# PROGRAMME DETAILS

34th Congress of the European Society of Surgical Oncology in partnership with BASO 2014

## Wednesday, 29 October 2014

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1. Oncoplastic surgical approach in treatment of breast tumours — surgical technique

I. Djurisic1, N. Jokic1, R. Dzodic1, M. Buta1, I. Markovic1, S. Nikolic1, M. Zegarac1

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Background: Oncoplastic surgery is a combination of oncological and reconstructive surgery, complying with all oncology principles and simultaneously providing satisfactory cosmetic outcome in all female patients treated surgically for breast carcinoma. Breast conserving surgery is a treatment of choice for minimal breast carcinoma, done on the principle of complete removal of the tumor together with surrounding glandular tissue, while at the same time having adequate breast shape and appearance preserved. Conserving breast surgery is always combined with postoperative radiation.

Materials and methods: This video shows a technique of breast conserving operation for carcinoma in the right breast of the 47-years-old female patient whom preoperatively had been diagnosed with suspicious tumor at the upper quadrant junction, 9 mm in size, visible on digital mammography and NMR. Clinically, tumor was impalpable, with negative axilla and no distant metastases confirmed on preoperative imaging (abdominal US, chest and bone X-ray). After standard preparations for general anesthesia, patient was operated on when partial resection of the right breast tissue was done, followed by intramammary defect reconstruction using glandular flaps. In partial resection of the breast tissue, clear tumor resection margins were achieved with 'no touch technique'. Intramammary reconstruction was performed by mobilization of glandular tissue flaps from pectoral fascia and subcutaneous tissue, with preservation of medial and lateral perforating branches of internal thoracic artery which are important for the vitality of the flaps. Non-selective ligation of these perforators, as well as extensive mobilization of the flaps, can cause partial or complete devascularization of the glandular flaps, leading to their necrosis. In addition, skin traction after suture of the formed flaps must be avoided.

Results: Definitive pathological examination verified 7 mm lobular breast carcinoma in the patient, with minimum of 15 mm negative resection margins and central position of the tumor in the tissue sample. Postoperative radiotherapy of the right breast was performed.

Conclusion: Oncoplastic surgery provides wide resection of the breast tissue, with satisfying cosmetic effect, which classifies this type of surgery as an important part of the multidisciplinary treatment of female breast carcinoma. With oncoplastic approach, complete excision of the breast carcinoma and negative tumor resection margins is possible, thus mutilating surgery such as mastectomy and poor cosmetic effect of standard breast conserving surgery can be avoided.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.002

2. Oncoplastic surgical approach in treatment of recurrent phyllodes tumour at the thoracic wall

D. Stojiljkovic1, I. Djurisic1, N. Miletic1, M. Buta1, M. Kocic2, I. Spurnic1, S. Jokic1, M. Oruci1, B. Radmanovic1, T. Stojiljkovic2

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Background: Phyllodes tumors, also called cystosarcoma phyllodes, are typically large, fast growing masses that form from the periductal stromal cells of the breast. They are very rare and count for about 1% of all breast neoplasms. Phyllodes tumors are fibroepithelial tumors composed of an epithelial and a cellular stromal component. They may be considered benign, borderline, or malignant depending on histologic features including stromal cellularity, infiltration at the tumor’s edge, and mitotic activity.

Materials and methods: Patient KD, 49 years old, initially underwent surgery for low grade phyllodes tumor, when simple mastectomy and partial resection of large pectoral muscle were performed in September 2011. Three months after initial surgery, a local recurrence in the left pectoral region was resected and the defect was reconstructed with local skin and fascial flap. Seven more months later, there were signs of new local recurrence in the left pectoral region, 67 × 83 × 42 mm in size, with infiltration of skin, subcutaneous tissues, pectoral muscles and intercostal muscles. The recurrent mass was close to the third and fourth rib on the left side, as shown on MR exam.

Results: After preoperative preparation, on July 2012 multidisciplinary team performed compartment excision of local recurrence with resection ‘en bloque’ of tumor mass, large pectoral muscle, third and fourth rib and intercostal muscles. The defect was reconstructed with mersilene mesh and a skin muscle flap formed of the latissimus dorsi muscle. Pathohistology confirmed mesenchymal tumor that, based on morphology and immunohistochemistry, may correspond to recurrence of stromal component of previously diagnosed phyllodes tumor.

Conclusion: In cases like this where there is a disease progression with multiple local recurrences and massive local tissue infiltration, the only acceptable treatment is extensive resection of the recurrent mass and surrounding tissues, followed by defect reconstruction. Participation of an experienced multidisciplinary team is necessary.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.003

6. Multivisceral resection for advanced pancreatic cancer: Posterior radical antegrade modular pancreatosplenectomy with left hemihepatectomy, left nephrectomy, resection of the gastric wall and duodenum

I. Shchepotin1, A. Lukashenko1, O. Kolesnik1, V. Prymak1

1 National Cancer Institute, Abdominal Oncology, Kyiv, Ukraine

Background: Complete surgical resection still remains the only possibility of curing pancreatic cancer. In the majority of countries, pancreatic tumors are diagnosed at advanced stages. The overall prognosis and survival of patients with advanced pancreatic cancer is generally poor. One of the most powerful predictors of outcomes in pancreatic cancer surgery is an R0 resection.

Materials and methods: The author present case of a patient with a T4 pancreatic tumour who underwent an open multivisceral en-bloc resection — posterior radical antegrade modular pancreatosplenectomy (RAMPS) with left hemihepatectomy, left nephrectomy, resection of the gastric wall and duodenum.

Results: Multivisceral surgical resection for cure was successfully performed in a 56-year-old man suffering from a pancreatic cancer associated with direct invasion to the left kidney, colon, gastric wall and distal part of the duodenum. The patient presented abdominal mass, upper abdominal pain. The patient’s postoperative course was uneventful. Six months after surgery, he has no recurrence or distal metastasis.
Conclusions: RAMPS with multivisceral resection and extended lymphatic dissection can be safely pursued in patients with locally advanced pancreatic cancer to achieve an R0 resection. No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.004

7. Multivisceral resection for advanced gastric cancer: Distal subtotal gastrectomy with pancreatoduodenectomy (D3 aortocaval lymphatic dissection)
I. Shchepotin1, A. Lukashenko1, O. Kolesnik1, V. Prymak1
1 National Cancer Institute, Abdominal Oncology, Kyiv, Ukraine

Background: Surgical management remains the cornerstone of multidisciplinary treatment in advanced gastric cancer, as the complete R0 resection confers only chance for cure of the disease. Over the past decades the operative technique and perioperative management have been noticeably advanced, which lead to the improved survival as well as the lower morbidity and mortality in high-volume specialized centers.

Materials and methods: We present a patient with a T4 gastric tumor who underwent an open multivisceral en bloc resection (distal gastrectomy and pancreatoduodenectomy) and extended aortocaval D3 lymphadenectomy. Results: The case of a 51-year-old man suffering from advanced low third gastric cancer is presented to illustrate the technique. Disease-free margins of resection were achieved. Pathology revealed a poorly differentiated gastric adenocarcinoma involving the stomach and pancreas. There was now incidence of pancreatic fistula and delay gastric emptying in early postoperative period, with a total hospital stay of 10 days. Seven months after surgery, she has no recurrence or distal metastasis.

Conclusions: Distal subtotal gastrectomy with multivisceral resection - pancreatoduodenectomy and extended D3 lymphatic dissection can be safely pursued in patients with locally advanced gastric cancer to achieve an R0 resection. No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.005

8. Multivisceral resection for advanced gastric cancer: Total gastrectomy with radical antegrade modular pancreatosplenectomy (D3 lymphatic dissection)
I. Shchepotin1, A. Lukashenko1, O. Kolesnik1, V. Prymak1
1 National Cancer Institute, Abdominal Oncology, Kyiv, Ukraine

Background: Gastric cancers are the second most common cause of cancer death worldwide. In the majority of countries, gastric tumors are diagnosed at advanced stages. The overall prognosis and survival of patients with advanced gastric cancer is generally poor. One of the most powerful predictors of outcomes in gastric cancer surgery is an R0 resection. However, the extent of the required lymphatic dissection during surgical resection for advanced gastric cancer are controversial.

Materials and methods: The author present case of a patient with a T4 gastric tumour who underwent an open multivisceral en bloc resection (total gastrectomy and partial pancreatectomy) and extended aortocaval D3 lymphadenectomy. The pancreatic dissection was performed in the manner of radical antegrade modular pancreatosplenectomy (RAMPS) technique which used for distal pancreatic cancer.

Results: Multivisceral surgical resection for cure was successfully performed in a 69-year-old woman suffering from a gastric cancer associated with direct invasion to the pancreatic body and splenic vessels. The patient presented with gastric outlet obstruction, upper abdominal pain. The patient’s postoperative course was uneventful. Nine months after surgery, she has no recurrence or distal metastasis.

Conclusions: Total Gastrectomy with multivisceral resection - RAMPS with extended D3 lymphatic dissection can be safely pursued in patients with locally advanced gastric cancer to achieve an R0 resection. No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.006

9. Thoracic vascular injuries during oesophageal resection in the prone position
J.M. Del Pino Monzon1, V. Concepcion Martin1, J.G. Diaz Mejias1, B. Reyes Correa1, M. Alonso Gonzalez1, E. Moneva Arce1, A. Soriano Benitez de Lugo1
1 Hospital Universitario Ntra. Sra. de Candelaria, Surgery, Santa Cruz de Tenerife, Spain

Background: The introduction of video assisted oesophageal cancer resections techniques has decreased morbidity of this complex surgery with similar oncologic results. But intraoperative complications appear similar to classic thoracotomy with the inconvenience of limited access of a minimally invasive approach. This is highly relevant facing a vascular injury.

Material and methods: After initial experience with minimally invasive transhiatal oesophagectomy experience (2004—2007) we changed to videoassisted thoracic oesophageal approach in the left lateral decubitus (2007—2008) and then in August 2008 we moved to a totally thoracoscopic approach in the prone position. Since then we managed 19 oesophageal cancer patients with a totally thoracolaparoscopic McKeown technique.

Results: We herein present a video record of some vascular injuries during the thoracoscopic resection of oesophagus in the prone position and its management. Two patients bleed from a direct aortic oesophageal artery and could be managed with direct compression and bipolar electrocoagulation. An injury of Inferior Lobal Pulmonary vein had to be controlled with clips. Left Pulmonary Vein injury needed thoracoscopic hand sewn and one patient had an Aberrant Subclavian Artery (Arteria Lusoria) mistaken as oesophagus and finally respected.

Conclusions: Thoracoscopic oesophageal surgery in the prone position is a feasible technique but it isn’t free of vascular injuries risks and the surgeon must be aware of them. Advanced thoracolaparoscopic surgical skills including hand sewing must be needed to solve fastly and safely these potentially lethal events. No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.007
10. Nipple sparing mastectomy in breast cancer: Extended indications, the Middle East Institute of Health experience
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2 Middle East institute of Health, Plastic and Reconstructive Surgery, Beirut, Lebanon
3 Middle East institute of Health, Pathology, Beirut, Lebanon
4 Middle East institute of Health, Oncology, Beirut, Lebanon

Background: Nipple-sparing mastectomy (NSM) is one of the procedures offered as part of the surgical treatment for breast cancer. It involves a mastectomy with preservation of the skin involving the breast and the nipple-areola complex. Immediate reconstruction, with a tissue expander was performed for a more favorable cosmetic outcome. This study reviews our experience with NSM, performed for patients with early and advanced breast cancer.

Materials and methods: This retrospective study from October 2004 till September 2013 evaluates the outcomes of 130 patients who underwent 169 NSM with immediate breast reconstruction. Sentinel lymph node biopsy was performed for 111 patients. The cosmetic and oncologic outcomes of this patient group are presented.

Results: A total of 130 patients in our study group had a total of 169 nipple-sparing mastectomies; 39 patients with bilateral and 91 with unilateral procedures. 61 patients had invasive breast cancer (locally advanced: 20); 44 had ductal carcinoma in situ (DCIS); 11 patients had a history of breast cancer (invasive: 6; DCIS: 5) and presented with diffuse microcalcifications (5) and atypical ductal hyperplasia (5), typical ductal hyperplasia (1); 8 patients had a history of previous breast cancer treated with mastectomy; 6 patients were BRCA-1 positive. Sentinel lymph node was positive in 26 patients: 12/44 patients with invasive cancer, 2/44 patients with DCIS and in 12/20 patients with locally advanced breast cancer (LABC) post neoadjuvant chemotherapy. They received axillary lymph node dissection. 44 patients received adjuvant chemotherapy, radiation therapy or both for their first breast cancer 2 to 7 years before their NSM (radiation to ipsilateral or contralateral breast: 10). 15 patients received adjuvant radiation. 24 patients received adjuvant chemotherapy. The average tumor size: invasive cancer: 1.8 ± 0.6 cm; locally advanced breast cancer: 4.5 cm ± 1.7 cm. The age range was 22—74 years. Local recurrence occurred in 2 patients; 9 patients had distant metastases. 29 patients had complications: wound infection and or partial nipple necrosis that recovered on conservative therapy; 11: nipple-areola complex necrosis with removal of the prosthesis: 14; contracture of the capsule: 4. Two patients had a positive retroareolar biopsy and NAC was excised. No patient was lost to follow-up. Immediate implant reconstruction: 119 had immediate implant reconstruction; 11 patients had early-delayed reconstruction (expander placement).

Conclusion: Nipple-sparing mastectomy can be offered to patients with low risk as well as advanced breast cancer. It is oncologically safe and offers a superior cosmetic result with one step immediate reconstruction. In advanced cases, the complication rates are comparable to those reported for patients undergoing mastectomy followed by radiation.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.008

12. Is metabolic syndrome-breast cancer link relatable to specific molecular subtype?
I. Capasso 1, E. Esposito 2, M. Montella 2, A. Crispo 2, M. D’Aiuto 1, M. De Laurentis 1, A. Fucito 1, M. Grimaldi 2, G. Ciliberto 2, G. D’Aiuto 1
1 Fondazione Senatore G. Pascale, Breast Surgery, Napoli, Italy
2 Fondazione Senatore G. Pascale, Epidemiology, Napoli, Italy

Background: Metabolic syndrome is considered to be associated with the increased risk of breast cancer. Epidemiologic data suggest that the strength of the metabolic syndrome—breast cancer link varies by intrinsic molecular subtype, but results from worldwide literature are controversial. Main aim of this study was to assess whether metabolic syndrome is associated to breast cancer specific subtype.

Materials and methods: This study consisted of 383 women diagnosed with breast cancer who have been treated in Department of Breast Surgery at National Cancer Institute of Naples in 2013. Anthropometric and metabolic variables were correlated to breast cancer specific subtypes, retrospectively. Body Mass Index (BMI) (kg/m²) was calculated from weight and height values and evaluated according to the World Health Organization criteria. The waist and hip ratio (WHR) was obtained from waist and hip circumference, measuring the smallest circumference of both to discriminate between android and gynoid fat distribution. Fasting plasma glucose, insulin, HDL-Cholesterol and triglycerides serum levels were assessed from blood samples database. Fasting plasma glucose, HDL-Cholesterol and triglycerides were measured according to the NCEP ATP III criteria. Insulin resistance was calculated by the homeostasis model assessment ratio-insulin resistance (HOMA-IR). Statistical significance was considered when p ≤ 0.05 and 95% CI.

Results: Outcomes from the above study suggest that metabolic syndrome is associated to HER-2 positive and Luminal breast cancer subtypes in postmenopausal. BMI is weakly statistically significant associated to Luminal A breast cancer specific subtype [OR 1.1 (95% CI 0.56—2.196 p = 0.007) WC, WHR and insulin resistance namely HOMA-IR are positively associated with breast cancer risk in HER-2 positive and Luminal B subtypes. Waist circumference ≥88 cm is strongly associated to increased risk of breast cancer in HER-2 positive and Luminal B subtypes [OR 2.57 (95% CI 0.85—3.1) p 0.06; OR 2.21 (95% CI 0.77—2.60) p 0.02], respectively. HOMA-IR is associated to HER-2 overexpressing and Luminal B cancers [OR 2.11 (95% CI 0.66—6.69)] and [OR 2.5 (95% CI 1.4—4.5) p 0.002], respectively.

Conclusions: Metabolic syndrome breast cancer link varies by molecular subtype, but further studies on larger samples are needed to better investigate this topic and to intervene on modifiable risk factors in cancer primary prevention.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.010

13. Healthcare professionals’ opinions of treating older women with operable breast cancer: A mixed methods study
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2 Sheffield Hallam University, Centre for Health and Social Care Research, Sheffield, United Kingdom
Background: Up to 40% of women over 70 are treated with Primary Endocrine Therapy (PET) as an alternative to surgery in the UK although this rate varies widely by region. This may be due to variation in clinician preference for either treatment. There is little published on the impact of healthcare professional (HCP) preference on treatment choice in elderly patient with early breast cancer. This mixed qualitative and questionnaire study has explored the underlying reasons for variation in treatment practices.

Methods: Semi-structured interviews were undertaken with HCPs from regions with high, medium and low rates of PET. Factors influencing treatments offered were explored. Interviews were recorded, transcribed verbatim and Framework analysed. A questionnaire was developed to quantitatively raise during the interviews and disseminated to 641 HCPs via the UK Association of Breast Surgeons.

Results: Thirty-four HCPs (20 breast surgeons; 13 nurse specialists; 1 geriatrician) were interviewed from 14 sites across the UK and 192 questionnaires returned within 6 weeks (30%). There was an overriding feeling that the definition of ‘old’ has changed with many suggesting that PET was not suitable for patients under the age of 80 unless there are significant comorbidities; however it was clear that age remains an important factor when deciding treatment in these patients with 150/192 (78.1%) stating that age has at least some importance in the decision making process. The opinion was split regarding the best way to treat patients with dementia, with 78/192 (40.7%) of respondents agreeing with the statement ‘Patients with dementia should be treated with PET’ and 110/192 (57.2%) disagreeing. Patient preference was generally stated as the most important factor when considering treatment options with 179/192 (93.2%) stating it was either important or very important. However opinions differed on whether a choice of the two treatments should be given, with over a quarter (50/192; 26.1%) believing that all patients over the age of 70 should be offered PET and 152/192 (79.1%) believing that all patients over 70 should be offered an operation.

Conclusions: Opinions differ on the best way to treat women over 70, especially if they have co-existing dementia, as well as whether they should be offered PET as a treatment option. This may be a significant cause of the variation in treatment of women over 70 in the UK.

Conflict of interest: Other substantive relationships: This abstract presents independent research funded by the National Institute for Health Research (NIHR) under its Programme Grants for Applied Research Programme (Grant Reference Number RP-PG-1209-10071). The views expressed are those of the author(s) and not necessarily those of the NHS, the NIHR or the Department of Health.

http://dx.doi.org/10.1016/j.ejso.2014.08.011

14. Repeat sentinel node biopsy in recurrent breast cancer: Additional staging information and factors associated with technical success

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2 Maxima Medical Centre, Surgery, Veldhoven, Netherlands
3 Amphia Hospital, Surgery, Breda, Netherlands
4 Netherlands Cancer Institute, Surgery, Amsterdam, Netherlands
5 Maastricht University, Epidemiology, Maastricht, Netherlands

Introduction: Knowledge of regional lymph node involvement could provide additional information in patients with recurrent breast cancer in order to achieve better locoregional control and predict prognosis. Standard axillary staging in patients with recurrent breast cancer is no axillary procedure in patients with prior axillary lymph node dissection (ALND) and ALND in patients with a prior sentinel node biopsy (SNB). The ‘Sentinel Node and Recurrent Breast Cancer (SNARB)’ study is a Dutch nationwide registration study to assess feasibility and validity of performing repeat SNB in patients with locally recurrent breast cancer.

Methods: A total of 255 patients diagnosed with locally recurrent non-metastatic breast cancer underwent lymphatic mapping (LM) and SNB in 24 Dutch hospitals.

Results: A total of 88 patients underwent breast conserving surgery (BCS) with SNB, 131 patients BCS with ALND and 25 patients mastectomy, of which 14 with SNB and 11 with ALND as their primary procedure. Another 11 patients underwent BCS without axillary surgery. In 148 patients (58%) a sentinel node (SN) was identified and in 122 patients (47.8%) the SN was successfully removed. Aberrant drainage patterns were visualized in 50% of patients, more frequently after previous ALND (74.7%) than after previous SNB (25%; P < 0.001). In 19 patients (15.6%) (micro)metastases were found in the SN. Overall, the result of this repeat SNB led to a change in the adjuvant treatment plan in 11.5%. Additionally, 47 patients (46.1%) with a previous negative SNB were spared an ipsilateral ALND due to a negative repeat SNB. Technical success of repeat SNB was influenced by several factors. Patients with successful repeat sentinel node visualization were injected with a higher amount of 99m technetium-nanocolloid (Tc-99)(P = 0.010). The identification rate was 32.8% after subareolar injection of Tc-99, 64.2% after periareolar injection in the quadrant of the tumor and 67.2% after peritumoral injection. LM in a two-day protocol was successful in 64.3%, versus 48.8% in a one-day protocol (P=0.016).

Conclusion: Repeat SNB is technically feasible and provides staging information in patients with locally recurrent breast cancer, leading to changes in management. Aberrant drainage patterns are observed in 50% of patients. Technical success is achieved more often when more Tc-99 is injected and when LM is performed in a two-day protocol. Subareolar Tc-99 injection appears to be inadequate in repeat SNB.

At the time of presentation at ESSO in October 2014, the total amount of included patients in the SNARB Registration Study is expected to be 450.

No conflict of interest.

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15. Long term effects of extended adjuvant endocrine therapy on quality of life in breast cancer patients

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2 Leiden University Medical Center, Medical Oncology, Leiden, Netherlands
3 Netherlands Cancer Institute, Surgery, Amsterdam, Netherlands
4 Leiden University Medical Center, Medical Decision Making, Leiden, Netherlands

Background: Prolonging adjuvant endocrine therapy for hormone-receptor positive, postmenopausal early breast cancer patients improves disease-free survival. However, endocrine therapy may have adverse events, resulting in reduced quality of life (QoL). The IDEAL study (BOOG 2006-05) investigates the optimal duration of letrozole after 5 years, the IDEAL QoL side-study investigates the impact of this extended therapy on QoL.

Methods: A representative sample of 468 patients, selected from the TEAM trial were invited to fill in a questionnaire 6-6.5 years after diagnosis. The questionnaires comprised the EORTC QLQ-C30 and BR23. QoL among long term survivors was compared with the general population and with previous reports from breast cancer patients.

Results: Response was 72%. Patients receiving extended adjuvant endocrine therapy reported significantly better global QoL compared with general population (80 versus 71; p < 0.01) and breast cancer patients (80 versus 65; p < 0.01). Similar results were found on 8 other scales. They scored worse on insomnia, body image and sexual enjoyment. Patients who sometimes forget their medication have the best QoL. (84 versus 79; p < 0.01). More detailed results on the impact of compliance and lifestyle factors will be shown.

Conclusion: Breast cancer survivors receiving extended adjuvant endocrine therapy have a significantly better long term QoL compared with the general population.
Table 1. QoL divided in functioning and symptoms scales, for QLQ-C30 and QLQ-BR23.

<table>
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<th>IDEAL population</th>
<th>Breast cancer patients stage I-II</th>
<th>General population</th>
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<td></td>
<td>N = 339</td>
<td>Mean</td>
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<td>Functioning scales</td>
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<tr>
<td>Global health status/QoL</td>
<td>79.6</td>
<td>64.6</td>
<td>&lt;0.01</td>
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<tr>
<td>Physical function</td>
<td>84.7</td>
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<td>0.16</td>
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<td>Role function</td>
<td>86.5</td>
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<td>Emotional function</td>
<td>83.0</td>
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<td>Cognitive function</td>
<td>84.1</td>
<td>84.1</td>
<td>0.97</td>
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<td>89.7</td>
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<td>Symptom scales</td>
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<tr>
<td>Fatigue</td>
<td>21.5</td>
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<td>Nausea/vomiting</td>
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<td>Pain</td>
<td>15.7</td>
<td>19.4</td>
<td>0.02</td>
</tr>
<tr>
<td>Dyspnoea</td>
<td>10.5</td>
<td>11.6</td>
<td>0.42</td>
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<td>Insomnia</td>
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<td>24.8</td>
<td>0.04</td>
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<tr>
<td>Appetite loss</td>
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<td>10.7</td>
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<tr>
<td>Constipation</td>
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<td>12.8</td>
<td>0.03</td>
</tr>
<tr>
<td>Diarrhoea</td>
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<td>6.2</td>
<td>0.02</td>
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<td>Financial problems</td>
<td>5.5</td>
<td>16.0</td>
<td>&lt;0.01</td>
</tr>
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</table>

No conflict of interest.

<table>
<thead>
<tr>
<th>QLQ-BR23</th>
<th>IDEAL population</th>
<th>Breast cancer patients, all stages</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>N = 339</td>
<td>Mean</td>
</tr>
<tr>
<td>Functioning scales</td>
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<td></td>
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<tr>
<td>Body image</td>
<td>80.0</td>
<td>84.5</td>
</tr>
<tr>
<td>Sexual functioning</td>
<td>21.5</td>
<td>22.0</td>
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<td>Sexual enjoyment</td>
<td>34.1</td>
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<td>Future perspective</td>
<td>70.0</td>
<td>51.9</td>
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<td>Symptom scales</td>
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<td>Arm symptoms</td>
<td>17.8</td>
<td>26.0</td>
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<tr>
<td>Breast symptoms</td>
<td>12.8</td>
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<td>Systemic therapy side effects</td>
<td>16.0</td>
<td>15.4</td>
</tr>
</tbody>
</table>

No conflict of interest.

16. Interactions between DAP1 and mTOR: Implications for human breast cancer
1 London Breast Institute, Breast and Endocrine Surgery, London, United Kingdom
2 Cardiff University-Peking University Cancer Institute, Cardiff University, Cardiff, United Kingdom
3 St George’s Hospital and Medical School, Breast and Endocrine Surgery, London, United Kingdom

**Background:** The mTOR pathway is being studied extensively with the view of identifying therapeutic targets for the treatment of human carcinogenesis, including breast cancer.

DAP1 has been identified as a substrate of mTOR, and is believed to act as a functional antagonist for the ULK1 complex, which initiates autophagy.

Previously, our group published evidence suggesting that DAP1 and components of the mTOR pathway, such as mTOR and Rictor (core protein of mTOR complex 2), were significantly associated with clinicopathological parameters of human breast cancer.

In this study, we shall present clinical and experimental evidence suggestive of significant interactions between DAP1 and the mTOR pathway, with potentially important clinical implications.

**Materials and methods:** The mRNA expression of DAP1 and components of the mTOR pathway were studied in a cDNA archive library derived from breast cancer tissue collected from a clinical cohort. In vitro cell function studies were performed on DAP1 knock-down breast cancer cells (MCF7 and MDA-MB-231). All in vitro experiments were performed at least in triplicate.

**Results:** In the clinical cohort, DAP1 was found to be directly related to mTOR (r = 0.173, p = 0.0878, n = 98) and Rictor (r = 0.337, p = 0.000632, n = 100).

Knock-down sub-lines showed increase adhesion, invasion and migration compared to controls, significantly so in MDA-MB-231. Whilst knock-down and control sub-lines in MDA-MB-231 shown no difference in exuberant growth, MCF7 knock-down strains demonstrated an initial suppression versus controls on Day 3. The subsequent increase of growth observed on Day 5 in the knock-down strain erased any difference with controls.

**Conclusions:** The role of mTOR in breast cancer is well attested. However, the details of the pathways continue to be subject of intense research. We believe our evidence is highly suggestive of significant interactions between DAP1 and the mTOR pathway, especially the relatively novel mTOR complex 2.

Furthermore, a review of the literature suggests that the potential downstream substrates of the DAP1 and ULK1 include the mTOR pathway, which is the most likely cause of the delayed growth in the MCF7DAP1kd sub-line.

The details of the autophagy pathway downstream of DAP1 remain obscure. An increased understanding of this pathway and its interactions with the mTOR pathway could potentially improve our therapeutic targeting of the same in the context of human breast cancer.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.013

17. Implementation of early discharge after surgery for breast cancer
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2 IPO Porto, Breast Unit, Oporto, Portugal

**Background:** The increased health care costs demanded an improvement in the efficiency and the implementation of medical cost-effectiveness programs. The Breast Unit of the Portuguese Institute of Oncology of Porto treats over 1,000 new patients from breast cancer per year. The present study aimed at evaluating the clinical, psychological and economic impact of patients undergoing major breast surgery in oncological scenario who were discharged with drains in place and followed as outpatient.

**Material and methods:** A pilot study with 18 months duration included a total of 104 patients treated for breast cancer and with early discharge on the second postoperative day with closed-suction drains. The patients included met specific inclusion criteria. After drain removal, a validated satisfaction questionnaire was applied. Morbidity was recorded and analyzed prospectively.

**Results:** A 76.9% response rate to the questionnaire was obtained and considered representative. Among these, 88.8% were likely to recommend future use of early discharge drains, 95.1% had little or no difficulty regarding handling the drains and 82.3% rated the quality of ambulatory monitoring as very good to excellent. The rate of local complications was 13.9% and 99% were classified as minor adverse events. Infection occurred in 3% of cases and seroma in 4%. Complication rate related to the drainage system was 0.96%. The total number of days of hospital beds theoretically saved was 564 days with an average of 5.42 days/patient. In 2014 an audit was conducted to review the implementation of the protocol that included 560 cases. 55.9% of treated patients were eligible for inclusion. A percentage of 61% were in fact early discharged. Non-compliance with the protocol was justified by refusal of the patient (in 14.6%) and the others by psychosocial factors. 5.5% of treated patients were eligible for inclusion. A percentage of 61% were in fact early discharged. Non-compliance with the protocol was justified by refusal of the patient (in 14.6%) and the others by psychosocial factors.

**Conclusions:** This study demonstrated that short hospital stay in patients undergoing major breast surgery for breast cancer is feasible and it is possible to reduce hospital costs without detriment in the quality of medical outcome.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.015
18. LINF (Lymphatic Imaging with Non-radioactive Fluorescent tracers) based education for lymph edema patients after breast surgery with axillary dissection

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2 Univ of Hyogo, Col. of Nursing Art&Science, Akashi, Japan
3 Kansai Electric Power Hospital, Oncology, Osaka, Japan

Background: After introduction of sentinel lymph node biopsy in breast cancer surgery, incidence of post-operative arm lymph edema has decreased. However it is true that lymphedema is still one of the biggest concern for breast cancer patients because once it happens, the recovery is not expected, self-management of the disease is mandatory and it bothers them life time long.

The study of lymphatic circulation has been left behind simply because there has not been good and simple methods to visualize it. It also has been very difficult to convince lymph edema patients of the efficacy of manual lymph drainage without showing them what lymphatic flow is like. Recently LINF (Lymphatic Imaging with Non-radioactive Fluorescent tracers) using ICG(indocyanine green) as a fluorescent tracer enabled us to detect lymphatic circulation with ease. During LINF, patients also can watch their arm lymphatic flow image on a TV monitor real time. We raised a question here whether it is possible to inspire patients’ motivation to self-manage their disease like self—manual lymph drainage, by sharing LINF images with patients.

Results: 1. Comparing the LINF image of an affected arm with that of a healthy arm, patients could understand that the lymph flow disturbance indeed caused their arm edema. 2. Applying manual lymph drainage to stage one and two lymph edema which show diffuse fluorescent pattern in LINF, patients was convinced of its efficacy by watching movement of fluorescence corresponding to that of interstitial fluid. 3. In some patients, enhanced lymphangiomotion by repeating clamping and unclamping their hands was observed in agreement with the report that exercise prevented lymph edema. 4. In stage 0 lymph edema which was subclinical but in which distinct LINF pattern was observed, some lymphatic flows other than those towards axilla were often preserved. LINF enabled us to guide the lymph stagnation in the desired drainage direction towards the remaining lymphatic flows by manual lymph drainage. 5. After LINF presentation, 92% of the patients understood what the lymphatic flow was like and 57% understood what their problems were.

Conclusions: By sharing LINF image with lymph edema patients real time, they were convinced of the efficacy of manual lymph drainage, since LINF provided the visual proof easily understood by anyone, inspiring their motivation to self-manage their problem by the procedure.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.016

19. Activation of the endoplasmic reticulum stress pathway and the radiosensitivity of human colorectal adenocarcinoma

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Background: Inhibitors of cellular protein degradation mechanisms (the proteasome) may cause radio-sensitisation of tumour cells. The mechanism of this effect is unclear due to the wide ranging role the proteasome plays in cellular homeostasis. One pathway implicated in modulating protein degradation is the unfolded protein response (UPR), which is induced in response to radiation in either the HT-29R (GRP-78) or HT-29R line (GRP78 with 48.1% showing strong GRP78 staining. HT-29 cells did not activate the UPR in response to radiation in either the HT-29R or HT-29R line (P > 0.970). Induction of the UPR resulted in significant radio-sensitisation (mean inactivation dose 2.91Gy vs. 1.22Gy; P < 0.05) of the resistant line.

Methods: Inhibitors of cellular protein degradation mechanisms (the proteasome) may cause radio-sensitisation of tumour cells. The mechanism of this effect is unclear due to the wide ranging role the proteasome plays in cellular homeostasis. One pathway implicated in modulating protein degradation is the unfolded protein response (UPR), which is induced in response to radiation in either the HT-29R (GRP-78) or HT-29R line (GRP78 with 48.1% showing strong GRP78 staining. HT-29 cells did not activate the UPR in response to radiation in either the HT-29R or HT-29R line (P > 0.970). Induction of the UPR resulted in significant radio-sensitisation (mean inactivation dose 2.91Gy vs. 1.22Gy; P < 0.05) of the resistant line.

Conclusions: This may provide an explanation of the mechanism by which proteasome inhibitors modulate radiosensitivity and provide a promising pathway for further therapeutic targeting. UPR induction is present in human colorectal cancer and may be implicated in radioresistance.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.017

21. Local recurrence and not liver or peritoneal colorectal carcinoma relapse has the worst prognosis when treated by multimodality approach

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2 Medical University of Lublin, Medical Oncology Unit Department of Surgical Oncology, Lublin, Poland
3 Medical University of Gdansk, Department of Surgical Oncology, Gdansk, Poland

Background: Survival of patients with colorectal carcinoma (CRC) is mainly dependent on the development of distant metastases, but strong association between local recurrence (LR) and survival should not be neglected. Surgical resection cures selected patients with CRC liver metastases (LM) or LR. In contrast, peritoneal spread has been considered inevitably fatal. Emerging evidence suggests that cure may be achieved by a combination of radical cytoreductive surgery and hyperthermic intraperitoneal chemotherapy (HIPEC).

Aim: to compare survival of patients with three main patterns of CRC relapse that have been treated with multimodality approach: 1) LR; 2) LM; and 3) peritoneal metastases (PM).
Material and methods: Retrospective survival analysis of prospectively collected data of the three groups of CRC patients with relapse, treated by multidisciplinary team with radical surgery, perioperative systemic chemotherapy, external beam/intraoperative radiotherapy (IORT), and HIPEC. The study included only patients who underwent surgical resection. LR cases were included whenever cancer re-growth was detected in the pelvis (rectal) or abdomen (colon). Only cases with metachronous (detected >6 months from primary treatment) LM, and resectable (cytoreductive surgery) PM were included. Kaplan–Meier curves and Log-rank test using time since relapse treatment were used to analyze overall survival. Forty eight percent of patients died during follow-up.

Results: The study involved 163 patients (PM n = 36; LM n = 75; LR n = 52) of mean age 58.4 years (SD ± 11.6). The results at 3 years were overall survival 44.3% (95% CI 39.6–49.0), LR 28.0% (95% CI 21.6–34.4); LM 49.8% (95% CI 42.9–56.7); and PM 72.5% (95% CI 62.4–82.6). There was significant difference between all three groups (p < 0.001). Patients treated for LR died faster than patients with either LM or PM (p < 0.001), while survival of patients with LM or PM was not different.

Conclusions: With current multimodality treatment, the LR is the most important prognosticator of poor survival in relapsing CRC. Since LR is mostly a consequence of either inadequate staging, perioperative treatment, surgical pitfalls and/or aggressive biological behaviour of the CRC. Clinical attention should be focused on precise identification of these peculiar factors in order to improve overall survival.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.018

22. Visceral obesity, body mass index and risk of complications after colon cancer surgery
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1 MCA, Surgery, Alkmaar, Netherlands
2 MCA/Trial Center Holland Health, Surgery, Alkmaar, Netherlands
3 Trial Center Holland Health, Research, Alkmaar, Netherlands
4 Academic Medical Center, Surgery, Amsterdam, Netherlands

Background: The aim of our study was to assess the influence of visceral obesity (VO), as measured by preoperative abdominal CT scan, in relation to Body Mass Index (BMI) on the incidence of postoperative complications and length of hospital stay (LOS) after colon cancer surgery.

Material and methods: Patients who underwent elective resection for colon cancer between January 1st 2006 and December 31st 2013 and had a preoperative CT scan were entered in the study. Visceral fat area was determined by using the preoperative CT scan at the L3–L4 level. The effect of VO, defined as a visceral fat area > 100 cm², on postoperative complications and LOS was analysed.

Results: Of 564 included patients, 65% had VO. VO was associated with more anastomotic leakage (p = 0.04), pneumonia (p = 0.02), wound infection (p = 0.03) and reoperations (p = 0.04) and longer LOS (p = 0.05). Of patients with a BMI < 25 kg/m², 44% had VO. In this group, VO was significantly associated with postoperative complications, (p < 0.01) and pulmonary (p < 0.01) co-morbidity, hypertension (p < 0.01) and diabetes (p < 0.01). In the overweight (BMI 25–30 kg/m²) and obese (BMI > 30 kg/m²) groups, the rate of VO was much higher (81% and 90%, respectively) but not significantly associated with complications or co-morbidity, except for cardiac co-morbidity (p < 0.02) in the BMI 25–30 kg/m² group. After multivariable analysis, VO was shown to be an independent predictor for anastomotic leakage and wound infection.

Conclusions: The association of VO with worse outcome after colon cancer surgery is most pronounced in patients with a BMI < 25 kg/m².

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.019

23. Impact of postoperative septic complications on recurrence of colorectal cancer
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Background: Approximately 30% of patients operated on for colorectal cancer, with an expectedly favourable prognosis suffer recurrence. The aim of our study was to evaluate the impact of postoperative complications following radical surgery for colorectal cancer on disease free interval.

Materials and methods: There were 1951 patients operated for colorectal cancer in Surgical Department, 1st. Medical Faculty, Thomayer Hospital, Prague, from 1994 to 2012. Radical R0 operation underwent 68% of these patients. Postoperative complications occurred in 457 (34.6%) patients. Impact of postoperative complications on disease free interval was studied in a prospective study.

Results: We identified minor complications (Clavien-Dindo classification I, II): abscess wound – 90 patients (6.8%), moderate complications (Clavien-Dindo III): intraabdominal abscess – 28 patients (2.1%), anastomotic leakage – 67 patients (5%) and severe septic complications: sepsis, peritonitis – 20 patients (1.5%). Another 255 patients (19.3%) had a different, non-inflammarory complications (pulmonary embolism, bowel obstruction, heart failure, etc.). Significantly worse disease-free interval was found in patients with severe septic complications. Other, less serious septic complications also increase the risk of recurrence, but not statistically significantly.

Conclusion: In our cohort of R0 operated patients, postoperative complication is the second most important prognostic factor following TNM stage of the colorectal cancer. Severe septic complications has an adverse effect on the further course of the disease in terms of relapse. In addition, serious complications increases postoperative mortality, prolong hospitalization, increase the cost of treatment. Other potentially septic complications such as anastomotic leakage have no essential impact on recurrence, therefore it is necessary to prevent the development of sepsis.

Supported by grants: P304/12/585, NT13424-4/2012

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.020

24. Survival after pelvic exenteration for T4 rectal cancer comparable to population-based colorectal cancer survival: Results of a pooled analysis of two tertiary referral centres
M. Kusters1, K.K.S. Austin2, M.I. Solomon2, P.J. Lee2
1 M.C.A. Nieuwenhuijzen1, H.J.T. Rutten1
1 Catharina Hospital, Surgery, Eindhoven, Netherlands
2 Royal Prince Alfred Hospital, Colorectal Surgery, Sydney, Australia

Background: The purpose of this study is to analyse the pooled results of patients undergoing pelvic exenteration for locally advanced T4 rectal cancer in a retrospective manner. Historically this subgroup of T4 rectal cancers requiring a pelvic exenteration have only been offered palliative surgery or no surgery. The Royal Prince Alfred Hospital in Australia and the Catharina Hospital in the Netherlands are national referral centres for locally advanced rectal cancer.

Material and methods: Of a total of 528 curatively treated patients with T4 tumours, 95 patients (18%) with locally advanced T4 tumours who underwent pelvic exenteration in these two tertiary referral centres up to May 2013 were studied. The basic treatment principle was preoperative (chemo) radiotherapy, intended radical surgery and in some patients adjuvant chemotherapy. In uni- and multi-variate analyses risk factors for local recurrence (LR), distant metastases (DM) and overall survival (OS) were studied.

Results: Clear margins (R0) were achieved in 87% of the patients. Adjuvant chemotherapy was administered in 33% of the patients, independent of margin of the resection, lymph node status and post-operative T-stage. 5-year LR-rate was 16.7%, DM-rate was 16.4% and OS was 62%. After multivariate analysis the only factor associated with death was no adjuvant chemotherapy (p = 0.016). The effect of adjuvant chemotherapy...
was even more pronounced in the elderly: patients older than 70 years who had chemotherapy had a 5-year overall survival of 80.0%, compared to the 39.2% in elderly who had no chemotherapy (p = 0.019).

Conclusions: This study describes the largest cohort in the literature investigating the long-term results of exenterative surgery for locally advanced T4 rectal cancer. Pelvic exenteration leads to an 87% R0 resection rate in these large tumours when treated in expert centres, leading to good local control and an OS that is comparable to population-based colorectal cancer survival. Adjuvant chemotherapy may improve OS further, even in the elderly patients.

No conflict of interest.


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Background: Emergency stoma placement prior to curative surgery in colorectal cancer is a common procedure, since 20% of colorectal cancer patients present themselves with a mechanical bowel obstruction. With the increased use of neoadjuvant treatment and ‘liver-first’ treatment strategies, the use of these temporary or bridging stomas will increase, especially in locally advanced (LARC) and locally recurrent rectal cancer (LRRC) patients. During definitive surgery, these previously placed stomas often need to be repositioned, revised or closed, which can lead to additional postoperative complications.

In this study the extent of stoma malpositioning and the impact on rectal cancer care is described and an algorithm is provided for the placement of a suitable stoma.

Materials and methods: All patients who received surgery for LARC or LRRC between 1994—2010 in our tertiary referral centre were reviewed. All patients who received a stoma prior to curative surgery were included. Patients with recurrent rectal cancer were only included if stomas from primary surgery had been restored. Outcome measures are stoma malpositioning, surgical characteristics and postoperative and stoma related complications.

Results: A total of 464 patients were included, 106 patients (22.8%) had a stoma prior to curative surgery. The main indications were defecation related problems (n = 16), acute mechanical obstruction (n = 27), an intra-operative irresectable tumour (n = 13), a pending obstruction prior to neoadjuvant therapy (n = 27). In 50 patients (47%) the stoma had to be revised during surgery. No significant differences were found regarding postoperative complications.

Conclusion: Almost half of the previously placed stomas were considered inappropriate and had to be revised during definitive surgery. Unfortunately, we were not able to identify an association with postoperative complications. The heterogeneity of our study population and the great variety of performed surgical procedures could be the explanation for this unexpected result, since other factors predominantly influence postoperative complications and mask the effect of stoma malpositioning. In order to improve care, an algorithm is proposed for the placement of a suitable stoma. This algorithm can guide the surgeon in his decision making in these often complex patients.

Table 3. Stoma formation related complications.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Stoma placement</th>
<th>Significance</th>
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</thead>
<tbody>
<tr>
<td>Correct (n = 69)</td>
<td>Malpositioned (n = 31)</td>
<td></td>
</tr>
<tr>
<td>Operating time mean in hours (range)</td>
<td>5.24 (2.13 – 10.36)</td>
<td>5.17 (2.20 – 10.44)</td>
</tr>
<tr>
<td>Admission to ICU mean in days (range)</td>
<td>1.99 (0–59)</td>
<td>1.13 (0–10)</td>
</tr>
<tr>
<td>General admission mean in days (range)</td>
<td>17.2 (5–138)</td>
<td>16.2 (6–79)</td>
</tr>
<tr>
<td>Perioperative bleeding (mean in mL)</td>
<td>4998 (50–18,000)</td>
<td>4775 (800–25,000)</td>
</tr>
<tr>
<td>Presacral abscess formation</td>
<td>13 (19%)</td>
<td>6 (19%)</td>
</tr>
<tr>
<td>Anastomotic leakage</td>
<td>5 (5%)</td>
<td>3 (10%)</td>
</tr>
<tr>
<td>Postoperative ileus</td>
<td>16 (23%)</td>
<td>4 (13%)</td>
</tr>
<tr>
<td>Incisional hernia</td>
<td>10 (7%)</td>
<td>2 (6%)</td>
</tr>
<tr>
<td>Overall Stoma complications</td>
<td>8 (12%)</td>
<td>2 (6%)</td>
</tr>
<tr>
<td>Necrosis</td>
<td>1 (14%)</td>
<td>0</td>
</tr>
<tr>
<td>Prolapse</td>
<td>4 (6%)</td>
<td>1 (3%)</td>
</tr>
<tr>
<td>Hernia</td>
<td>5 (7%)</td>
<td>1 (3%)</td>
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</tbody>
</table>
No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.023

27. Differences in adjuvant chemotherapy administration for stage II colon cancer patients—a EURECCA international comparison
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2 Belgian Cancer Registry, Brussels, Belgium
3 Danish Colorectal Cancer Group, Copenhagen, Denmark
4 Uppsala University, Surgical Sciences, Uppsala, Sweden
5 Lithuanian University of Health Sciences, Oncology, Kaunas, Lithuania
6 INCLIVA University of Valencia, Hematology and Medical Oncology, Valencia, Spain
7 Comprehensive Cancer Center South, Eindhoven, Netherlands

**Background:** Adjuvant chemotherapy use has been recommended for stage III colon cancer, improving disease-free and overall survival compared with surgery alone. Although most trials also included stage II colon cancer patients, the benefit of adjuvant chemotherapy for these patients is much smaller. Several European countries recommend in their guidelines to consider adjuvant chemotherapy for high-risk stage II colon cancer patients. The aim of this large population-based international comparison, using country as instrumental variable, is to compare treatment strategies and survival in stage II colon cancer patients among five European countries. This could lead to new insights on the value of adjuvant chemotherapy for stage II colon cancer patients.

**Purpose:** To compare adjuvant chemotherapy administration for stage II colon cancer patients in five European countries. Differences in adjuvant chemotherapy administration were compared, stratified for stage (IIA and IIB) and country. Relative survival will be calculated for all participating countries, and is defined as the ratio of observed survival to the expected survival based on the matched general population.

**Methods:** We used population-based national cohorts from Belgium, the Netherlands, Sweden, Denmark, and a regional cohort from Lithuania, including operated stage II colon cancer patients diagnosed between 2004 and 2009. Country will be used as instrumental variable in these analyses. The proportion of adjuvant chemotherapy administration was compared, stratified for stage (IIA and IIB). Relative survival will be calculated for all participating countries, and is defined as the ratio of observed survival to the expected survival based on the matched general population.

**Results:** Overall, 32,733 patients were included for analyses. For stage IIA colon cancer, 4.6% of the patients in the Netherlands received adjuvant chemotherapy, while the proportion of adjuvant chemotherapy administration amounted 7.0% in Sweden, 5.5% in Denmark, 13.2% in Lithuania and 24.5% in Belgium. For stage IIB colon cancer patients, the proportion of adjuvant chemotherapy administration was 21.5% in the Netherlands, 23.7% in Lithuania, 27.8% in Sweden, 28.4% in Denmark, and 47.2% in Belgium. Relative survival will be calculated.

**Conclusion:** The current international comparison demonstrates differences in adjuvant chemotherapy administration for stage II colon cancer patients among five European countries. Relative survival for all countries will be calculated and these results will also be presented during the congress. This way, we can investigate if there is an association between the different treatment strategies and survival. The final results of this study could lead to individualised treatment strategies for patient with stage II colon cancer.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.024

28. Electrochemotherapy in advanced pancreatic adenocarcinoma
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2 Fondazione Senatore G. Pascale, Radiology, Napoli, Italy

**Purpose:** Electrochemotherapy is effective in treatment of various cutaneous tumors and could be translated into treatment of deep seated tumors. With this aim, a prospective clinical phase I/II study was conducted to evaluate feasibility, safety and efficacy of intraoperative Electrochemotherapy (ECT) in locally advanced pancreatic adenocarcinoma. Secondary endpoint was to evaluate treatment response in terms of qualitative morphological and functional criteria based on Magnetic Resonance Imaging.

**Methods:** Twelve consecutive patients were enrolled, recruited in a clinical phase I/II study approved by the Ethical Committee of National Cancer Institute G. Pascale Foundation- IRCCS of Naples. Electrochemotherapy with bleomycin was performed during open surgery, by insertion of electrodes into and around the tumor according to the individualized treatment plan. All patients underwent MR and CT scan, before and after ECT treatment, using morphological and functional imaging. RECIST criteria were used to evaluate ECT response on TC images and quantitative parameters were used to evaluate ECT response on MR images.

**Results:** No acute (intraoperative) and/or postoperative serious adverse events related to electrochemotherapy were observed; no clinically significant electrocardiographic, hemodynamic, or serum biologic changes were noted. No clinically relevant elevation of amylase or lipase levels was observed in any patient and no bleeding or damage to surrounding viscera occurred. Functional imaging based on MR has shown more suitable to evaluate ECT response in patients with locally advanced pancreatic adenocarcinoma than TC imaging.

**Conclusions:** Electrochemotherapy of locally advanced pancreatic adenocarcinoma proved to be feasible, safe and effective treatment modality. Dynamic and diffusion MR imaging is more suitable to assess ECT treatment response than TC imaging.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.025

29. Selecting tumour-specific biomarkers in pancreatic and periampullary cancer: Paving the way for image-guided surgery
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**Background:** A diagnosis of pancreatic or periampullary cancer still remains a devastating one. The only chance of cure for these patients is complete surgical resection with negative tumor margins, but unfortunately irradical resections are very common. Intraoperative optical imaging using tumor targeting contrast agents holds promise for better tumor detection and surgical elimination of residual disease. The purpose of our study was to evaluate the expression of potential biomarkers in pancreatic and periampullary cancers and their potential for optically guided surgery.

**Material and methods:** We used population-based national cohorts from Belgium, the Netherlands, Sweden, Denmark, and a regional cohort from Lithuania, including operated stage II colon cancer patients diagnosed between 2004 and 2009. Country will be used as instrumental variable in these analyses. The proportion of adjuvant chemotherapy administration was compared, stratified for stage (IIA and IIB). Relative survival will be calculated for all participating countries, and is defined as the ratio of observed survival to the expected survival based on the matched general population.

**Results:** Overall, 32,733 patients were included for analyses. For stage IIA colon cancer, 4.6% of the patients in the Netherlands received adjuvant chemotherapy, while the proportion of adjuvant chemotherapy administration amounted 7.0% in Sweden, 5.5% in Denmark, 13.2% in Lithuania and 24.5% in Belgium. For stage IIB colon cancer patients, the proportion of adjuvant chemotherapy administration was 21.5% in the Netherlands, 23.7% in Lithuania, 27.8% in Sweden, 28.4% in Denmark, and 47.2% in Belgium. Relative survival will be calculated.

**Conclusion:** The current international comparison demonstrates differences in adjuvant chemotherapy administration for stage II colon cancer patients among five European countries. Relative survival for all countries will be calculated and these results will also be presented during the congress. This way, we can investigate if there is an association between the different treatment strategies and survival. The final results of this study could lead to individualised treatment strategies for patient with stage II colon cancer.

No conflict of interest.

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periampullary cancer in order to determine the most promising targets for tumor-specific image-guided surgery.

Materials and methods: We constructed tissue microarrays from 107 resected pancreatic ductal adenocarcinomas and 61 resected periampullary (i.e. ampulla of Vater, distal common bile duct and duodenum) adenocarcinomas. The expression of the following eight biomarkers was assessed by immunohistochemistry and compared with normal pancreas (n = 14): carcinoembryonic antigen (CEA), epithelial cell adhesion molecule (EpCAM), hepatocyte growth factor receptor (HGF, cMet), vascular endothelial growth factor receptor (VEGFR), epithelial growth factor receptor (EGFR), human epidermal growth factor receptor 2 (HER2), urokinase plasminogen activator receptor (upPAR), and integrin alpha6 beta6 (avb6).

Results: We found that avb6 was abundantly present in 91.3%, HGF in 90.7%, HER2 in 88.9%, CEA in 81.2%, upPAR in 70.3%, EGFR in 66.7%, EpCAM in 33.3% and VEGFR in 31.3% of pancreatic ductal adenocarcinoma cases. Among the periampullary adenocarcinoma samples HGF was overexpressed in 90.7%, HER2 in 91.1%, avb6 in 88.1%, CEA in 76.6%, EGFR in 70.7%, EpCAM in 52.5%, VEGFR in 43.9% and upPAR in 36.7% of cases. CEA, upPAR and avb6 expression was absent in the surrounding healthy pancreatic tissue, which may translate in an optimal target-to-background ratio when using these targets for imaging purposes.

Conclusions: These results suggest that based on expression rate and potential tumor-to-background ratio CEA, avb6 and upPAR are the most promising biomarkers for tumor-specific contrast agent development for image-guided pancreatic and periampullary cancer surgery.

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30. The predictive ability of timed ‘Up & Go’ in hepato-pancreato-biliary onco-geriatric surgical patients
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Background: With the expanding geriatric population, cancer prevalence in the elderly has increased accordingly. Within the onco-geriatric surgical population, it is very important to differentiate between fit and non-fit patients in order to effectively implement preventive measures and to improve outcome in this population. Therefore, it is necessary to find a time-saving and efficient screening tool to assess the probability of developing postoperative complications in elderly cancer patients, and to anticipate the postoperative outcome. The aim of this study was to determine the prognostic ability of timed ‘Up & Go’ (TUG) versus the American Society of Anesthesiologists (ASA Score) in hepato-pancreato-biliary (HPB) onco-geriatric surgical patients.

Materials and methods: This was a single centre prospective cohort study including patients ≥70 years undergoing surgery for HPB malignancies. Primary endpoints were 30-day morbidity and 30-day mortality, secondary endpoints were hospital stay and re-admission rate. TUG, and ASA were administered preoperatively. The TUG depicts the time a person needs to stand up from a chair, walk 3 meters, turn around, walk back and sit down again: a score of less or equal to 15 seconds was considered a low score. The ASA physical status classification system is a system for assessing the fitness of cases before surgery adopted by the American Society of Anesthesiologists (score from 1 to 6).

Results: 31 patients were enrolled into the study and data were analysed. All patients underwent major surgery: 14 patients (45%) had complications within 30 days from surgery and, among them, 4 (12.4%) developed major complications (grade 3-4 Clavien-Dindo); one (3.2%) patient died within the same period of time. In univariate analysis neither TUG nor ASA proved to be of prognostic value with regard to 30-day morbidity (no versus any complications: p=0.05), mortality and to hospital stay, when corrected for blood loss, type of surgery and number of comorbidities.

Conclusions: Analysis didn’t show a prognostic ability of TUG and ASA with respect to 30-day postoperative morbidity, mortality and hospital stay in a group of HPB onco-geriatric surgical patients. These preliminary results need to be carefully interpreted in light of the small number of patients. Furthermore, it is possible that the complexity of such surgery might play a role as the event of grade 3-4 complications and related mortality are more often unpredictable (major bleeding, anastomotic leak). Other studies with larger population are needed to validate this preliminary results in HPB subgroup.

No conflict of interest.

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31. Exome sequencing of synchronously resected primary colorectal cancer and colorectal liver metastases to identify novel response biomarkers and drug targets
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Background: Next generation sequencing technology has evolved rapidly over the past few years, with targeted exome capture now widely available. The 1000 Genomes Project and The Cancer Genome Atlas have gone a long way to mapping the genotype of colorectal cancer and furthering our understanding of metastogenesis. In the clinical setting however, biological material from the liver metastasis is not accessible until after resection, and we are therefore dependent upon deriving information on genetic mutations from the primary tumour. We aimed to establish the frequency of single nucleotide variants (SNVs) common to primary and metastatic tumours as well as discrete to either, and also those which may predict response to neoadjuvant chemotherapy.

Methods: We performed exome sequencing of synchronously resected primary colorectal cancer and colorectal liver metastases, as well as corresponding normal colonic mucosa and liver parenchyma, from 4 patients who had received neoadjuvant chemotherapy. Paired-end exome sequencing at a depth of 50X and read length of 120bp was performed using the Ion Proton platform. Raw data was mapped to a reference genome prior to variant calling and annotation.

Results: A total of 222,225 SNVs were identified, of which 21,179 were somatic. 6651 were non-synonymous, 6495 of which were missense and 427 of these were predicted to be biologically deleterious.

<table>
<thead>
<tr>
<th>Patient</th>
<th>Responder</th>
<th>Total</th>
<th>Primary SNVs Only (%)</th>
<th>Met Only (%)</th>
<th>Common to Primary (%)</th>
<th>Met (%)</th>
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<tr>
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<td>133</td>
<td>35 (26)</td>
<td>58 (44)</td>
<td>40 (30)</td>
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</tr>
<tr>
<td>2 Yes</td>
<td>155</td>
<td>64 (41)</td>
<td>74 (48)</td>
<td>17 (11)</td>
<td></td>
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<tr>
<td>3 No</td>
<td>122</td>
<td>48 (39)</td>
<td>60 (49)</td>
<td>14 (12)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 No</td>
<td>120</td>
<td>62 (52)</td>
<td>37 (31)</td>
<td>21 (17)</td>
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<tr>
<td>Mean</td>
<td>132.5</td>
<td>52.3 (39.5)</td>
<td>57.3 (43.2)</td>
<td>23 (17.4)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A mean of 39.5% of SNVs identified were unique to the primary tumour, and 43.2% unique to the liver metastasis. 17.4% of SNVs are common to both tumour types, of which we identified 78 (including 38 novel variants). Of these 78, 68 were identified in 1 patient, 7 in 2 patients, 2 in 3 patients (MTCH2 and PAPPC1) and 1 in all 4 patients (CDC27). Of the paired mutations identified in more than one patient, only one was found to correlate with response to treatment (LGALS3).

Conclusions: This is the first reported exome sequencing of synchronously resected primary colorectal cancer and colorectal liver metastases. We have identified a series of novel genetic variants, a number of which are present in both primary and metastatic tumours. Given the inability to obtain biological information from a colorectal liver metastasis until after resection, identification of these SNVs in the primary tumour may allow stratification and patient selection for neoadjuvant chemotherapy for the treatment of colorectal liver metastases.
32. Factors associated with outcome in patients undergoing surgery for borderline resectable pancreatic cancer
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Background: Venous resection (VR) is the standard of care in patients with borderline resectable pancreatic cancer. We performed a multivariable analysis to determine the factors associated with outcome in patients undergoing surgery for borderline resectable pancreatic cancer.

Methods: This is a UK multicenter retrospective cohort study assessing outcomes and risk factors in patients undergoing pancreatoduodenectomy with venous resection (PDVR) and standard pancreatoduodenectomy (PD). Nine high-volume UK centers contributed. All consecutive patients with T3 only adenocarcinoma of the head of the pancreas undergoing surgery between December 1998 and June 2011 were included. Multivariable logistic and proportional hazards regression analyses were performed to determine the association between the surgical groups and morbidity, in-hospital mortality and overall survival.

Results: 1070 patients were included of whom 840 (78.5%) had PD and 230 (21.5%) had PDVR. Median age at surgery was 66 (range 27–84). For morbidity, the only difference between PD and PDVR was greater delayed gastric emptying with PDVR (39/840 (4.6%) vs 25/230 (10.9%), p = 0.0007), and the number of blood units transfused (0.030 vs 0.09, p = 0.03). There were no differences for in-hospital mortality (26/840 (4.6%) vs 10/230 (4.4%), p = 1.00) or median overall survival (18.48 vs 18.84 months, p = 0.66). Multivariable analyses identified R1 resection margin status (adjusted hazard ratio [aHR] 1.22, p = 0.01), N1 nodal status (aHR 1.92, p = 0.0001), perineural invasion (aHR 1.37, p = 0.002), tumour size ≥20mm (aHR 0.63, p = 0.0001) and a re-laparotomy (aHR 1.84, p = 0.0001) to be independently associated with overall mortality. Factors associated with in-hospital mortality were a high creatinine (aHR 1.14, p = 0.02), post-operative bleeding (aHR 2.86, p = 0.04) and a re-laparotomy (aHR 8.42, p = 0.0001). Sensitivity analyses using a univariate model demonstrated this to be similar in the PDVR group when the PD group was excluded.

Discussion: This largest study on T3 tumours suggests that the factors associated with poorer survival outcome in patients undergoing surgery for T3 tumours arise from histological assessment. Patients with these features are at a high risk of disease recurrence. Predictive pre-operative features are required to determine a subset of patients who might benefit from neo-adjuvant therapy.


No conflict of interest.

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33. Irreversible electroproporation in the treatment of advanced pancreatic cancer
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Introduction: The prognosis of pancreatic adenocarcinoma is extremely poor. The incidence is rising worldwide. Only about 20% of patients have localized nonadvance disease and can be operated on. There is not any effective oncological treatment. Irreversible electroporation (IRE, Nano knife) have been used in cases of advanced disease since 2009. This method is safe but the long term outcomes are unknown.

Methods: We have used IRE in the treatment of 48 patients with advanced inoperable disease. Half of them had had chemotherapy before IRE. The application of IRE was performed during laparotomy or under CT guidance. All patients have been treated by chemotherapy after the procedure too.

Results: The hospital stay was 11 days in cases of laparotomy application and 6 days after CT guided IRE. The complication occurred in 7 patients. Two of them were reoperated due to complication. Unfortunately there were two dead’s after IRE. We have repeatedly observed vanishing of PET CT activity after IRE but this effect was only temporally. We did not recognize longer survival after procedure but the quality of life is better.

Conclusions: IRE is safe and simple method for pancreatic tumor destruction. We have not observed downsizing of the tumor what is described in the literature. The proper role of IRE in the treatment of pancreatic tumors needs further studies. We continue in our study and expect inclusion other patients.

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No conflict of interest.

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No conflict of interest.

Proffered Paper Session: Oesophago-Gastric Cancer

29 October 2014 11:30 – 13:00

35. The impact of proportion of early gastric cancer on survival following radical surgery for T2-4 gastric cancer: How reliable is it?
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Background: Geographic variability in prognosis for gastric cancer (GC) is well documented, as in Eastern series (primarily from Japan and Korea) higher survival rates were reported when compared with Western patients at the same stage of disease. The explanation for this phenomenon is unknown. Even if molecular studies on Eastern and Western patients have been conducted, potential biological differences between patient cohorts are still unclear.
The aim of the study is to conduct a special investigation to clarify the impact of proportion of early gastric cancer (EGC) on prognosis following radical surgery that was postulated before by us on the basis of meta-analysis.

Materials and methods: From January 2001 till December 2013 515 patients (men = 331, women = 184) with GC (including patients with Sievert’s type II and III EGC cancer) underwent radical surgery in the Department of Oncology, Azerbaijan Medical University. In 144 of 238 cases of distal gastrectomy, in 4 of 17 cases of proximal gastrectomy and in 217 of 260 cases of total gastrectomy extended lymph node dissection (ELND) – D2 or D2 plus lymphadenectomy was carried out. For homogeneity of the investigation materials patients with EGIJ cancer (199 cases) were not enrolled into this study.

Patients were stratified according to three time periods: I period (2001–2004) - 104 patients (12 with ELND), II period (2005–2008) - 94 patients (81 with ELND), III period (2009–2013) - 118 patients (all with ELND). All patients of II and III periods with ≥T2 cancer received adjuvant chemotheray. No patient received neoadjuvant therapy.

In order to achieve the goal we comparatively studied the proportion of EGC, proportion of N0 cases and survival of the patients following radical surgery according to the time periods. Proportion of N0 cases was calculated in patients undergone ELND for T2-4 GC. When survival analyses were estimated patients with EGC were excluded. χ2 test was used to analyze significance of differences in proportions of EGC and N0 cases between subgroups. Survival was calculated by Kaplan-Meier method. Differences between survival was estimated by log-rank test. P<0.05 was considered statistically significant. Because of the small number of patients undergone ELND in I period, analyses were done between the II and III subgroups.

Results: The proportion of EGC, the proportion of N0 cases and 5-survival rates of the patients following radical surgery according to the time periods (II and III periods) were as following: 3.2% versus 10.2% (P=0.049), 8.9% versus 19.8% (P=0.039), 36.6% versus 47.4% (P=0.042) respectively.

Conclusions: Detecting more GC cases in EGC stage increases the proportion of N0 cases and improves survival not only in patients with EGC, also in patients with GC at higher stages. Survival differences following the same radical surgery for GC between the countries where proportion of EGC is higher and those where the mentioned indicator is following the same radical surgery for GC between the countries where proportion of N0 cases and improves survival not only in patients with advanced gastric cancer.

The proportion of EGC, also in patients with GC at higher stages. Survival differences between survival was estimated by log-rank test. P<0.05 was considered statistically significant. Because of the small number of patients undergone ELND in I period, analyses were done between the II and III subgroups.

Overall, the postoperative pancreatic fistula rate was 3.3% (30/900) (1.5% in laparoscopic gastrectomy versus 6.9% in open gastrectomy. P<0.001). Patients with postoperative pancreatic fistula had higher morbidity (46.7% versus 13.1%, P<0.001), delayed gas out (4.9 days versus 3.8 days, P<0.001), belated diet start (5.8 days versus 3.5 days, P<0.001) and longer postoperative hospital stay (13.7 days versus 6.8 days, P<0.001). On the multivariate analysis, total gastrectomy (odds ratio 9.751, 95% confidence interval: 3.348 to 28.397, P<0.001), distal gastrectomy, splenectomy or distal pancreatectomy showed higher postoperative pancreatic fistula rates (4.7%, 13.8%, 13.6%, or 57.1%, respectively, P<0.001). Patients with postoperative pancreatic fistula had higher morbidity (46.7% versus 13.1%, P<0.001), delayed gas out (4.9 days versus 3.8 days, P<0.001), belated diet start (5.8 days versus 3.5 days, P<0.001) and longer postoperative hospital stay (13.7 days versus 6.8 days, P<0.001). On the multivariate analysis, total gastrectomy (odds ratio 9.751, 95% confidence interval: 3.348 to 28.397, P<0.001), distal pancreatectomy (odds ratio 7.637, 95% confidence interval: 1.668 to 34.961, P=0.009) and open gastrectomy (odds ratio 2.934, 95% confidence interval: 1.100 to 7.826, P=0.032) were the independent risk factors of postoperative pancreatic fistula.

Conclusions: Laparoscopic gastrectomy had an advantage over open gastrectomy in terms of the lower postoperative pancreatic fistula rate. Total gastrectomy and combined resection, such as distal pancreatectomy, should be performed carefully to minimize postoperative pancreatic fistula in gastric cancer surgery.

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38. Intraoperative sentinel lymph node detection in gastric cancer using near-infrared fluorescence imaging and indocyanine green coupled to nanocolloid

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Background: The extent of lymph node dissection in gastric cancer is subject of debate and the sentinel lymph node (SLN) procedure is being widely investigated. A SLN procedure could avoid an unnecessary lymphadenectomy when no tumor positive lymph nodes (LNs) are present and can assist in identifying potentially involved LNs that our outside the standard resection specimen.

Near-infrared fluorescence (NIRF) imaging is an innovative technique to visualise lymphatic channels and lymph nodes. Previous studies already proved the use of indocyanine green (ICG) in SLN mapping in gastric cancer, but showed detection of many fluorescent LNs and an extensive lymphadenectomy was still needed. Binding ICG to a nanocolloid increases its hydrodynamic diameter, which results in better retention in the SLN. The aim of this study is to investigate feasibility of ICG coupled to nanocolloid as a lymphatic tracer and to determine accuracy of the SLN procedure in gastric cancer patients.

Methods: Twenty patients with gastric cancer, planned for a (partial) gastrectomy, were included. Patients received 1.6ml ICG:nanocolloid (0.1 mg Nanocoll and 0.05 mg ICG) suberosally in four quadrants around the tumor. During surgery, lymphatic pathways and SLNs were visualized using the Mini-Flare camera system. All hotspots detected within 15 minutes after injection were identified as SLN, other hotspots as 2nd tier nodes. Patients underwent a standard-of-care (partial) gastrectomy. After resection the specimen was inspected again using the camera system. Marked hotspots were analysed separately for tumor status.

Results: Median age was 64 years (range: 30-86 yr). Three patients were excluded during surgery because of distant metastases and one patient was excluded of further analysis due to technical failure of the inject. In 15/16 remaining patients, at least 1 SLN was detected by NIRF (mean: 2.1 SLNs per patient). In 4/16 patients tumor positive LNs were found. Accuracy of the technique was 87%, which decreased by T-stage (100%, 100%, 75%, 0% for respectively Tx, T1, T2, T3, T4 tumors). Mean ratio of the fluorescence signal between SLN and surrounding tissue was 4.6 (range 1.7-19.8). In 4 patients SLNs were found which were located outside standard dissection margins.

Conclusion: The current study is the first which proves successful use of ICG:nanocolloid as a lymphatic tracer for SLN detection in gastric cancer patients. Especially in gastric cancer with low T-stage the SLN procedure can be used for predicting lymph node tumor status. Also, potential involved LNs outside the standard lymph node dissection margins can be identified by this technique.

No conflict of interest.

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39. A novel methylation biomarker for oesophageal adenocarcinoma

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Background: Worldwide, oesophageal adenocarcinoma (OADC) is increasing in incidence. The inflammatory environment in which OADC develops in the lower oesophagus is likely to result in epigenetic rather than genetic changes. As yet, no robust biomarker for OADC exists. We present our analysis of the Tumour Cancer Genome Atlas (TCGA) methylation data for OADC and our validation experiments to produce a novel biomarker.

Materials and methods: Methylation data was extracted from the recently published TCGA database, and analysed using a Bayesian linear regression method. Differences in methylation profiles were compared between normal oesophageal squamous tissue and OADC.

Identified markers of interest were analysed using bisulphite pyrosequencing in 24 matched tumour and normal formalin fixed oesophageal resection specimens with 8 matched Barrett’s oesophagus samples. An additional 9 internal and 7 external matched tumour and normal formalin fixed OADC resection specimens were analysed separately as a validation set (power calculation at 99% proposed n=6 samples for second round validation).

Results: Analysis of the TCGA dataset probes tagging TRIM15 were significantly hypermethylated 33 times, which meant that TRIM15 was significantly over-represented in the probe set, suggesting it is an important biomarker differentiating the two tissues. The top rated probe cg09769113 reached high significance and was ranked number 2 in the list of significantly differentially methylated genes (BF = 27.97, p=7.26x10^-12).

We validated our findings on an in-house sample set consisting of 24 samples of oesophageal adenocarcinoma, 24 matched normal mucosa and 8 samples of Barrett’s metaplasia (an intermediate pre-malignant lesion in oesophageal cancer). We quantified methylation levels at TRIM15 via bisulphite pyrosequencing of 6 CpG’s within +100bp of the start of the CpG island associated with TRIM15. We found that there were significant differences (p<0.001) between tumour and normal samples at all CpG’s, and significant differences between Barrett’s metaplasia and normal tissue (p<0.001). Using metaplasia & cancer together, compared to normal mucosa, methylation at TRIM15 had a C-statistic of 0.91 (95% CI 0.88-0.99) in discriminating malignant and pre-malignant lesions from normal mucosa in the oesophagus.

Conclusions: Our data suggest that TRIM15 may be a methylation biomarker for OADC. Further investigation of the functional significance of this methylation marker is ongoing.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.035

40. Not the type of surgical treatment but neoadjuvant treatment influences overall survival in patients with gastro-oesophageal junction tumours in the Netherlands

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3 Netherlands Cancer Registry, Research, Eindhoven, Netherlands

Background: There may be two different therapeutic strategies for patients with resectable gastro-oesophageal junction (GEJ) tumours. Either, they are treated as an esophageal tumour with neoadjuvant chemoradiation and a subsequent esophagectomy or as a gastric tumour with perioperative chemotherapy and a gastrectomy. According to the TNM classification, GEJ tumours with the epicentre within 5cm of the GEJ and extension into the esophagus should be staged according to the esophageal classification. Whereas, GEJ tumours within 5 cm of the junction without extension into the esophagus should be staged according to the gastric classification. The objective of this study was to
determine the patterns of care for resectable GEJ tumours in the Netherlands and to compare oncological outcome with the different treatment regimes.

**Material and methods:** All patients with resectable GEJ tumours (T1-3, N0-1, M0) diagnosed between 2000-2011 that were treated with either an esophagectomy or gastrectomy (n=1277) were selected from the population based Netherlands Cancer Registry. Differences between patients receiving an esophagectomy or a gastrectomy were compared using the chi-square test. Unadjusted estimates of survival rates were made using the Kaplan-Meier method. Overall multivariate survival was performed with Cox regression analyses.

**Results:** Patients treated with an esophagectomy (n=970) were significantly younger than patients treated with a gastrectomy (n=307) 64 vs. 67 years (p<0.001). Furthermore, patients treated with esophagectomy received neoadjuvant chemoradiation more often. Kaplan-Meier analysis showed no survival differences between patients treated with an esophagectomy or with a 5-year survival of 31 vs. 34%, respectively (p=0.97). Kaplan-Meier analysis showed a significant 5 year survival difference (p<0.001) between esophagectomy with chemotherapy (39%), esophagectomy with chemoradiation (38%), gastrectomy with chemotherapy (42%), gastrectomy with chemoradiation (40%), esophagectomy alone (28%) and gastrectomy alone (30%). Multivariate analyses showed that older patients (>70years) had a worse overall survival (OR 1.3 CI 1.1-1.5). Patients receiving neoadjuvant chemotherapy (OR 0.7 CI 0.6-0.8) or chemoradiation (OR 0.8 CI 0.6-1.0) had a significantly better overall survival. Multivariate analysis showed no significant difference between patients treated with an esophagectomy or gastrectomy (p=0.744).

**Conclusions:** Type of surgery (esophagectomy or gastrectomy) did not show any survival difference in the treatment of patients with a GEJ tumour. Although this is a population based study with possible confounding factors, the administration of neo-adjuvant treatment appeared to be associated with an improved survival. **No conflict of interest.**

http://dx.doi.org/10.1016/j.ejso.2014.08.037

41. The influence of delaying surgery for esophageal adenocarcinoma after neoadjuvant chemoradiotherapy on postoperative outcome

**Background:** The preferred treatment for cT1-3,N0-3,M0 esophageal carcinoma is neoadjuvant chemoradiotherapy (nCRT) followed by esophagectomy. The literature reports that esophagectomy is preferably performed within 3 to 8 weeks after nCRT. In practice, however, surgery is often delayed because of the patient’s condition. A few studies have described delaying surgery in patients with esophageal squamous cell carcinoma, but little is known about time to surgery (TTS) in patients with esophageal adenocarcinoma (EADC). The aim of this study was to evaluate whether timing of surgery has an effect on perioperative and postoperative course, long-term survival and pathologic response in patients who were treated curatively for EADC.

**Materials and methods:** We retrospectively included patients from a prospectively obtained database. Patients were treated for EADC (cT1-3, N0-3, M0) between 2001 and 2013. Treatment consisted of nCRT followed by esophagectomy. Patients were divided into a group in which TTS was 8 weeks or less and in a group in which TTS was more than 8 weeks.

**Results:** Of 179 included patients, 65 had a TTS of ≤ 8 weeks and 114 a TTS > 8 weeks, the median TTS was 50 and 70 days respectively. The groups did not differ in age, sex, clinical T stage, tumor location, weight loss on diagnosis and need for enteral tube feeding after nCRT. Patients with TTS > 8 weeks had significantly higher ASA scores and more comorbidities. No difference was observed in perioperative complications, hospital stay and ventilation time. There was a trend towards more anastomosis-related complications (20.0% vs. 32.5%, p = 0.074) and complications with Clavien Dindo score ≥ IIb (13.8% vs. 22.8%, p = 0.146) in patients with a TTS > 8 weeks. More re-interventions (16.8% vs. 29.8%, p = 0.056) took place in patients with a TTS > 8 weeks. Multivariate analyses, however, showed no significant effect of TTS on anastomosis-related complications (95%CI [0.21-1.07], p = 0.07) or re-interventions (95%CI [0.23-1.26], p = 0.16). There was no difference in pathologic complete response (pCR) (32.3% vs. 25.7%, p = 0.358). Mean survival was 4.97 years in patients with a TTS ≤ 8 weeks and 4.91 years in patients with a TTS > 8 weeks (p = 0.850), 3 year survival was 37% in both groups. Mean disease free survival was 5.77 and 5.51 years respectively (p = 0.831).

**Conclusion:** Our study showed a trend toward more anastomosis-related complications and re-interventions in patients with a TTS > 8 weeks, but multivariate analysis showed no significant effect of TTS. Higher ASA scores and comorbidities in patients with a longer TTS may play a role in this observation. More research is needed to evaluate the safety of a longer TTS. **No conflict of interest.**

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42. Optimising an enhanced recovery programme for oesophagectomy: A stepwise evolution

**Background:** Enhanced recovery after surgery (ERAS) programmes are designed to reduce complications whilst improving patient recovery times and are established for several resectional procedures. Consensus on an optimal oesophagectomy ERAS program does not exist and there is significant variation in the clinical practice of its components. We describe the experience and outcomes of an evolving ERAS program for oesophagectomy.

**Methods:** A retrospective review was performed of a prospectively created database for patients undergoing oesophagectomy for malignancy over a four year period in a District General Hospital. Patient data was analysed for type of procedure and ERAS interventions, post-operative complications and clinical outcomes.

**Results:** During the four year period 57 oesophagectomies were performed of which 53 were hybrid minimally invasive procedures, 2 totally minimally invasive and 2 open resections. ERAS interventions and protocol changes were introduced incrementally over the study period and included preoperative counselling, laparoscopic approach, minimising pleural drainage (number of chest drains and length of drainage), early oral intake / nutrition, optimising analgesia delivery (intercostal blocks, reduced use of epidural analgesia) and early mobilisation. Overall, there was one death (1.9% mortality rate), one anastomotic leak, one chyle leak, one wound infection and one postoperative bleed, resulting in 2 reoperations (3.8%). Median length of stay was 8 days (range 3 – 40) with the most recent protocol expected length of stay being 4 days.

**Conclusions:** Our experience demonstrates that a stepwise introduction of ERAS ‘type’ interventions is a safe and effective way of optimising recovery after oesophagectomy. In the absence of evidence-based guidelines or recommendations this method allows continual evolution and improvement of surgical management and outcomes for patients undergoing major resectional surgery. **No conflict of interest.**

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43. Nomogram predicting intra-abdominal abscesses after a gastrectomy for gastric cancer

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Background: Intra-abdominal abscesses are one of the most common complications after a gastrectomy for gastric cancer, and a major cause for re-hospitalization. The aim of this study is to evaluate risk factors for intra-abdominal abscesses after a gastrectomy and develop a prediction model based on multivariable analysis.

Materials and methods: We reviewed the clinicopathological data of 1564 patients who underwent gastrectomies for gastric cancer between April 2010 and June 2012. Twenty-six risk factors were analyzed, and multivariable logistic regression analysis was used to develop a prediction model. To correct biases, internal validation using a bootstrap approach was first employed. The prediction model was then validated based on an independent dataset of the patients who underwent gastrectomies between January 2008 and March 2010. Discrimination and calibration abilities were evaluated in both the development and validation datasets.

Results: The incidence of intra-abdominal abscesses in the development set was 7.8% (122/1564). In the multivariable analysis, surgical approach, operating time, pathologic N classification, body temperature, white blood cell count, C-reactive protein, glucose, and hemoglobin difference were significant risk factors for intra-abdominal abscesses. Based on these results, a prediction model was developed and good discrimination and calibration abilities were shown (concordance index = 0.828, Hosmer-Lemeshow chi-statistic p-value = 0.2739). Finally, we developed a nomogram predicting intra-abdominal abscesses using the entire datasets.

Conclusion: A nomogram predicting intra-abdominal abscesses after a gastrectomy was developed. High-risk patients could be identified with the nomogram and delayed intra-abdominal abscesses might be prevented. No conflict of interest.

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29 October 2014 11:30 – 12:40
Proffered Paper Session: Peritoneal Surface Oncology

45. Colorectal peritoneal carcinomatosis treated by completed surgery + systemic chemotherapy: Futility of HIPEC?

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Background: Cytoreductive peritoneal surgery (CPS) associated with hyperthermic intraperitoneal chemotherapy (HIPEC) is considered as the standard treatment for colorectal peritoneal carcinomatosis (CPC). Complete CPS efficacy has been demonstrated but evidence supporting HIPEC’s role is lacking.

Methods: We report our experience for surgical treatment of CPC without adjuvanciation of HIPEC. From 2003 to 2013, all patients who underwent a CPS for CPC were retrospectively identified. Overall survival (OS), progression-free survival (PFS) and outcomes were recorded. Statistical analysis was performed using SPSS software. Kaplan-Meier survival estimates were calculated.

Results: 53 patients with CPS out of 103 patients with CPC were identified. 25 males and 28 females with a mean age of 60.2. 25 patients (52.8%) had other sites of metastases mostly liver (20) and lung (7). For 26 patients (49.1%) carcinomatosis was synchronous. 18 (34%) patients underwent preoperative chemotherapy, 35 (66%) post-operative chemotherapy among them 6 had pre and post-operative. Median Peritoneal Carcinomatosis Index (PCI) was 9 (1-25).

Median follow-up was 52.3 months. 28 patients (52.8%) were alive, 13 without cancer, 15 with. On 25 deaths, 23 died from the cancer. Median survival was 46.1 months. OS at 1, 3 and 5 years were respectively 94%, 61.67% and 40.12%. PFS at land 3 years were respectively 72.91% and 4.68%. In univariate analysis, presence of extraperitoneal metastases was significantly (p=0.013) associated with a poor survival with median survival of 30.7 months compared to patients without extraperitoneal disease who had a median survival of 75.2 months. 43 patients had a recurrence (35 CPC, 30 other metastases, 2 local recurrence). Mean progression time was 14.9 months. In univariate analysis PCI> = 10 was correlated with poor PFS (p=0.03).

Conclusion: Compared to the results in the literature after CPS for CPC + HIPEC, our survival results are similar with less complication. The benefit of HIPEC remains hypothetical. No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.042

46. Extensive surgical history prior to cytoreductive surgery and hyperthermic intraperitoneal chemotherapy associated with poor survival outcomes in patients with peritoneal mucinous carcinomatosis of appendiceal origin

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Background: It is common for patients with peritoneal mucinous carcinomatosis of appendiceal origin (PMCA) to undergo surgical procedures of various extents before definitive cytoreductive surgery and hyperthermic intraperitoneal chemotherapy (CRS/HIPEC). We evaluated the role of extensive surgical treatment before CRS/HIPEC in terms of overall survival (OS) compared to patients who had limited surgical procedures.

Methods: One hundred patients with PMCA who underwent a single CRS/HIPEC procedure were identified from a prospective database. Patients were divided into two groups based on Prior Surgery Score (PSS): PSS≤1- limited surgery group (LSG), PSS > 1 - extensive surgery group (ESG). Survival of lymph node (LN) negative and positive patients was analyzed separately because of high impact of LN status on the OS. OS was calculated from the day of CRS/HIPEC.

Results: Of 100 patients, 39 were in LSG and 61 in ESG. Mean time interval from diagnosis to CRS/HIPEC was 7.1 months for LSG and 17 months for ESG (p=0.002). Peritoneal Cancer Index was more than 20 in 69% of both LSG and ESG groups (p=0.97). Complete cytoreduction was achieved in 82% and 74% of the LSG and ESG groups, respectively (p=0.34). LN’s were positive in 17/39 and 22/61 patients in LSG and ESG, respectively
ABSTRACTS

S27

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48. Peritoneal cancer patients not suitable for cytoreductive surgery and HIPEC during explorative surgery: Risk factors, treatment options and prognosis

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Background: Cytoreductive surgery (CRS) combined with hyperthermic intraperitoneal chemotherapy (HIPEC) is currently the only curative option for patients with peritoneal carcinomatosis of colorectal origin. In spite of meticulous preoperative assessment, CRS and HIPEC appears to be impossible in a subset of patients at the time of surgery. This study aimed to investigate which clinical factors may identify these patients prior to surgery and to report on factors influencing survival.

Methods: All patients with PC of colorectal origin between April 2005 and November 2013 who underwent exploratory surgery to determine whether cytoreduction and HIPEC was feasible were included in this study. Details concerning pre-operative patient characteristics, peri-operative outcomes, treatment and survival were compared.

Results: In total, 350 patients with PC were referred to evaluate the possibility of CRS+HIPEC of which 268 (76.6%) underwent CRS and HIPEC and 82 (23.4%) had an open-close procedure. The main reason for discontinuing surgery was wide spread peritoneal disease (50.4%). A pre-operative omentostomy and an ASA score of 3 were associated with an increased risk for O&C. Median survival was 11.2 months in patients treated with palliative chemotherapy (75%) compared to 2.7 months with palliative care only.

Conclusion: CRS and HIPEC was deemed unsuitable in almost a quarter of all patients undergoing surgery. No strong clinical predictors for O&C were found, stressing the need for better preoperative imaging modalities. Survival in these patients is limited but the majority could be treated with palliative chemotherapy resulting in survival of almost 1 year.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.045

49. Urological procedures in patients with peritoneal carcinomatosis of colorectal cancer treated with HIPEC: Morbidity and survival analysis

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Background: The goal of this study was to investigate whether cytoreductive surgery (CRS) and hyperthermic intraperitoneal chemotherapy (HIPEC) is a feasible and effective option in patients with urological involvement of peritoneal carcinomatosis from colorectal cancer.

Methods: The characteristics of patients with peritoneal disseminated colorectal cancer treated with CRS+HIPEC between April 2005 and June 2013 in two tertiary referral centers were analyzed. Postoperative complications were graded according to Clavien-Dindo. Odds ratios were formed using logistic regression for the development of postoperative complications. For survival a Kaplan-Meier survival analysis was performed.

Results: In total 267 patients were treated for histological proven peritoneal carcinomatosis of colorectal cancer with CRS+HIPEC. Thirty-eight patients (14%) had an associated urological procedure during cytoreduction. In 24 patients the resection involved the bladder and in 14 patients the resection involved the ureter. The urological procedures consisted of

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(® 0.013). Eleven (28%) patients in the LSG and 42 (69%) in ESG had systemic chemotherapy prior CRS/HIPEC (® 0.001). One, 3, and 5-year OS among LN negative patients was 95, 83, and 75% for the LSG (n = 22) group and 89, 50, and 29% for the ESG (n = 39) group respectively (® 0.01). One, 3, and 5-year OS among LN positive patients was 69, 44, and 22% for the LSG (n = 17) group and 81, 32, and 16% for the ESG (n = 22) group respectively (® 0.72). For all patients 1, 3, and 5-year OS was 84, 65, and 54% for the LSG (n = 39) group and 86, 43, and 26% for the ESG (n = 61) group respectively (® 0.05).

Conclusion: The strategy of using extensive surgical treatment before CRS/HIPEC is associated with delay of CRS/HIPEC and poorer long-term outcomes overall and especially among LN negative patients. Future prospective studies would help to provide clarification in terms of cause and effect. We recommend early referral of patients with PMCA to peritoneal surface malignancy center as soon as diagnosis is established.

Survival 1-year (%) 3-year (%) 5-year (%) p

<table>
<thead>
<tr>
<th>Group</th>
<th>1-Year (%)</th>
<th>3-Year (%)</th>
<th>5-Year (%)</th>
<th>p</th>
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<tbody>
<tr>
<td>LN negative LSG (n = 22)</td>
<td>95</td>
<td>83</td>
<td>75</td>
<td>0.01</td>
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<tr>
<td>ESG (n = 39)</td>
<td>89</td>
<td>50</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td>LN positive LSG (n = 17)</td>
<td>69</td>
<td>44</td>
<td>22</td>
<td>0.72</td>
</tr>
<tr>
<td>ESG (n = 22)</td>
<td>81</td>
<td>32</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>All patients LSG (n = 39)</td>
<td>84</td>
<td>65</td>
<td>54</td>
<td>0.05</td>
</tr>
<tr>
<td>ESG (n = 61)</td>
<td>86</td>
<td>43</td>
<td>26</td>
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No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.043

47. Cytoreduction and hyperthermic intraperitoneal chemotherapy: A feasible and effective option for colorectal cancer patients after emergency surgery in the presence of peritoneal carcinomatosis T. Van Oudheusden1, H.J. Braam2, S.W. Nienhuijs1, M.J. Wiewer2, B. Van Ramshorst3, M.D. Luyer4, V.E. Lennemans5, I.H.J.T. De Hingh1
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Background: When peritoneal carcinomatosis (PC) is diagnosed during emergency surgery for colorectal cancer (CRC), further treatment with curative intent may seem futile given the known poor prognosis of both PC and emergency surgery. The aim of the current study was to investigate the feasibility and effectiveness of cytoreductive surgery and hyperthermic intraperitoneal chemotherapy (HIPEC) for colorectal cancer patients who previously underwent emergency surgery in the presence of PC.

Methods: All patients with synchronous PC of CRC referred to two tertiary centers between April 2005 and November 2013 were included in this study. Operative, post-operative and survival details were compared between patients presenting in an emergency or elective setting.

Results: In total, 149 patients with synchronous PC underwent cytoreductive surgery and HIPEC. Amongst them, 36 (24.2%) initially presented with acute symptoms requiring emergency surgery. Acute presentation did not result in a longer interval between the initial operation and HIPEC (2.2 vs. 2.1 months, P = 0.09). When comparing operative outcomes, no significant differences were found in blood loss (P = 0.47), operation time (P = 0.39) or completeness of cytoreduction (P = 0.97). Also, complication rates, degree and types of complication did not differ between the groups. Median survival was 36.1 months for emergency presentation compared to 32.1 in the elective group (P = 0.73).

Conclusion: CRS+HIPEC may be performed safely in patients with PC of colorectal origin presenting with acute symptoms requiring emergency surgery. More importantly, the five-year survival rate in these patients was equal to elective cases. This should be regarded as promising and therefore considered for these patients.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.044
Partial cystectomy was performed in 21 patients, and complete cystectomy with urinary diversion according to Bricker in 3 patients. At a median follow-up of 26.7 months, 160 patients (60%) were alive. The overall median survival was 32.0 months. There was no significant difference in overall survival following CRS+HIPEC between patients with and without involvement of the urological tract (median survival: 26.9 versus 32.1 months, P = 0.29). In patients with an urological procedure during CRS+HIPEC, severe complications (grade ≥3) occurred in 18 patients (47%), compared to 20% in patients without urological resection (OR 3.58, 95%-CI: 1.75 – 7.31, P < 0.001). In patients with an urological procedure, the most frequent complications were gastrointestinal leakage (n=9) or intra-abdominal abscess formation (n=5). In univariate analysis the following variables were significantly correlated to severe postoperative complications: regional PC score (OR 1.22, 95%-CI: 1.00 – 1.48, P = 0.05), intraoperative blood loss (OR 1.36, 95%-CI: 1.05 – 1.78, P = 0.02), operating time (OR 1.45, 95%-CI: 1.20 – 1.76, P < 0.001) and urological procedures (OR 3.58, 95%-CI: 1.75 – 7.31, P <0.001). In multivariate analysis, operating time (OR 1.38, 95%-CI: 1.08 – 1.77, P = 0.01) and an urological procedure (OR 2.66, 95%-CI: 1.16-6.11, P = 0.021) were significantly correlated to severe postoperative complications.

Conclusions: Urological resections during cytoreduction and HIPEC in patients with peritoneal carcinomatosis of colorectal origin are feasible and effective. Severe complications are prevalent in these patients, mainly due to the more extensive visceral resections, but the overall and disease-free survival are comparable to patients without involvement of the urinary system.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.046

50. Cytoreductive surgery and HIPEC in treatment of colorectal peritoneal carcinomatosis: Experimental or standard care? A survey of surgical oncologists and medical oncologists
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Background: Cytoreductive surgery (CRS) combined with hyperthermic intraperitoneal chemotherapy (HIPEC) is increasingly applied in patients with peritoneal metastasis of colorectal carcinoma. Although the treatment in recommended in the Dutch guideline, in current daily practice there still appears to be controversy regarding its indication and effectiveness. The goal of the current study was to evaluate the opinion about this treatment among Dutch gastroenterological surgeons and medical oncologists.

Methods: An online survey, with 10 general questions and 6 cases, was sent to all known Dutch oncologic or gastroenterological surgeons (N=459) and medical oncologists (N=363) located in 84 hospitals. The questions concerned effectiveness of HIPEC, risk of complications, and patient selection. A comparison was made between surgeons and medical oncologists.

Results: In total we received 185 eligible responses of 71 hospitals, resulting in an overall response rate of 23% and a response rate of 85% of the hospitals. Overall, 65% of respondents regarded CRS+HIPEC as effective with sufficient evidence for its effect. 29% responded that CRS+HIPEC is probably effective without sufficient evidence, and 7% of respondents regards HIPEC as probably ineffective with insufficient evidence of effect. Medical oncologists were significantly less convinced of the effect of CRS+HIPEC compared to surgeons (51%, 41%, 9%, vs. 74%, 21%, 6%, P = 0.006). In our study, 68% of respondents indicated that they regard CRS+HIPEC as standard treatment in patients with peritoneal dissemination of colorectal carcinoma (77% of surgeons vs. 54% of medical oncologists, P = 0.001). Additionally, a quantification of the effect of HIPEC was asked, overall 68% of respondents regards CRS+HIPEC as potentially curative. Again surgeons were more in favour of this treatment compared to medical oncologists (77% versus 54%, P = 0.001).

Conclusions: Although CRS+HIPEC is currently advised in the Dutch guideline in patients with peritoneal dissemination of colorectal cancer, approximately 30% of physicians, who treat colorectal carcinoma, does not regards this treatment as standard care. Surgeons appear significantly more in favour of this treatment compared to medical oncologists. This study shows that there is a need for a widely accepted consensus regarding the position of this treatment in patients with peritoneal dissemination of colorectal cancer.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.047

51. Infrared thermography monitoring in closed hyperthermic intraperitoneal chemotherapy: A novel technique to maintain therapeutic intraperitoneal temperature distribution
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Background: Primary and secondary peritoneal malignancies have an extremely poor prognosis. There is a growing body of evidence that cytoreductive surgery (CRS) combined with hyperthermic intraperitoneal chemotherapy (HIPEC) is the optimal treatment for selected patients with peritoneal surface malignancies. There are basically two methods to deliver the heated chemotherapy: the open-abdomen and the closed-abdomen technique. Due to growing concern about toxic side effects of chemotherapeutic agents on medical staff during open-abdomen HIPEC, the closed technique is increasingly used. The main drawback of the closed technique is the loss of manual temperature control within the peritoneal cavity with a possible insufficient intraperitoneal temperature distribution during the HIPEC procedure. We present a novel technique to visualize and maintain a constant and therapeutic intraperitoneal temperature distribution during closed HIPEC.

Methods and materials: An infrared thermography camera was used to measure and display the superficial thermal distribution on the abdominal wall during closed HIPEC procedure. The live on-screen visualized mapping was directly correlated with the intraperitoneal temperature measured by three intraabdominal, one inflow and one outflow temperature probes. In case of low correlation the ‘shake and bake’ method was applied to maintain an equally distributed intraperitoneal heated chemotherapy.

Results: From April 2013 to April 2014 this novel technique was used during 10 closed HIPEC procedures. Colorectal cancer n=4, gynecological tumor n=2, mesothelioma n=3, gastric cancer n=1 and pseudomyxoma peritonei n=1. On the basis of our preliminary results, both qualitative, as well as quantitative statements could be obtained regarding the distribution of the intra-abdominal temperature during closed HIPEC.

Conclusion: Infrared thermography temperature control of the abdominal surface during closed HIPEC is a novel and feasible method. Its use provides a better control for constant therapeutic intraperitoneal temperature distribution of the heated chemotherapy, and gives the surgeon the ability to react immediately and targeted to avoid severe acute or late systemic side effects.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.048
53A. Bladder-sparing procedure based on response to neoadjuvant gemcitabine-cisplatin chemotherapy

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**Background:** Neoadjuvant chemotherapy has been reported to increase pathologic downstaging and used in bladder-sparing procedure for patients with muscle-invasive bladder cancer (MIBC). This study evaluates the possibility of selective bladder preservation in MIBC patients based on response to neoadjuvant chemotherapy.

**Patients and methods:** Twenty-eight patients with clinical stage of T2-T4N0M0 urothelial carcinoma of the bladder received 2-cycles of neoadjuvant chemotherapy of gemcitabine-cisplatin (GC). Clinical restaging was performed by cystoscopy and MR or CT. Patients underwent operation based on response to chemotherapy. Nineteen patients (67.9%) who had their tumors down-staged to ≤T0 or ≤T1 got treated with transurethral resection of the bladder (TURB). Sixteen patients who had no residual disease in muscle received 2 cycles of adjuvant GC and 3 patients who had residual disease received radiation therapy after TURB. Among the remain 9 (32.1%) patients who failed to respond or had a status >/= cT2 after chemotherapy, 3 patients with monofocal had partial cystectomy and 6 patients underwent radical cystectomy.

**Results:** Of 22 patients who had bladder-sparing surgery, at the time of operation after receiving neoadjuvant chemotherapy, 5 patients were pT0, 11 were pT1 and 3 were pT2 in TURBT group (TG) and 1 patient was pT1 and 2 were pT2 in partial cystectomy group (PG). The median follow-up was 31 months (range, 3-81 months). 19 (86.3%) patients were alive with 14 (73.6%) patients (13 in TG and 1 in PG) maintained an intact bladder and 4 required a salvage cystectomy (3 in TG and 1 in PG). Seven (31.8%) patients (6 in TG and 1 in PG) experienced bladder recurrence respectively. Furthermore among 17 patients with complete response or superficial disease (T0 or T1) following neoadjuvant chemotherapy, 14 (82.4%) are alive with an intact functioning bladder.

**Conclusions:** Bladder-sparing on the basis of response to neoadjuvant GC chemotherapy represents a feasible strategy for a select group of MIBC patients. Patients with T0 or T1 after systemic chemotherapy seem to be good candidates for this bladder-sparing program.

**No conflict of interest.**

http://dx.doi.org/10.1016/j.ejso.2014.08.049

53. Organ-preserving surgery in vulvar cancer patients of young age

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**Background:** The purpose of the study was to analyze surgery character in vulvar cancer patients of young age.

**Methods:** Case records of 839 vulvar cancer patients were analyzed. From 64 (7.6%) of them, 32 patients were treated with organ-preserving surgery.

**Results:** 3 (9.3%) of 32 vulvar cancer patients were under 30 years old, 11 (34.4%) — aged 31-40 years, 18 (56.25%) — aged 41-50 years. 22 (69%) of 32 patients were married, 10 (31%) were divorced. All of them had been sexually active by the time they got the disease. All patients were diagnosed with epidermoid cancer: 6 (18.75%) — in situ, 21 (65.6%) — stage I of the disease with depth of invasion ≤1 mm, 5 (15.6%) — stage II with depth of invasion >3 mm. Inguinal lymph nodes were not enlarged. Taking into consideration young age of the patients, their sexual activity, noninvasive or microinvasive cancer and some of the patients’ refusal of vulvectomy, the following types of organ-preserving surgery were conducted: side vulvectomy if the tumor was to the right/to the left of the median line — 23 (72%) patients; front vulvectomy if the tumor was in the front part of the vulva - 5 (16%), rear vulvectomy if the tumor was in the rear part of the vulva — 4 (12.5%). 5 patients with stage II of the disease were treated with inguinal lymphadenectomy on the affected side at first with urgent histological examination, tumor metastases in lymph nodes were not detected in any of the patients; then organ-preserving surgery was conducted. In postoperative period festering was not detected, patients got up early on the first day after the operation and behaved actively. 5 patients with 3mm invasion and stage II of the disease were treated with external beam radiation therapy two weeks after the operation. The patients are still alive and in state of remission now. Observation periods are the following: up to 2 years — 20 women, from 2 to 5 years — 6, from 5 to 10 years — 4, over 10 years — 2. During the first three years, patients were followed every 3 months, then every 6 months. Thus, the results of organ-preserving surgery are not inferior to those of traditional treatments.

**Conclusions:** The choice of a surgical treatment method should be made individually. Operation character depends on the disease stage, depth of invasion, metastases in inguinal lymph nodes, the patient’s age and sexual activity. Surgery should not result in disorders of psychosomatic status, a patient should not be ashamed of her body because of the disfiguring scars and absence of vulva. Sparing operations are possible in treatment of young sexually active patients with preinvasive or microinvasive cancer without metastases in inguinal lymph nodes.

**No conflict of interest.**

http://dx.doi.org/10.1016/j.ejso.2014.08.050

54. Near-infrared fluorescence sentinel lymph node biopsy in vulvar cancer: A comparison of lymphatic tracers

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**Background:** The introduction of the sentinel lymph node (SLN) procedure in vulvar cancer has led to a significant reduction in lymphedema, wound infection and wound dehiscence. Several studies investigated SLN mapping in vulvar cancer and it is considered both safe and accurate. Near-infrared (NIR) fluorescence imaging using Indocyanine Green (ICG) has recently been introduced to improve the SLN procedure. Besides ICG, several additional optical tracers and administration techniques have been successfully tested such as ICG coupled to human serum albumin (ICG-HSA) or ICG premixed with 99mTc-radiolabelled nanocolloid. No comparison between different tracers is yet available. Therefore, the aim of this study was to compare the performance of 3 different ICG-based formulas during SLN biopsy of vulvar cancer.

**Material and methods:** 36 women planned to undergo SLN biopsy for clinically FIGO (International Federation of Gynecology and Obstetrics)
stage I vulvar cancer were included. SLN mapping was performed by both radioactive, blue and fluorescence guidance. Three different lymphatic tracers were tested (ICG alone (800 nmol ICG), ICG:HSA (800 nmol ICG), and ICG premixed with $^{99m}$Tc-radionabeled nanocolloid (160 nmol ICG). NIR fluorescence guided SLN detection was performed using the Mini-FLARE™ camera system. Excised SLNs were assessed on tumour involvement.

Results: In 31 of 36 patients (86%) at least one SLN was detected during surgery and a total of 56 SLNs (mean 1.6, range 1 – 5) were resected. All resected SLNs were both radioactive and fluorescent, though only 40 of 56 SLNs (71%) were stained blue. Intraoperative fluorescent SLN detection rates were 75%, 83%, and 100% for ICG alone, ICG:HSA, and ICG-$^{99m}$Tc-nanocolloid respectively ($P = 0.21$). Average brightness of SLNs, expressed as signal-to-background ratio, was 9.0±4.5. Lymph node involvement was found in 18% of the resected lymph node.

Conclusion: NIR fluorescence guided SLN mapping was feasible and provided real-time intraoperative guidance. This technique outperforms blue dye staining in all groups, and does not alter the surgical field by dark staining or tattoo the skin of the patient. Although not significant, ICG-$^{99m}$Tc-nanocolloid appears to outperform the other 2 lymphatic tracers in terms of the intraoperative detection (100%), required only a single injection of tracer and has the potential to shorten operating time as no lymphatic tracer administration is needed in the operating room.

Conflict of interest: Ownership: Dr. J.V. Frangioni: FLARE™ technology is owned by Beth Israel Deaconess Medical Center, a teaching hospital of Harvard Medical School. Dr. Frangioni has started three for-profit companies, Curadel, Curadel ResVet Imaging, and Curadel Surgical Innovations, which has optioned FLARE™ technology for potential licensing from Beth Israel Deaconess Medical Center.

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55. Near-infrared fluorescence sentinel lymph node mapping in patients with muscle-invasive bladder cancer

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Background: Patients with muscle-invasive bladder cancer have significantly poorer prognosis if tumor has metastasized to lymph nodes. Pelvic lymphadenectomy is therefore still standard-of-care in surgery. Sentinel lymph node (SLN) biopsy, a concept which has proven its value in breast cancer and melanoma, has been suggested to improve nodal staging in bladder cancer patients. Near-infrared (NIR) fluorescence imaging is a novel intraoperative method to identify tumor tissue, vital structures (e.g. ureters), and for SLN mapping. Light in the NIR spectrum (700-900 nanometers) is subject to less tissue absorbance and has consequently deeper tissue penetration capacity than light in the visible spectrum. NIR fluorescence imaging enables therefore the detection of structures even when they are just beneath the surface. The objective of this study was to assess the feasibility of SLN mapping in patients with muscle-invasive bladder cancer using NIR fluorescence imaging and to optimize tracer injection technique.

Materials and methods: A total of fourteen patients with muscle-invasive bladder cancer scheduled for radical cystectomy were prospectively included. Indocyanine green (ICG), a NIR fluorescent dye, was mixed with human serum albumin (ICG:HSA) and 500 µM was injected peritumorally for SLN mapping. ICG:HSA was injected either serosally (n = 5) or mucosally by cystoscopic injection (n = 15). In 12 patients in the latter group, the bladder was kept filled with saline solution for at least 15 minutes to improve lymph drainage. Directly before and during lymphadenectomy, NIR fluorescence imaging was performed using the mini Fluorescence Assisted Resection and Exploration system (mini-FLARE™, Harvard Medical School, Boston, Massachusetts, USA).

Results: Fluorescent lymph nodes were only observed in the patient group with cystoscopic injection of ICG:HSA. Bladder distention by means of filling it with saline solution after injection of ICG:HSA resulted in improved drainage to regional lymph nodes. In 11 of these 12 patients (92%) one or more NIR fluorescent lymph nodes were identified.

Conclusions: This study demonstrates the feasibility of SLN mapping using NIR fluorescence imaging and ICG in patients with muscle-invasive bladder cancer. Furthermore, the injection technique was optimized. In contrast to other cancer types, bladder cancer requires special attention to the injection technique.

Conflict of interest: Ownership: Dr. J.V. Frangioni: FLARE™ technology is owned by Beth Israel Deaconess Medical Center, a teaching hospital of Harvard Medical School. Dr. Frangioni has started three for-profit companies, Curadel, Curadel ResVet Imaging, and Curadel Surgical Innovations, which has optioned FLARE™ technology for potential licensing from Beth Israel Deaconess Medical Center.

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56. Adjuvant photodynamic therapy using intravesically administered hematoporphyrin derivative for non-muscle invasive bladder cancer: 15 years follow-up results

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Background: The long outcomes of adjuvant photodynamic therapy (PDT) using intravesical photosensitize for patients with intermediate or high-risk non-muscle invasive bladder cancer (NMIBC) is unknown. We report the long-term effects of adjuvant PDT using hematoporphyrin derivative (HpD) intravesical instillation for patients with intermediate or high-risk NMIBC.

Materials and methods: From 1993 to 1997,eighteen post-operative patients with intermediate or high-risk NMIBC received 0.4 mg/ml HpD instilled intravesically two hours before PDT. Whole-bladder irradiation was performed with 630-nm laser light and dose of 10 J/cm² (2). Protection from light was not needed after treatment. Each patient had a follow-up for 15years.

Results: There were 11 men and 7 women with a mean age of 58 years. The recurrence-free rates were 77.8% at 1 year, 55.6% at 5 years, 44.9% at 10 years and 38.9% at 15 years, respectively. Three patients progressed to muscle invasive disease and underwent cystectomy. Two patients died of metastatic bladder cancer and 3 died of other diseases. After the treatment, 11 patients (61.1%) had severe irritative bladder syndrome. All symptoms completely resolved within 10 days. No patient experienced bladder shrinkage or cutaneous photosensitization.

Conclusions: Intravesical HpD mediated PDT is an effective adjuvant treatment for intermediate or high-risk NMIBC in the long term. Severe urinary irritation symptoms were related to the treatment in some patients but were transient.

No conflict of interest.

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58. Down-to-up transanal total mesorectal excision
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Background: Laparoscopic total mesorectal excision in rectal cancer is a technically demanding operation especially in patients with large tumours, narrow pelvis and obesity. A relatively new approach combining laparoscopy and transanal endoscopy aims at overcoming these problems.

Materials and methods: In this video we present a technique of Transanal Total Mesorectal Excision in a 52 years old female patient with a T3N2M0 rectal cancer localised 5 cm from the anal verge operated after neoadjuvant radio and chemotherapy. Abdominal part of operation is performed laparoscopically. The Lonestar anal retractor is placed in ano. The complete circular incision of the whole thickness of the intestinal wall under direct vision is performed. The purse-string suture is placed at the distal end of the specimen and the GelPort is placed in the anal position to obtain pneumorectum. The mesorectal dissection is done in the endoscopic way starting with the posterior part of the mesorectum. Anterior mesorectum is dissected afterwards since the peritoneal reflexion at this side is reached easily and pneumorectum can be lost after its inadvertent aperture. After completing the mesorectal dissection the specimen is extracted with ViDrape protective bag. Protective ileostomy concludes the surgery.

Results: The postoperative course was uneventfull and the patient has been discharged home on 4th postoperative day. Postoperative pain was below 3 on VAS pain score (1-10), with Paracetamol as a sole analgesic agent. From the 21cm long specimen 12 lymphnodes have been isolated and the mesorectal excision has been judged as complete by the pathologist.

Conclusion: The Down-to-up Transanal Mesorectal Excision is feasible in patients with relatively advanced rectal cancers.

No conflict of interest.

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59. Robotic nerve-sparing total mesorectal excision for rectal cancer
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Background: Urinary and sexual dysfunctions are recognized complications of rectal cancer surgery. In recent decades, the introduction of total mesorectum excision (TME) and the concept of nerve sparing dissection has decreased urogenital dysfunction. However, despite the advantages of a minimally invasive approach, laparoscopic rectal surgery is associated with a rate of sexual and urinary dysfunction that is similar or higher when compared with the open approach. This may be due to the proximity between the pelvic nerves and the mesorectum, and the difficulty in identifying small anatomical structures, specially in obese patients and those treated with neoadjuvant chemoradiotherapy. The aim of this video is to demonstrate that robotic TME facilitate the preservation of the inferior hypogastric nerve, allowing decrease of urinary and sexual dysfunction.

Methods: A fully robotic TME was performed in a 54 years old female patient with T2N0M0 rectal cancer. She was placed in a lithotomy position with 30° Trendelenburg and 20° right lateral inclination. The robot was docked at the patients left hip in 45° angle. Four robotic trocars were placed in a semi-lunar fashion. After small bowel loops mobilization, the inferior mesentric artery and vein was dissected and divided. The left colon, splenic flexure and the sigmoid were mobilized. The mesorectum was approached only after dissection, identification and preservation of the hypogastric nerves. Then the TME was carried out with sacral, lateral and anterior rectal dissection in this order. The rectum was then divided using an endo-roticator stapler, the robotic arm 1 was undocked and the extraction of the specimen was performed by a left inguinal incision. A circular-stapled coloanal anastomosis was done under robotic assistance.

Results: The operative time was 280 min, blood-loss estimation was 150ml. The patient was discharged on the fourth postoperative day without any complications. Urinary catheter was removed in the first post-operative day and the patient had spontaneous voiding and without any urinary symptoms. No sexual dysfunction was noted according to the Female Sexual Function Index questionnaire.

Conclusion: Robotic assistance provides better nerve-sparing TME due to the magnified view allied with the wide range of motion of the instruments that facilitates the identification and dissection of the anatomical planes and the smaller neural component of the inferior hypogastric plexus.

No conflict of interest.

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60. Laparoscopic total mesorectal excision: Step-by-step technique
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Background: Laparoscopic total mesorectal excision for rectal cancer is safe and feasible, with sound oncological outcomes and improved quality of life. Notwithstanding, laparoscopic proctectomy remains a challenging procedure. Our colorectal group emphasizes the relevancy of a standard laparoscopic procedure, and presents an embedded didactic video demonstrating a step-by-step laparoscopic total mesorectal excision for a low rectal cancer.

Materials and methods: The group describes a four to five-trocar technique for laparoscopic low anterior resection (LLAR). The key steps demonstrated are: high division of the inferior mesentric artery and vein, medial-to-lateral mobilization of the descending colon, take-down of the splenic flexure, total mesorectal excision with division of the rectum at the pelvic floor, and side-to-end colorectal anastomosis. Principles of a good anastomosis and potential pitfalls are described, including protection of the ureter, pelvic autonomic nerves and anastomosis.

Results: The didactic video demonstrates the several steps of a total mesorectal excision down to the pelvic floor, performed in different patients of the colorectal group. A diverting ileostomy protected all low colorectal anastomosis. The short-term outcomes are also reported.

Conclusions: Laparoscopic total mesorectal excision for low rectal cancer is safe and effective, allowing surgical and oncologic outcomes similar to those reported for open surgery. Nevertheless the high conversion rate and the long operation time, patient selection and advanced laparoscopic skills are paramount. The author hope that this didactic
61. Glissonian approach in associated liver partition and portal vein ligation for staged hepatectomy (ALPPS)
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Background: ALLPS method in staged liver resection is an efficient alternative to portal vein ligation allowed to enlarge the liver remnant using portal ligation and liver parenchyma transection during first operation.

Materials and methods: The author present case of a patient with a sigmoid colon cancer and synchronous bilobar liver metastasis who underwent a staged liver In Situ Split resection with primary sigmoid tumor removing using glissonian pedicle approach.

Results: during first step of the ALLPS we used Glissonian approach for defining right primary Glissonian pedicle, and marked it with yellow stripe for further transaction during second step. We also ligated right portal vein and removed primary tumor of the sigmoid colon. On 7-th postoperative day we confirmed left liver enlargement more over 35% and decided to remove right liver. After relaparotomy we easily found yellow marked right primary Glissonian pedicle also as blue marked right hepatic vein. Then we dissected them using linear vascular stapler. Postoperative period was uneventful and patient were regarded on 8-th day after second step operation.

Conclusions: described method allowed us to perform the second step of ALLPS more faster and bloodless.

No conflict of interest.

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62. The virtual surgical pelvis: A highly-detailed 3D pelvic model for anatomical education and surgical simulation
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Background: The surgical anatomy of the pelvis is highly complex. In case of rectal cancer the surgeon is challenged to perform a total mesoeroctal excision (TME) warranting complete removal of the tumor and preservation of the autonomic nerves. However, incomplete TME specimens and surgical damage to the nerves are still part of clinical reality. A highly-detailed 3D pelvic model would be an excellent tool to increase anatomical knowledge of the surgical anatomy of the pelvis. Visible Human Datasets (VHDs) are often used to create a 3D model, but they lack anatomical detail such as autonomic nerves and fasciae. Immunohistochemistry is an ideal method to study those key surgical structures at microscopic level. Recently, the Unified Anatomical Human (UAH) has been developed. UAH integrates heterogeneous anatomical data and will allow registration of patient-specific diagnostic images. In this study, we describe the development of The Virtual Surgical Pelvis (VSP) and its potential clinical value in anatomical education and surgical simulation.

Materials and methods: We selected 910 slices from a VHD that comprised the entire pelvis. All surgically relevant anatomical structures were manually segmented using Amira® software and three-dimensionally reconstructed using the UAH. The Online Anatomical Human (OAH), an online web-viewer, was developed as well. Paraffin embedded mega blocks of 1 female cadaveric pelvic exenteration specimen were sliced in transverse sections of 5 µm. A series was stained with Hematoxylin & Eosin and Masson’s Trichome and selected sections were immunohistochemically stained with S100, a pan-neuron marker. The autonomic nerves and fasciae were manually segmented in Amira® software, three-dimensionally reconstructed and integrated using the UAH.

Results: Currently, the VSP presents most of the essential surgical anatomy of the pelvis, including the levator ani muscle and pudendal nerve, and can be interactively visualized in the UAH and OAH. Microscopic analysis of the female cadaveric specimen reveals the organization of autonomic nerves and fasciae in relation to pelvic organs.

Conclusion: The VSP showing the complex pelvic anatomy is a potentially excellent tool for anatomical education. Registration of the VSP to patient-specific diagnostic images allows visualization of key surgical structures such as autonomic nerves and fasciae in relation to pelvic viscera. This makes surgical simulation a nearby future goal for all pelvic surgeons.

No conflict of interest.

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Thursday 30 October 2014 11:30 — 13:15
Proffered Paper Session: Niall O’Higgins Award Session

63. The significance of fiberoptic ductoscopy in patients with pathological nipple discharge in one single centre material
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Background: Pathological nipple discharge (PND) are unilateral, spontaneous discharges as well as discharges from a single mammary duct. The aim of the project was to set FDS method in PND.

Material and methods: The material consists of 214 patients from 2004-2012. In FDS diagnostics procedure assesses: the percentage of successful cannulations of mammary ducts as well as the duration of examination in the distinguished four sub-periods. Sensitivity, specificity, PPV (Positive Predictive Value) and NPV (Negative Predictive Value) FDS, galactography and cytological examination verified by means of post-operative histopathological results were assessed.
All examined patients received local anaesthesia. Follow-ups were conducted after 6–12 months.

**Results:**

**Cannulation**

214 patients were qualified. The remaining 208 patients had a successful cannulation of mammary ducts. 100 patients had lesions in mammary ducts (group one, surgical procedure), and 108 patients had normal mammary ducts (group two, clinical observation).

**Duration of FDS**

Average duration of FDS in 214 patients was 26.5 min. Mean duration of FDS in four subsequent periods was respectively: 32.9 min, 23 min, 15.5 min and 11.2 min (p < 0.001).

**Lesions in mammary ducts**

In 128 (61.6%) out of 208 successful FDS intraductal lesions was confirmed. Among intraductal proliferative lesions single intraductal papilloma, multiple intraductal papilloma, amputation of a mammary duct, circular narrowing or hyperplasia, ductectasia, ambiguous results (reddening, red spots), microcalcifications were respectively: 13 (10.1%), 14 (10.6%), 43 (33%), 27 (21%), 10 (7.7%), 21 (15.4%) and 4 (2.1%).

**Comparison of FDS with galactography and cytology examination**

FDS verified by the post-operative histopathological results it was assessed that the sensitivity is 90%, specificity 76%, PPV is 92% and NPV is 92%.

Galactography verified by post-operative histopathological examination the following parameters were assessed: sensitivity, specificity and PPV and NPV for galactography which amounted to 53%, 43%, 72% and 25% respectively.

Sensitivity of the cytological examination verified by post-operative histopathological results amounted to 0%. Specificity, PPV and NPV were respectively 93%, 80%, 25%.

**Safety and quality of life of the patients after FDS**

Among 208 FDS only 8 (3.6%) had complications. Early complications were confirmed in 2 patients (0.9%). Later complications in the form of local inflammation were found in 4 (1.9%).

Only 2 patients after microductectomy were confirmed to have a recurrence of discharge from the nipple.

**Conclusions:**

1. FDS applied to patients with pathological nipple discharges is characterized by high sensitivity and high specificity in assessment of location and character of intraductal lesions.
2. FDS is a safe method both in diagnostic tests and when used as an auxiliary tool in surgery of patients with breast cancers. It encumbers small number of early and late complications what enables applying this method in ambulatory environments.

No conflict of interest.

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64. Combined Ablation and Resection (CARe) as an effective parenchymal sparing treatment for extensive colorectal liver metastases

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**Background:** Combined intra-operative ablation and resection (CARe) is proposed to treat extensive colorectal liver metastases (CLM). This study was conducted to evaluate overall survival (OS), local recurrence-free survival (LRFS), hepatic recurrence-free survival (HRFS) and progression-free survival (PFS) in a multicenter study; to identify factors associated with survival; and to report complications.

**Methods:** Four centers combined their clinical experiences regarding CLM treated by CARe: CLM characteristics, pre- and post-operative chemotherapy regimens, surgical procedures, complications and survivals were analyzed.

**Results:** Of the 288 patients who received CARe, 210 had synchronous CLM (73%) and 255 bilateral (88%). Twenty-two patients (8%) had extrahepatic disease. Median follow-up was 3.17 years (95% CI, 2.83 to 4.08). Median OS was 3.33 years (95% CI, 3.08 to 4.17). One- and 5-year LRFS from ablated lesions were 87.9% (95% CI, 83.3 to 91.2) and 78.0% (95% CI, 71 to 83), respectively. Median HRFS and PFS were 14 months (95% CI, 11 to 18) and 9 months (95% CI, 8 to 11), respectively. One hundred patients experienced complications, including three deaths. In the multivariate models adjusted for center, the occurrence of complications was confirmed as a major independent factor: 5-year OS was 25% with complications and 45% without (HR 1.80; P = 0.008).

Conclusions: Recent strategies facing advanced CLM include non-anatomic resections, portal induced hypertrophy of the future remnant liver and aggressive medical preoperative treatments. CARe has the qualities of an approach that allows effective tumor clearance while maintaining good tolerance for the patient.

No conflict of interest.

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65. A multicenter experience of TNF-αa and melphalan based isolated limb perfusion in patients with locally advanced extremity desmoid tumours

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**Background:** Aggressive fibromatosis (or desmoid tumor) is a rare benign soft tissue tumor that can be locally aggressive, but lacks the capacity to metastasize. Although a conservative approach to these tumors is advocated, pain and functional impairment are compelling arguments for more aggressive treatment options. When surgery leads to functional loss or amputation, other options should be considered. Tumor necrosis factor α based isolated limb perfusion (TM-ILP) has proven to be an effective limb saving technique for soft tissue tumors. We report our multicenter experience of TM-ILP in patients with locally advanced extremity aggressive fibromatosis.

**Methods:** The institutional databases of three tertiary referral centers in Europe were retrospectively searched. All patients receiving TM-ILP for aggressive fibromatosis between 1990 and 2012 were included. Prior to treatment, all patients were discussed in a multidisciplinary tumor board.

**Results:** Twenty-four patients were treated with 27 TM-ILPs (3 patients had re-perfusions for recurrence). Median follow-up was 84 months (IQR 33-112). The overall response rate was 70% of which 2 patients had complete response (CR). Partial response (PR) was achieved after 17 TM-ILPs. Stable disease was reported after 7 TM-ILPs and 1 patient had progressive disease. TM-ILP was limb saving in 88% of the patients.

Conclusions: TM-ILP appears an effective limb saving technique. If previous therapies have failed and surgery of recurrent/progressive...
66. On behalf of the EORTC MG: The interval between primary melanoma excision and sentinel node biopsy does not affect survival

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**Background:** Worldwide, sentinel node (SN) biopsy (SNB) is currently the recommended routine staging procedure for stage III melanoma patients. Most national melanoma guidelines recommend re-excision plus SNB within six weeks after primary excision. To date, there is no literature to support this time frame. We evaluated the melanoma specific survival (MSS) for different time intervals between primary excision and SNB in a SN positive population.

**Materials and methods:** Between 1993 and 2008, 1,080 patients (509 women and 571 men) were diagnosed with a positive SN in 9 European Organization for Research and Treatment of Cancer (EORTC) Melanoma Group Centers. We selected 928 patients (86%) of whom primary excision date was known. Time until SNB was calculated from primary excision date until SNB date. Different cut-off values were tested. Kaplan-Meier estimated MSS was calculated. Cox proportional hazard multivariate analysis was performed to correct for known prognostic factors.

**Results:** Median Breslow thickness was 3.00 mm, 44% were ulcerated. Median follow-up time was 36 months (range 1–162 months). Median interval between primary excision and SNB was 37 days (5.3 weeks). The interval was eight weeks or more in 26%. Patients undergoing SNB within two weeks had a significantly worse MSS compared to patients undergoing SNB at two weeks or more: MSS was 66% versus 70% (p=0.036), Hazard Ratio (HR) 0.74 (95%CI 0.56–0.98). MSS was also significantly worse for a three week cut-off value: 66% for SNB within three weeks versus 71% for SNB at three weeks or more (p=0.025), HR 0.75 (95%CI 0.56–0.96). There were no significant differences in MSS for other interval cut-off values, in particular not for the 6 weeks interval (p=0.123). Patients operated within three weeks had a median Breslow thickness of 3.75 mm and ulceration was present in 56%, versus 2.60 mm and 39% for patients with a time interval of three weeks and over. Time interval between primary excision and SNB was not confirmed as an independent prognostic factor for MSS on multivariate analysis with Breslow thickness and ulceration as covariates.

**Conclusions:** Patients undergoing SNB within a short interval have a significantly worse prognosis compared to patients undergoing SNB later. However, this effect is caused by a selection bias, since patients with thicker and ulcerated melanomas undergo a SNB within a shorter waiting period. It is not the consequence of the time interval between primary excision and SNB.

No conflict of interest.

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67. Salvage gastrectomy after intravenous and intraperitoneal paclitaxel (PTX) combined with oral tegafur/gimeracil/oteracil potassium (S-1) for gastric cancer with peritoneal metastasis

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**Background:** Peritoneal metastasis is the most frequent and life-threatening types of metastasis in gastric cancer. In spite of recent advances in chemotherapeutic agents, any regimens, if administrated only via intravenous (IV) route, cannot satisfactorily control the peritoneal metastasis in gastric cancer. Although intraperitoneal (IP) chemotherapy has been proposed as a treatment option, the clinical efficacy of IP chemotherapy for peritoneal lesions has not been examined in gastrointestinal cancer.

**Patients and methods:** A total of 100 patients with peritoneal metastasis of gastric cancer received combination chemotherapy of S-1 plus PTX from both IV and IP routes. In particular, 64 patients were clinically diagnosed as severe peritoneal metastasis (F3 category in Japanese classification) with apparent malignant ascites. PTX was administered IP at 20 mg/m² from the subcutaneous implanted peritoneal access ports as well as IV at 50 mg/m² on days 1 and 8. S-1 was administered at 80 mg/m²/day for 14 consecutive days, followed by 7 days rest. In case of apparent downstage, gastrectomy was performed in salvage setting, and then the same chemotherapy was continued.

**Results:** The median survival time (MST) of the whole 100 patients was 23.5 months. In all patients, laparoscopy was performed under general anesthesia before and after chemotherapy, and the change of peritoneal metastasis was macroscopically evaluated by video-recorded picture. In 60 patients who showed apparent shrinkage of peritoneal lesions with negative peritoneal cytology after the median course of 3 (range 2–16), we performed gastrectomy with standard nodal dissection and R0 resection was achieved in 35 cases. The MST and 1 year overall survival (OS) of the 60 patients were 34.5 months and 83%, while those of the other 40 patients without gastrectomy were 13.0 months and 39%, respectively. Pathological examination of the resected stomach and lymph nodes revealed that grade 2 and grade 3 histological responses were obtained in 18 (18%) and 1 (1%) case(s), respectively. Anastomotic leakage and pancreatic fistula developed in 2 cases but no mortality was observed. In 64 patients with malignant ascites, gastrectomy could be performed in 34 patients, and their MST and 1-year OS were 26.4 months and 82%, respectively.

**Conclusions:** Combination chemotherapy of S-1 plus IV and IP PTX is well tolerated and very effective in gastric cancer patients with peritoneal metastasis. Systemic chemotherapy combined with repeated IP administration of PTX followed salvage gastrectomy is a promising strategy for peritoneal carcinomatosis in gastric cancer even in cases with malignant ascites. No conflict of interest.

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68. Use of personalized abdominal band in stoma hernia and stoma prolapse prophylaxis - retrospective analysis

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**Background:** Parastomal hernia (PH) and stoma prolapse (SP) are the most frequent complications post stoma construction. When symptomatic they represent major morbidity and impaired quality of life. Prophylaxis of PH and SP is one of the major challenges in intestinal stoma care. Our aim was to evaluate the role of personalized abdominal band (PAB) in the prophylaxis of SH and SP in our patients.

**Methods:** Retrospective longitudinal analysis. Adult patients with intestinal stoma construction in our hospital between April 2011 and October 2013 were studied with a follow-up of at least six months. Demographic data, comorbidities, surgery and type of stoma were registered. Incidence of symptomatic PH and SP, were assessed and compared between patients using daily abdominal band with personalized manufactured hole, for patient with stoma and patients who don’t. Descriptive analysis, parametric
tests and stepwise logistic regression were performed. Statistical significance was considered for an α=0.05.

Results: 152 patients, 35.5% female (n=54), 64,19±14.7 years old [23-97], 38 ileal stomas (36.7% loop ileostomy) and 11 colostomies (36.8% loop colostomies), 72% with malignant disease and 47.3% with emergency surgery. 80 patients use daily PAB. The incidence was 24.3% for PH and 15.1% for EP. Age, gender, comorbidities, BMI, surgical complications and reinterventions were independent of PAB use. In univariate analysis colostomy was associated with PH (X²=7.70; df=1; p=0.006) and daily use of PAB was associated to a lower PH and SP incidence (X²=24.2; df=1; p<0.001; X²=9.97; df=1; p=0.002). Multifactorial analysis and stepwise logistic regression shows PAB with negative association to PH and SP (B=-21.6; p<0.001 and B=-83.4; p=0.002 respectively); and colostomy as a risk factor for (PH B=1.41; p=0.039 respectively).

Conclusion: Colostomy was a risk factor for PH when compared to ileostomy. PH and EP incidence was independent of BMI. Daily use of personalized abdominal band seems to be efficient in the prophylaxis of parastral hernia and stoma prolapse.

Colostomy was a risk factor for PH when compared to ileostomy. PH and EP incidence was independent of BMI. Daily use of personalized abdominal band seems to be efficient in the prophylaxis of parastral hernia and stoma prolapse. No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.065

69. Is lymph node assessment by MRI after neoadjuvant chemoradiation for rectal cancer useful?

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Purpose: Patients with locally advanced rectal cancer may have a favorable response to Neoadjuvant chemoradiation (CRT). Among these, a selected group of patients might benefit from a local surgical approach rather than radical resection without undermining curative potential. When determining local excision, accurate preoperative assessment of nodal status is a key. This study analyzed the predictive value of magnetic resonance imaging (MRI) in determining lymph node (LN) status after CRT for locally advanced rectal cancer.

Methods: This is a single-center retrospective case series. Between Mar 2007 and Sep 2013, patients with locally advanced rectal cancer undergoing post-CRT pelvic MRI and radical resection were included.

MRI reports were compared to the final post-operative histopathologic findings after total mesorectal excision. Three T (tesla) MRI was used and MRI data was interpreted by gastrointestinal radiologists at our institution. For the analysis, negative LN status by MRI (cN[-]) was regarded when the MRI report explicitly stated that there was no evidence of local LN metastasis. All other documentations (frankly positive as well as indeterminate nodal metastasis) were termed ‘cN[+]’. Outcome measures were sensitivity, specificity and predictivity of value of MRI LN negative (cN[-]) status. Statistical analysis was done by Fisher’s Exact Test.

Results: 77 patients were studied, of which 23 were staged cN[-] and 54 staged cN[+] on MRI. On pathologic evaluation, there were 56 patients without LN metastases (ypN[-]) and 21 patients with positive LNs (ypN[+]). Of the 23 cN[-] patients, two had LN metastasis on final pathology. The average total LN harvest was 14 (1–45), and there was no significant difference between the groups (ypN[-]: 14.4 vs. ypN[+]: 13.4). The sensitivity, specificity and predictive values are shown in the table.

Conclusion: This study, supported by recent several literature, confirms that LN staging by strict interpretation of MRI post-CRT is reliable in assessing negative LN status. Pelvic MRI could be used to select patients for consideration of local resection (i.e. TEM, TAMIS, TEO) after CRT, while preserving the potential for curative intent.

http://dx.doi.org/10.1016/j.ejso.2014.08.066

Sensitivity / Specificity Analysis Table

<table>
<thead>
<tr>
<th>MRI LN</th>
<th>ypN[-]</th>
<th>ypN[+]</th>
<th>91.3 % Predictive value of cN[-] in predicting ypN[-]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative</td>
<td>21</td>
<td>2</td>
<td>23</td>
</tr>
<tr>
<td>Indeterminate</td>
<td>35</td>
<td>19</td>
<td>54</td>
</tr>
<tr>
<td>Positive</td>
<td>56</td>
<td>21</td>
<td>77</td>
</tr>
</tbody>
</table>

Sensitivity Specificity

37.5% 90.4% Sensitivity Specificity

cN[-] cN-Neg : Final MRI report explicitly stated that there was no evidence for local lymph node metastasis.
cN[+] N-Pos : All other MRI reports including those with indeterminate / positive LNs

ypN[-] ypN-Neg : No Lymph node metastasis on final histopathological review.

ypN[+]ypN-Pos : Lymph Node metastasis on final histopathological review No conflict of interest.

70. Treatment and survival of colon cancer patients over the age of 80 years; a EURECCA international comparison

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2P Aarhus University Hospital, Surgery, Aarhus, Denmark
3Uppsala University, Surgical Sciences, Uppsala, Sweden
4Public University of Navarra, Surgery, Pamplona, Spain
5Catholic University of the Sacred Heart, Department of Radiotherapy, Rome, Italy
6Cancer Registry Belgium, Research, Brussels, Belgium
7Catharina Hospital, Surgery, Eindhoven, Netherlands
8Cancer Registry Netherlands, Research, Eindhoven, Netherlands

Background: A significant proportion of the colon cancer patients are over the age of 80 years at diagnosis. As they are seldom included in clinical trials, the most optimal treatment strategy is largely unknown. International comparisons could provide clues to the most optimal treatment strategy in older patients.

Methods: Four population-based national cohorts from Denmark, Sweden, Belgium and the Netherlands including colon cancer patients of 80 years and older were compared. Both treatment strategies per country and short and long term relative survival were assessed, where relative survival was defined as the ratio of the survival observed and the expected survival based on the matched general population in the specific countries. All analyses were stratified by stage and where appropriate, adjusted for sex, age and grade.

Results: Overall, 34956 patients were included in the 4 countries (2001-2010). There were no survival differences for stage I colon cancer. Belgium and the Netherlands had a lower survival rate for stage II colon cancer (adjusted RER 1.9 (1.6-2.4) and 2.5 (2.0-3.0); p<0.001, respectively), despite a higher proportion receiving adjuvant chemotherapy in Belgium (p<0.001). Sweden had a higher survival rate for stage III colon cancer (adjusted RER 0.6 (0.5-0.7); p<0.001), with equal surgery rates in all countries, but a lower proportion received adjuvant chemotherapy in Sweden (0.9% versus 11.9%, 23.4% and 5.4% for Denmark, Belgium and the Netherlands, respectively). Survival was slightly higher in Sweden and Belgium for stage IV colon cancer, with higher surgery and chemotherapy rates in Belgium (surgery and...
chemotherapy in Belgium 21.0% versus 8.7%, 1.5% and 5.7% in Denmark, Sweden and the Netherlands, respectively).

Conclusion: In the present international comparison, a treatment strategy with a higher proportion of chemotherapy was not associated with survival in stage II colon cancer in patients 80 years and older. Besides, a treatment strategy with a lower proportion receiving adjuvant chemotherapy in stage III was not associated with lower survival. Higher surgery rates and chemotherapy seem to be associated with higher survival rates for stage IV patients; however this could be due to patient selection. Further detailed analyses of selection criteria for surgery and adjuvant chemotherapy could lead to tailored treatment strategies for patients of 80 years and older.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.067

71. Survival benefit of superextended (D3) lymphadenectomy in subgroups of patients with advanced gastric cancer
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Background: At present prophylactic superextended (D3) lymphadenectomy is no longer indicated in advanced gastric cancer, while the debate is still going on regarding the survival benefit of D3 lymphadenectomy when metastases to para-aortic nodes are clinically detected. The present study aimed at evaluating whether superextended (D3) lymphadenectomy can be useful in specific subgroups of patients with advanced gastric cancer when compared with extended (D2) lymphadenectomy.

Materials and methods: We retrospectively compared patients undergoing D2 or D3 lymphadenectomy at two high volume Italian centres (Verona and Siena) from August 1988 to May 2011.

After excluding Bormann IV tumours, neuroendocrine tumours, early gastric cancer, 728 patients were considered. Of these 130 had non-curative resection; the proportion of R2 resections was higher in the D2 group (37/367=10.1%) than in the D3 group (15/357=4.2%) while the proportion of R1 was similar in both groups (10.9% and 10.6%, respectively). Survival analysis was performed in 598 R0 patients, 293 undergoing D2 lymphadenectomy and 305 D3 lymphadenectomy. None of the included patients had received preoperative chemotherapy. Univariable survival analysis was performed by Kaplan-Meier survival curves and log-rank test, while multivariable survival analysis was accomplished by Cox regression model.

Results: In the whole series no survival advantage was found after superextended D3 dissection; 5-year disease-related survival was 51.1% after D2 and 49.5% after D3 (p=0.472). In subgroup analysis disease-related survival tended to be higher after D3 than after D2 in cases with pT4a tumours (p=0.035), or with mixed/diffuse Lauren histotype (p=0.058). In more detail, the largest survival benefit after D3 as compared to D2 was observed in pT4a tumours with mixed/diffuse histology of the lower two-thirds of the stomach (p=0.047). In multivariable survival analysis a significant II-order interaction was detected among depth of tumour invasion, Lauren histotype and extension of lymphadenectomy (p=0.048).

Conclusions: The present study confirms that D3 lymphadenectomy does not improve survival in the whole population of patients with advanced gastric cancer. However subgroups analysis suggest that D3 lymphadenectomy could be useful in subsets of patients with advanced gastric cancer in particular in pT4a tumours with mixed/diffuse Lauren histotype.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.068

30 October 2014 15:00 – 16:30

Proffered Paper Session: Ronald Raven Prize Papers Session

72. The long-term results of sentinel node biopsy with triple-technique in cutaneous melanoma
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2 General Regional Hospital, General Surgery, Elblag, Poland
3 Centrum Onkologii-Instytut, Breast Cancer and Reconstructive Surgery, Warsaw, Poland

The sentinel lymph node biopsy (SLNB) is basic staging method in all primary cutaneous melanomas \(\geqpt1b\). The standard technique is triple technique consisting of preoperative lymphoscintigraphy, intraoperative blue-dye lymphography and gamma-probe assessment. We performed the analysis of long-term results in very large one-institution series of cutaneous melanoma patients.

Methods: We have analyzed the group of 1764 consecutive patients with cutaneous melanoma, who underwent SLNB between 1997 and 2008 in one tertiary center. Median follow-up time was 4.9 years.

Results: Metastases to SLN (SLN+) were found in 19.9%. 8-year overall survival (OS) rate in the entire group was 73.5%, 80% without SLN metastases and 50% in group with SLN+ (p<0.001). Independent prognostic factors for OS were: presence of metastases to SLN, primary tumor ulceration and higher mitotic index (>5/mm2) of primary tumor. The nodal recurrences in biopsied lymphatic basin were 5.4%. The metastases to non-sentinel lymph nodes (NSLN found in 27% of patients with SLN+) correlated (on multivariable logistic regression analysis) with primary tumor thickness >4mm, SLN metastatic deposit size >1 mm and extracapsular involvement of SLN. In SLN+ group the NSLN involvement was related to poorer prognosis (8-year OS rate NSLN- vs NSLN+: 59.6% vs. 34.7%, respectively). The independent prognostic factors for OS in SLN+ group were higher Breslow thickness and ulceration of primary tumor, metastases to >1 lymph nodes.

Conclusion: The long-term results confirm crucial prognostic significance of SLN biopsy in cutaneous melanoma, allowing for identification of factors related to NSLN involvement, what may limit indications for completion lymph node dissection.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.069

73. Effect of increased time interval between neoadjuvant chemoradiotherapy and surgery in locally advanced carcino ma rectum-interim analysis of an ongoing randomized control trial
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2 Regional Cancer Centre, Department of Pathology, Trivandrum, India
54. GIST may have a higher incidence of second primary cancers which negatively impact upon survival
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2Queen’s University, Public Health Sciences, Kingston, Canada
3Odette Cancer Centre Sunnybrook Health Sciences Centre, Surgical Oncology, Toronto, Canada
4Odette Cancer Centre Sunnybrook Health Sciences Centre, Medical Oncology, Toronto, Canada

Background: A higher incidence of second primary cancer (SPC) has been reported in patients diagnosed with gastrointestinal stromal tumors (GIST). We aimed to identify patients with GIST who develop a SPC, quantify the risk of additional malignancy and evaluate the impact upon survival.

Material and methods: Individuals diagnosed with GIST from 2001-2009 were identified from the SEER database. Standardized incidence ratios (SIR) were calculated using SEER*Stat software (V.7.1.0). Cox-proportional hazards and logistic regression identified predictors of survival and SCP.

Results: 1705 cases of GIST were identified, with 181 (10.6%) patients developing SPC overall. The risk of SPC was significantly higher in our cohort than expected (SIR 1.36; 1.08-1.7 95% CI). Older age (p<0.0001) and extra-oesophagogastric GIST (p=0.0027) were significant predictors of SPC. Colorectal cancer was the commonest synchronous cancer (30%). Median time to diagnosis of metachronous SPC was 21.9 months, the commonest sites being urinary system in men (SIR 2.39; 1.03-4.72 95% CI) and colon (SIR 2.96 1.19-6.09; 95% CI) in women. Overall 5-year survival was 65%. A synchronous SCP associated with reduced overall survival (HR 1.55 1.05-2.3 95% CI, p=0.04).

Conclusion: Patients with GIST have a higher incidence of SPC when compared with the general population. Older age and primary disease site are predictors of SPC. 10.6% of our cohort developed a SPC, with urinary tract being the commonest site overall. Colon cancer was the commonest synchronous cancer, and women were at an increased risk of metachronous colon cancer. Synchronous SCP was associated with a poorer overall survival. At diagnosis and during surveillance of GIST, screening for colon and urinary tract cancers may be considered.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.070

75. Endoscopic sentinel node biopsy and axillary dissection for early breast cancer can be navigated by the fusion image of 3D-CT lymphography and SPECT-CT
K. Yamashita1, K. Yanagihar2, H. Takei3
1Nippon Medical School, Dept. of Breast Surgery, Tokyo, Japan

Background: 3D-CT mammary lymphography (LG) can image the detail lymphatic map from the breast gland to the axillary nodes (AN) and can enable us to detect the precise sentinel node (SN) and to perform the endoscopic SN biopsy easily. It can also detect the second and the third SN on the lymphatic map. These nodes biopsy will contribute to omit AN dissection on the SN-positive patients. Then we try to overlay the fusion image of SPECT on the endoscopic view, and evaluate its real-time navigation of endoscopic surgery.

Methods: 3D-CT LG was performed by the subcutaneous injection of 2 ml lopamidol 300 above the tumor and near areola, and by taking CT images at 1 minute. They were reconstructed to produce a 3D image of lymph ducts and lymph nodes by the volume rendering method. SPECT was performed by injection of 99mTc phytate 74mBq and taking images after 2 hours. SN biopsy and AN dissection were performed by dye and RI method using endoscope with the optical trocar Visiport through only 1 cm long skin incision, and overlaying 3D-CT image on the endoscopic view.

Results: We have performed the endoscopic SN biopsy on 350 patients. SN metastasis was found on 80 patients: single SN metastasis on 32, the second SN metastasis on 32 and the third SN metastasis on 16. There was no false negative study. There is no local recurrence at 10 years after surgery.

Conclusions: The overlay of 3D-CT LG on the endoscopic view improves the identification rate of SN and the manipulation of the endoscopic surgery. We are developing this visual processing technique to apply the real-time navigation for the endoscopic partial mastectomy.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.072

76. Optimal treatment of the axilla after positive sentinel lymph node biopsy in primary invasive breast cancer patients (surgery versus radiotherapy)—OTOASOR trial: 5 years follow-up of a randomized clinical trial
A. Sávolt1, Z. Mátrai1, C.S. Polgár2, N. Udvarhelyi1, G. Rubovszky4, E. Kovács3, P. Musonda1, G. Peley1
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http://dx.doi.org/10.1016/j.ejso.2014.08.071
**77. Patient satisfaction at Cardiff Liver Unit: Improving the standard of tertiary based cancer care**

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**Background:** Recording patient experience and satisfaction remains a standard in the provision of cancer services. With the recent trend towards increased patient choice within the NHS and tightening financial constraints, improving patient perception of current services is paramount. We recorded patient satisfaction in those undergoing liver resection for colorectal liver metastases at a busy centre receiving tertiary referrals from across Wales.

**Method:** We sent the modified Patient satisfaction questionnaires, designed originally by the Basingstoke Liver unit, to all patients undergoing surgery between 01/02/13 to 31/01/13 at least 1 month after their discharge from hospital. The survey covered various aspects of patient care from initial referral, outpatient attendance and inpatient care during hospital stay. Results were analyzed using SPSS version 20.

**Results:** A total of 99 patients were sent a questionnaire of whom 57 responded (response rate 57%). 91% (n = 51) of patients had the reason for referral to the liver unit explained prior to their attendance. Fifty-nine percent (n = 33) of patients were seen on time in the clinic and 95% (n = 53) felt that they were given sufficient information regarding their diagnosis and treatment during their appointment. Fifty-six patients (98%) felt fully involved in the decision making process but only 39% of patients (n = 22) were given both verbal and printed information about their treatment at clinic. 83% of patients felt they were given sufficient information regarding what to expect after discharge from hospital and 90% of patients rated their overall hospital experience as good or excellent.

**Conclusion:** Overall patient satisfaction appeared to be good with regards to most aspects of care. Attention has been drawn to the variation in waiting time for initial consultation, the provision of both verbal and written information following pre-operative consultation has been made a standard and clinic structure has been modified in order to allow adequate time for the counselling of new patients.

**No conflict of interest.**

http://dx.doi.org/10.1016/j.ejso.2014.08.073

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**78. Antireflux anastomose for esophagojejunoostomy after proximal gastrectomy**

I. Shchepotin, O. Kolesnik, A. Lukashenko, A. Burlaka, Y. Gukov, M. Volk

1 National Cancer Institute, Abdominal Oncology, Kyiv, Ukraine

**Background:** The incidence of proximal gastric cancer has increased in last decade. The proximal gastrectomy (PGE) are mostly avoided because of the postgastrectomy syndromes which are still more or less unavoidable. The selecting an ideal alimentary canal reconstructive pattern after PGE to elevate the quality of life has become more critical.

**Materials and methods:** Between May 2007 and March 2014, 324 patients were randomized in three groups by type of gastroesophageal anastomosis used during PGE: stapler anastomosis (SA), hand-sutured standard anastomosis by Ivor Lewis (HSA) or modified antireflux hand-sutured anastomosis (MA).

**Results:** Endoscopic control at 1 year follow-up of SA group showed reflux esophagitis with the following distributions: 40.6%, 30.2% and 8.6% for grade A, B and C respectively. In contrast endoscopic control of MA group showed reflux disease grade A and B only in 14.1% and 1.7% respectively. The evaluation scores measured by the EORTC QOL gastric cancer specific questionnaire (QLQ-25) for acid indigestion or heartburn and acid or bile coming into mouth in main group MA were 1.2 ± 0.08; 1.2 ± 0.08 whereas in groups HSA and SA they were 1.8 ± 0.1; 1.8 ± 0.2 and 2.2 ± 0.2; 1.8 ± 0.1 respectively (p < 0.05).

**Conclusions:** Our data showed that the presented modified method of esophagogastic anastomosis forming is a safe, easy to implement and effective in preventing the development of reflux after PGE for cancer of the upper third of the stomach.

**No conflict of interest.**

http://dx.doi.org/10.1016/j.ejso.2014.08.075

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**79. Large regional differences in the utilization of liver resection for patients with synchronous colorectal liver metastases in the Netherlands**

J. ’t Lam - Boer, E. P. Van der Stok, M. A. M. Elferink, R. H. A. Verhoeven, J. H. W. De Witt, C. Verheef

1 Radboud University Medical Center, Surgery, Nijmegen, Netherlands

**Background:** Recording patient experience and satisfaction remains a standard in the provision of cancer services. With the recent trend towards increased patient choice within the NHS and tightening financial constraints, improving patient perception of current services is paramount. We recorded patient satisfaction in those undergoing liver resection for colorectal liver metastases at a busy centre receiving tertiary referrals from across Wales.

**Method:** We sent the modified Patient satisfaction questionnaires, designed originally by the Basingstoke Liver unit, to all patients undergoing surgery between 01/02/13 to 31/01/13 at least 1 month after their discharge from hospital. The survey covered various aspects of patient care from initial referral, outpatient attendance and inpatient care during hospital stay. Results were analyzed using SPSS version 20.

**Results:** A total of 99 patients were sent a questionnaire of whom 57 responded (response rate 57%). 91% (n = 51) of patients had the reason for referral to the liver unit explained prior to their attendance. Fifty-nine percent (n = 33) of patients were seen on time in the clinic and 95% (n = 53) felt that they were given sufficient information regarding their diagnosis and treatment during their appointment. Fifty-six patients (98%) felt fully involved in the decision making process but only 39% of patients (n = 22) were given both verbal and printed information about their treatment at clinic. 83% of patients felt they were given sufficient information regarding what to expect after discharge from hospital and 90% of patients rated their overall hospital experience as good or excellent.

**Conclusion:** Overall patient satisfaction appeared to be good with regards to most aspects of care. Attention has been drawn to the variation in waiting time for initial consultation, the provision of both verbal and written information following pre-operative consultation has been made a standard and clinic structure has been modified in order to allow adequate time for the counselling of new patients.

**No conflict of interest.**

http://dx.doi.org/10.1016/j.ejso.2014.08.074

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Background: Surgical resection of all metastases offers a chance of cure for patients with synchronous colorectal liver metastases (SCLM). Over the past decade liver resection has been centralized in specialized centers to ensure the highest quality of care. All patients with SCLM therefore need to be referred to these centers to be considered for liver resection. The aim of this study was to investigate the utilization of liver resection for patients with SCLM in the Netherlands.

Methods: This nationwide population-based study includes all patients diagnosed with SCLM between 2008 and 2012 (n = 10,529), selected from the Netherlands Cancer Registry. The proportion of patients diagnosed with SCLM undergoing liver surgery was calculated per hospital of diagnosis. Multivariable logistic regression analysis was used to determine predictors for resection of liver metastases.

Results: Of the 10,592 patients, 12% (n = 1,260) underwent resection of liver metastases. During these years the number of hospitals performing >10 liver resections for SCLM increased from 5 hospitals in 2008 to 12 in 2012. Of the patients undergoing liver resection, 51% (n = 647) were treated in nine academic hospitals, 38% (n = 482) in sixteen specialized non-academic centers, 8% (n = 102) in 28 general hospitals, and 2% (n = 29) were treated outside the Netherlands. There was a large inter-hospital variation between the hospitals of diagnosis in the proportion of patients with SCLM undergoing liver resection (2-26%). The chance of undergoing liver resection did strongly depend on the type of hospital (academic versus general: OR 1.60 [95% CI 1.23-2.08]) and region of diagnosis (highest OR 2.18 [1.60-2.97]).

Conclusion: Despite centralization of liver resection, there is a large variation in the utilization of liver resection in patients with SCLM between different regions and different types of hospitals in the Netherlands. Measures to reduce these differences should be investigated.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.076

80. Sentinel lymph node identification rate in melanoma: A comparison of the standard and magnetic techniques in different lymphatic basins

B. Amminga, S. White, M. Moncrieff, P. Dziewulska, J.L. Geh, J. Klaase, H. Garmo, S. Pinder, M.A. Hall-Craggs, M. Douek, On behalf of the MELAMAG Trialists Group

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Background: The MELAMAG phase II international trial evaluated a new magnetic technique for performing sentinel lymph node biopsy (SLNB) in melanoma, against the standard technique (radioisotope and blue dye). The magnetic technique does not use radioactive material, provides a colour change (brown/black) in the sentinel lymph nodes (SLNs) and can be detected intra-operatively using a hand-held magnetometer (SentiMag®, Endomagnetics Ltd., UK). We analysed the SLN identification rate for both the magnetic and standard techniques for different primary melanoma sites and in different lymphatic basins.

Materials and methods: Patients with primary cutaneous melanoma scheduled for SLNB, and who were clinically AJCC stages IB-IIIC, were recruited from 4 centres in the United Kingdom and the Netherlands. The trial assumed a 97% proportion identified by the standard and magnetic techniques overall, with a limit difference for equivalence of -5%. SLNB procedures were performed after administration of radioisotope (followed by a lymphoscintigram), magnetic tracer (Sienna®, Endomagnetics Ltd., UK) and blue dye (Patent Blue V®, Guerbet, France). SLN identification rate with the standard and magnetic techniques was compared in patients with a primary melanoma at different anatomical locations (extremities, trunk and head/neck) and within different lymphatic basins (axilla, groin and neck).

Results: A total of 166 SLNB procedures were undertaken in 129 patients. Of these procedures, 86 were axillary, 42 were in the groin and 26 were in the neck. The remainder were interval nodes. The SLN identification rates for a primary melanoma located in the extremities (n = 70), trunk (n = 71) and head/neck (n = 25) were 97.1%, 97.2% and 92.0% with the standard technique and 94.3%, 90.1% and 88.0% magnetic technique, respectively. The axillary identification rate was 98.8% (85/86) with the standard technique and 91.9% (79/86) with the magnetic technique. In the groin, the identification rate was 95.2% (40/42) with both techniques. For SLNB in the neck, the identification rate was 88.5% (23/26) with both techniques.

Conclusion: The magnetic technique is feasible for SLNB in melanoma with a high SLN identification rate in the groin and axillary lymphatic basins. The identification rate in the neck is lower for both the standard and magnetic technique.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.077

31 October 2014 11:30 – 13:00
Proffered Paper Session: Breast Cancer II

81. Bridging the age gap in breast cancer interim analysis of the impact of comorbidity, dementia and frailty on rates of surgery in older women

J.L. Morgan, K. Collins, M.W. Reed, J. Mamdani, S. Cousins, S. Ingram, L. Wyld

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2 Sheffield Hallam University, Centre for Health and Social Care Research, Sheffield, United Kingdom
3 University of Sheffield, Sheffield Medical School, Sheffield, United Kingdom

Background: Up to 40% of women over 70 with primary operable breast cancer are treated with Primary Endocrine Therapy (PET) as an
alternative to surgery in the UK with no proven survival difference. In some cases this is due to co-existing comorbidity or frailty, rendering surgery high-risk. The Bridging the Age Gap study is a UK multi-centre cohort study collecting high-quality data on patients, cancer and treatment characteristics of women over 70 diagnosed with operable breast cancer with the aim of creating a decision aid to help guide treatment decisions in the future. Here we present an interim analysis of the first 500 patients.

Methods: Prospectively collected data on treatment received (Surgery vs. PET) were analysed according to co-morbidity (modified Charlson score), dementia (MMSE - Mini Mental State Examination) and frailty (ADL and IADL - Activities of Daily Living and Instrumental Activities of Daily Living) using Pearson’s Chi Squared test in SPSS.

Results: Treatment data were available for analysis on 331 women with a completed modified Charlson score, 268 women with a completed MMSE, 294 women with completed ADL and 299 with completed IADL questionnaires. Increasing co-morbidity level was significantly associated with increasing rates of PET; with 13.5% of patients with a modified Charlson score of zero (no co-morbidity) being treated with PET, and this figure rising to 37.7% for patients with a score of 3 or more (p=0.002). A MMSE score of below 27 was also significantly associated with increased PET rate with 30.3% of patients treated this way, compared to 14.6% of patients with a score of 27 or more (p=0.004). Being dependent in one or more of the ADL or IADL categories was also significantly associated with increased rates of PET; only 10% of patients who were independent in all ADLs were treated with PET with this increasing to 43.4% of those who were dependent in at least one area (p<0.001), and the same was seen for IADL, with only 10.5% of independent patients treated with PET compared to 37.6% of those with at least area of dependence (p<0.001).

Conclusions: This initial interim analysis clearly demonstrates that the presence of co-morbidity, dementia and frailty are important factors in determining treatment for older women diagnosed with operable breast cancer in the UK.

Conflict of interest: Other substantive relationships: This abstract presents independent research funded by the National Institute for Health Research (NIHR) under its Programme Grants for Applied Research Programme (Grant Reference Number RP-PG-1209-10071). The views expressed are those of the author(s) and not necessarily those of the NHS, the NIHR or the Department of Health.

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evaluate new magnetic technique of SNB in comparison to the isotope 'gold standard'.

**Materials and methods:** 65 women with node negative, pathologically verified breast cancer underwent SNB using both methods: SPIO (Sienna+, Endomagnetics Ltd., UK) and a handheld magnetometer (Sentimag, Endomagnetics Ltd., UK) and isotope (99mTc nanocolloid) in two breast care units.

**Results:** 65 pts/65 SNB were evaluated. Staging: Tis:1, T1: 39, T2: 25. BCS were done in 55 (85%), oncoplastic techniques 11 (20%). The identification rate: 94% (61/65) for SPIO vs. 95% (62/65) for 99mTc. SN(+) occurred in 14 (21%), 17 (26%) pts, underwent previous breast surgery (tumorectomy/WLE) - the SN identification rate for SPIO: 94% (16/17). Two SNB were done after preoperative chemotherapy (100%), re-SNB: 1 patient (identification with only SPIO), Follow up 2 - 14 months, no recurrence in axilla was observed.

**Conclusions:** The magnetic technique is an easy implemented and safe method of SNB effecting the high rate of identification, equivalently well in comparison to the isotope technique and provides the independence on nuclear medicine departments. It is significant that high identification rate was achieved in pts who underwent previous breast surgery. Further research is needed to confirm these initial results.

**No conflict of interest.**

http://dx.doi.org/10.1016/j.ejso.2014.08.080

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84. The sentinel node of patients treated with breast conserving therapy receives an elective radiation dose in the vast majority L.M. Van Roozendael1, R.J. Schipper1, E.M. Heuts1, K.R.M.I. Keymeulen1, M. Moossdorff1, L.H.M. Smit1, J. Buijsen2, L.J. Boersma2, M.L. Smidt1, J.H. Maduro8, V.C.G. Tjan - Heijnen9, T. Van Dalen10

**Background:** Randomized controlled trials revealed that completion axillary lymph node dissection can be safely omitted in clinically T1-2N0 breast cancer patients with limited sentinel node metastesis, with extremely low regional recurrence rates. Patients in these trials were mainly treated with breast conserving therapy (lumpectomy and whole breast radiotherapy) and adjuvant systemic therapy. Findings of these trials led to the development of several randomized controlled trials that aim to investigate whether the sentinel node procedure can be safely omitted in clinically and ultrasonographically node negative breast cancer patients who are treated with breast conserving therapy. Study patients might be at risk for regional undertreatment when the sentinel node procedure is omitted. The aim of this study was to investigate the incidental dose delivered to the location of the sentinel node in breast cancer patients treated with lumpectomy, followed by whole breast radiotherapy.

**Methods:** In 30 consecutive T1-2N0 breast cancer patients treated with lumpectomy, sentinel node procedure and whole breast radiotherapy, a surgical clip was placed at the location of the removed sentinel node(s). The clip was visualized on the postoperative CT-scan for radiotherapy planning. Standard 3D dose distribution was calculated. The dose to the whole breast was between 95% and 107% of the prescribed dose. In 15 patients the prescribed dose was 16x2.67Gy=42.7Gy; 12 patients received a modified schedule with a low boost and three patients with high boost. The boost was mostly given by the so-called Simultaneous Integrated Boost technology. The dose delivered to the clip was determined using the CT-images and 3D dose distribution. The elective radiation dose to the location of the sentinel node was defined as 95% of the radiation dose to the whole breast.

**Results:** The mean fraction of the prescribed radiation dose to the location of the sentinel node was 89.8% (range 7.2-131.6%, median 99.6%). In 25/30 (83.3%) patients the location of the sentinel node received at least the elective radiation dose. The location of the tumour in the breast and the size of the breast were not predictive for not receiving the elective radiation dose.

**Conclusion:** With the use of 3D radiotherapy techniques, the location of the sentinel node is treated with an elective radiation dose in the vast majority of patients who are treated with breast conserving therapy.

**No conflict of interest.**

http://dx.doi.org/10.1016/j.ejso.2014.08.081

85. Communication in triple negative breast cancers through TSG101 S. Sharma1, L. Gubbins1, K. Weiner-Gorzel1, A. McCann1, M. Kell2

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**Background:** TSG101 is an essential protein and constituent of cellular function involved in the sorting and trafficking of cell components destined for processing or degradation and is also integral to exosome production and release. Limited information is known about TSG101 and exosomes in the field of breast cancer and even less in the difficult to treat subset of Triple Negative Breast Cancer (TNBC). We propose that TNBC tumours demonstrating high levels of TSG101 are more likely to recur locally and at distant sites due to enhanced exosome mediated communication in the tumour microenvironment through the propagation of chemoresistance.

**Methods:** Cellular viability of our TNBC cell lines (BT-549 and MDA-MB-231) after incremental Paclitaxel treatments were assessed by MTT viability assay. Using an siRNA knockdown we were able to selectively target and reduce the intracellular levels of TSG101 protein. TNBC cell lines were treated with Paclitaxel at 24 and 48 hours. Immunohistochemical staining for TSG101 was performed to evaluate the expression of TSG101 in breast cancer clinical cases.

**Results:** Using an MTT viability assay, BT-549 TNBC cells were found to be more sensitive to the chemotherapeutic drug Paclitaxel compared to the MDA-MB-231 TNBC cells which were shown to be more chemoresistant. Following 24 and 48hours of treatment with Paclitaxel the levels of TSG101 in the MDA-MB-231 cells remained level, while the levels of TSG101 were lower in the more Paclitaxel sensitive BT-549 cells. Subsequent exosome profiling of serum collected from TSG101 protein knockdown cells shows differential size and number of exosomes released from BT-549 and MDA-MB-231 cells after Paclitaxel treatment. Immunohistochemical analysis of 184 clinical TNBC cases showed differential expression of TSG101 in the epithelial and stroma of tumour sections. Differential staining was associated with an increase in adverse events in patients with observed high stromal staining of TSG101.

**Conclusions:** We conclude that TSG101 is differentially expressed in the TNBC in vitro and that expression levels are influenced by Paclitaxel treatment. We also conclude that siRNA knockdown of TSG101 impedes the release of exosomes. We suggest that TNBC tumours that clinically express high stromal levels of TSG101 may express a more aggressive phenotype.

**No conflict of interest.**

http://dx.doi.org/10.1016/j.ejso.2014.08.082


1 On behalf of the Scientific Committee of the NABON Breast Cancer Audit, Surgery, Leiden, Netherlands
Background: At present, various treatment modalities are used to preserve the breast contour in patients diagnosed with invasive breast cancer: breast-conserving surgery (BCS), primary systemic therapy (PST) and immediate reconstruction after ablative surgery. The rate of BCS as a frequently used quality indicator does not appropriately reflect the clinically relevant outcome of breast contour preserving treatment since it reflects only the surgical effort. We addressed the involved treatment modalities by defining a new quality indicator: the rate of breast contour preserving procedures (BCPP).

Material and methods: All invasive M0 breast cancer patients diagnosed and operated in the Netherlands between January 2011 and September 2013 were selected from the national NABON Breast Cancer Audit. The use of BCS, BCS following PST, and immediate reconstruction following mastectomy were calculated and BCPP was defined as the sum of the three treatment options.

Results: A total of 34,423 patients were identified. Of them, 55% underwent BCS alone. Twenty-three percent of the patients with a T2-T3 tumour were treated with PST and an immediate reconstruction was performed in 16% of the patients who underwent ablative surgery. There was a large variation between hospitals in BCS (31-80%), the use of PST in patients with T2-T3 tumours (0-75%), and the performance of an immediate reconstruction after ablative surgery (0-63%). Age significantly affected the rate of BCS, the number of patients treated with PST and the percentage of immediate reconstructions after ablative surgery.

Overall, BCPP was performed in 64% of all patients: by BCS alone in 55.3%, by BCS after PST in 3.5% and by an immediate reconstruction after a mastectomy in 5.6% of the patients. While BCPP and BCS rates were comparable in elderly patients (>70 years; 48 and 46% respectively), BCPP and BCS-rates deviated substantially in patients <40 years (62 and 34% respectively). The rate of BCPP also varied between different hospitals: 45-83%.

Conclusions: A large variation is seen between hospitals on performing BCS, PST and immediate reconstruction after ablative surgery.

The rate of BCPP provides meaningful information regarding satisfactory local results as it reflects the multidisciplinary effort to obtain a good cosmetic outcome. It provides additional information relative to the mere rate of BCS. Both the rate of BCS and BCPP vary largely between the hospitals.

No conflict of interest.

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days (range 1-8 days; SD 1.02). Of 99 patients, 66 (66.7%) had therapeuti
cut surgery alone (of which 6 were bilateral cancers), 16 (16.2 %) under
grew risk-reducing mastectomy and 17 (17.2%) patients had bilateral
surgery for cancer of one breast and opted for a contralateral mastec
tomy. Primary chemotherapy was administered to 19/99 (19.2%) and
adjuvant to 36/99 (36.4%). 34 patients (34.3%) underwent post-operative
radiotherapy. Patients were followed up for a median of 8 months (range
4-27 months). At least one complication was observed in 30/99 (30.3%)
at 30 days and in 41/99 (41.4%) of patients overall, of which 24/99 had a
complication graded as IIIb on the Clavien-Dindo scale. 30 day reoper-
ation rate was 13/99 (13.1%) with the most common indication being
infection or wound dehiscence requiring washout or debridement of
the wound in 7 patients. Implant explantation rate at one year was
10.2% (10/99), seroma rate (when radiological drainage indicated) was
19% (19/99) and rate of wound infection requiring IV antibiotics was
15.2%(15/99). Logistic regression analysis showed that both age (OR
1.058 p=0.010 95%CI 1.014-1.105) and adjuvant chemotherapy (OR
5.295 p=0.014 95%CI 1.394-20.107) were independent predictors of
developing a complication at any point during follow-up (OR 1.052
p=0.010 95%CI 1.012-1.093). The other variables had non significant
associations.

Conclusions: Immediate breast reconstruction using an implant and
ADM post mastectomy is feasible in higher risk patients many of whom
require adjuvant chemotherapy or radiotherapy. Awareness of complica-
tions and greater experience in managing these, are required in order to
reduce their incidence.

No conflict of interest.

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89. Lymphatic arm mapping, a new concept in prevention of
lymphedema during axillary lymph node dissection for breast
carcinoma
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Background: The most long-term and devastating morbidity of sur-
gery for breast cancer is lymphedema of the arm, even in patients under-
going SLNB (7-13%). This may be explained by variations in arm
lymphatic drainage that put the arm lymphatics at risk for disruption dur-
ing axillary lymph node surgery. Mapping the drainage of the arm with
blue dye decreases the likelihood of disruption of lymphatics and subse-
quent lymphedema.

Materials: This is a prospective study that was conducted on 75 pa-
tients, at the National Cancer Institute, Cairo, Egypt, with early breast can-
cer (T1,T2 N0) requiring an axillary dissection undergoing either modified
radical mastectomy (MRM) or breast conservative surgery (BCS). Blue
dye was injected subdermally in the upper arm with an attempt to identify
and separately excising specific lymph nodes related to and draining the
arm from nodes draining the breast. The identified blue nodes and ducts
were separately removed and sent for pathological evaluation in order to
identify whether they contained metastatic deposits or not thus evaluating
this technique feasibility &oncological safety. Axillary dissection is then
completed.

Results: Lymphatic arm mapping (Axillary Reversed Mapping)
(ARM) were identified in 65 patients with identification rate of 86.6%.
The upper limb lymphatics were mainly seen just below the axillary vein
in 42 patients (64.6 %), the sentry node of the upper limb mainly were
just lateral to the thoracodorsal vessels in 56 patients (of the 65 patients
with identified nodes) with 86.15 % . Cross over between breast and arm
nodes was found in 9 patients(13.8 %). The identified nodes were free
from tumor metastasis in 60 patients (92.3%) despite the presence of
node metastasis (in the other axillary nodes) in 44 patients. In patients
with cross over (9 patients) metastases were found in 5 patients (i.e.
55.5%) and this shows that leaving ARM nodes is not safe when cross
over is present

Conclusion: ARM is safe as a concept especially in early breast cancer
but is not safe in patients with clinically positive axillary nodes and that
cross over is present these nodes should also be removed during axil-
ary dissection as they have high incidence of metastasis. It is recommend
that additional research on ARM is warranted, with studies characterized
by the preservation of the identified blue nodes, a long follow-up, and a
randomized comparison with a group of patients undergoing conventional
ALND will be required.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.086

31 October 2014 11:30 – 12:50
Proffered Paper Session: Colorectal Cancer II

91. Antero-posterior perineal approach (APPA) for sphincter
preservation in ultra low rectal cancer: Oncologic and functional
outcome
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Background: The perineal dissection through an antero-posterior peri-
eal entry has been introduced to minimize the oncological drawbacks
encountered with ultra-low rectal tumours resection (2-5 cm) from the
anal verge as Circumferential Resection Margin (CRM) involvement, inad-
vertent intraoperative bowel perforation with subsequent increase in local
recurrence rate and low overall survival. This approach confers better ac-
tess to low seated rectal tumours enabling sphincter saving and bowel con-
tinuity with better life quality.

Methods: Between 2008 and 2012, 35 consecutive patients with low
rectal cancer tumours (3-5cms) from anal verge, underwent ultra low
rectal anterior resection with concomitant anteroposterior perineal entry
compared to 45 patients with conventional low anterior resection. All pa-
tients received neoadjuvant chemoradiation with R0 resection. Patients’
data was prospectively collected from our colorectal database. Rates of
CRM involvement, bowel, perforation and wound infection were
compared. Continence was subjectively evaluated according to Kirwan
scale. The sphincter preservation and Colo-Anal Anastomosis (CAA) in
the anterioposterior approach was achieved through either hand sewing
in 10 patients or double stapling technique in 25 patients with protective
ileostomy in 15 patients.

Results: The rates of CRM involvement, bowel perforation and wound
infection in such approach versus conventional resection were 5% vs 10%
(p =0.04),5% vs 21.1% (p=0.52) and 11 % vs 31% (p=0.518) respect-
vly. The mean distal clear margin was 1.5±0.5 cm (range 0.5-1.7)
versus 1±0.3 cm (0.3-1.2). Mean Operative time was lower with the peri-
eal entry than with conventional surgery (220.3 &300 minutes)
92. Identification of colorectal cancer using optical spectroscopy

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Background: To improve the outcome and quality of life after surgery for colorectal cancer, it is essential to prevent incomplete resection of the tumor. Optical based techniques can identify tumor and surrounding tissue through a tissue specific ‘optical fingerprint’ based on the morphological and biochemical composition of the tissue. Dual-modality Diffuse Reflectance Spectroscopy – Fluorescence Spectroscopy (DRS-FS) was evaluated for discrimination between benign and malignant tissue in colon surgery with ultimate application implementation into surgical instruments.

Material and methods: Resection specimens of colon cancer patients were investigated immediately after resection. Differences in tissue composition and structure were measured through a fiber-optic needle using dual-modality DRS-FS. Model-based analyses were used to derive various optical parameters like the scattering and absorption coefficients as well as sources of intrinsic fluorescence. A classification and regression tree algorithm (CART) was used to cross-validate optical based parameters with the results of the histopathological analysis.

Results: A total of 1127 measurements was performed on 21 specimens. Spectral characteristics of beta-carotene, hemoglobin, lipids and water could be identified in the measured spectra. Both DRS and FS allowed differentiation of tumor from surrounding tissue with a sensitivity and specificity of 95% and 88%, respectively. In 10 specimens optical data could be identified in the measured spectra. Both DRS and FS allowed accurate identification of colon cancer based on optical detection of differences in tissue composition and structure. The technique, here demonstrated in a needle like probe, may be incorporated into surgical tools for optical guided surgery or combined in other devices.

Conclusion: This study demonstrates that dual-modality DRS-FS allows accurate identification of colon cancer based on optical detection of differences in tissue composition and structure. The technique, here demonstrated in a needle like probe, may be incorporated into surgical tools for optical guided surgery or combined in other devices.

Conflict of interest: Other substantive relationships: This study was supported by Philips Research, Eindhoven, The Netherlands. The author who is affiliated with Philips Research (B.H.) has a personal interest in the subject matter, materials, and equipment, in the sense that he is an employee of Philips. The prototype system involved in this study is currently only a research prototype and is not for commercial use. None of the other authors have any conflicts of interest.

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95. The relationship between the tumour microenvironment and epithelial-mesenchymal transition in colorectal cancer

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Background: Epithelial-mesenchymal transition (EMT) is the process whereby tumour epithelial cells dedifferentiate into mesenchymal cells, therefore conferring these cells an invasive and metastatic phenotype. EMT has been shown to be related to high-risk clinicopathologic factors and poorer cancer specific survival in colorectal cancer. The relationships between EMT and the tumour microenvironment have not been fully characterized.

Materials and Methods: The expression of E-cadherin, β-Catenin and Zinc-finger-encoding-binding-protein-1 (Zeb-1) was assessed by immunohistochemistry in a tissue microarray comprising 272 patients with Stage I-III colorectal cancer. Tissue specimens were taken from the tumour core. The relationships between the expression of these biomarkers and clinicopathologic factors, tumour microenvironment factors and cancer specific survival were assessed.

Results: Low membrane expression of E-cadherin was associated with venous invasion (P = 0.011). A high total Zeb-1 expression was associated with peritoneal involvement and poor tumour differentiation (both P = 0.019). A low cytoplasmic β-Catenin expression was associated with a weak Klintrup-Makinen score (P = 0.027) and a high tumour stroma percentage (P = 0.020). An EMT score was computed which comprised (1) low membrane E-cadherin, (2) absent membrane β-Catenin, (3) increased nuclear β-Catenin and (4) high total Zeb-1. A high EMT score was associated with a low Klintrup-Makinen score (P = 0.050), a low CD3 infiltrate and a low CD8 infiltrate at the invasive margin (P = 0.01 and P = 0.017, respectively). On multivariate analysis of tumour microenvironment factors and TNM stage, a high EMT score was associated with a low Klintrup-Makinen score (P = 0.050), a low CD3 infiltrate and a low CD8 infiltrate at the invasive margin (P = 0.01 and P = 0.017, respectively). On multivariate analysis of tumour microenvironment factors and TNM stage, a high EMT score was associated with poorer cancer specific survival (HR = 2.01 (95% CI = 1.05-3.85) P = 0.034), independent of TNM stage (HR= 1.64 (95% CI = 1.02-2.65) P = 0.042), CD3 infiltrate at the invasive margin (HR= 2.26 (95% CI = 1.22-4.20) P = 0.010) and tumour stromal percentage (HR= 2.14 (95% CI = 1.24-3.71) P = 0.006). Further, a high EMT score was correlated with poorer cancer specific survival in patients who were node-negative and venous invasion negative (P = 0.045).

Conclusions: This study shows that a combined EMT score as assessed in the tumor core is associated with poorer cancer specific survival in colorectal cancer independent of TNM stage and tumour microenvironment and may also identify early stage patients at risk of recurrence. Additionally, it supports increasing evidence that EMT as assessed by its biomarker alterations is not confined to the invasive margins of tumors. Moreover, an increased immune reaction at the invasive margin was associated with a low EMT score and may reflect the protective effect of adaptive immune responses in colorectal cancer.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.090

96. Differences in adjuvant chemotherapy administration for rectal cancer patients - a EURECCA international comparison

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8 Comprehensive Cancer Center South, Eindhoven, Netherlands

Background: Considerable debate exists on the role of adjuvant chemotherapy for rectal cancer patients after preoperative (chemo)radiotherapy and TME surgery, and trials did not give a definitive answer so far. The aim of this large population-based international comparison, using country as instrumental variable, is to compare treatment strategies and survival in rectal cancer patients among seven European countries. This could lead to new insights on the value of adjuvant chemotherapy for rectal cancer patients.

Material and methods: We used population-based national cohorts from Belgium (BE), the Netherlands (NL), Sweden (SE), Denmark (DK), and Spain (ES), as well as two regional cohorts from Italy (IT), and Lithuania (LT), including operated stage I-III rectal cancer patients diagnosed between 2004 and 2009. Country will be used as instrumental variable.

The proportion of adjuvant chemotherapy administration was compared, stratified by stage. Relative survival will be calculated for all participating countries defined as the ratio of observed survival to the expected survival based on the matched general population.

Results: We included a total of 35,830 operated rectal cancer patients aged 18 years and older in seven countries. The proportion of adjuvant chemotherapy administration varied between 1.2% (SE) and 52.1% (ES) for stage I rectal cancer (including patients who were downstaged after chemoradiation), between 3.0% (NL) and 65.5% (ES) for stage II rectal cancer, and between 12.1% (LT) and 69.1% (ES) for stage III rectal cancer. Relative survival will be calculated, and will also be presented during the congress.

Conclusion: This international comparison demonstrates large variation in the use of adjuvant chemotherapy between seven European countries. The final results of this study could lead to changes in adjuvant treatment administration, and has the ultimate goal to provide a better founded and individualised guideline for stage I-III rectal cancer patients.

No conflict of interest.

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97. Intraoperative red blood cell salvage in locally recurrent rectal cancer patients
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Background: Surgical resection of local recurrent rectal cancer (LRRC) is often challenging. The anatomy is disturbed after prior surgery for the primary tumour. To achieve a radical resection, an extra anatomical resections is often required. These comprehensive procedures are often associated with increased blood loss and relatively high morbidity and mortality rates. It is unclear if it is safe to use intraoperative red blood cell salvage (ICS) in the treatment of patients with local recurrent rectal cancer. The objective of this study is to evaluate if the use of autologous blood through the cell saver is safe in patients with LRRC, regarding survival and complication rates.

Material and methods: The Catharina hospital is a national referral centre for patients with recurrent rectal cancer. The amount of blood products, the quantity of blood aspirated by the ICS and the blood volume returned to the patients was registered. Patient follow up was enrolled in a database; complications post-operative, presence of local recurrence, metastasis and overall survival was reported. Follow up ranged from 0 to 227 months, with a median of 40 months.

Results: From 1994 until 2013, a total of 264 patients (mean age 63 year; 159 male, 105 female) were treated with curative surgery. Patients were subdivided in two groups: patients who did or did not receive blood from the ICS. The mean blood loss was 6705cc (range 0-34000cc) of which 1533cc (range 72-6300cc) was returned with the ICS during surgery. The amount of blood loss was larger in the ICS group in contrast to patients in the non ICS group with an amount of blood loss >5L 65% vs 27%. More intra-abdominal abscesses occurred in the ICS group compared to the non ICS group (13% vs 2%), most likely due to the higher amount of blood loss in the ICS group. Multivariable analysis showed no influence of blood loss or blood products influencing the oncological outcome. The 5 year cancer specific, distant metastasis free, local recurrence free, relapse free and overall survival was 41,49,52,33 and 35% respectively. The survival rates between the two groups did not differ significantly.

Conclusions: The use of the cell saver in the treatment of patients with LRRC is safe and does not lead to additional complications. No disadvantageous effects were found concerning the oncological outcome, when comparing patients treated with the ICS and patients treated without the ICS. The use of the ICS should not be omitted because of fear for worse oncological outcome and should be implemented in the treatment of patients with LRRC.

No conflict of interest.
Background: Desmoid fibromatosis (DF) carries a significant morbidity and a recognised mortality. The optimal management of DF remains unclear and there are limited diagnostic or treatment algorithms specific to this complex condition. This risks unrecognised variability in patient management. We aim to quantify this problem by investigating the current approach of clinicians managing this DF in the United Kingdom.

Materials and methods: A case of intra-muscular limb girdle DF in a fit 65 year old patient was devised. Surgical and oncological members of the British Sarcoma Group were questioned on how they would manage this case in 3 scenarios; primary disease with neurovascular involvement, and disease recurrence following a previous R0 resection. Initial management, management of symptomatic disease progression, and clinical and radiological follow up regimes were investigated. Participants were also asked how they would manage the 3 devised scenarios in a 25 year old patient.

Results: 18 specialist sarcoma surgeons, 15 clinical oncologists and 10 medical oncologists responded. DF management is generally shared by surgeons and oncologists working within sarcoma multi-disciplinary teams within the UK. Variation existed in the chosen initial management of primary DF with function sparing surgery possible (observation 43%; resection 43%), primary DF with neurovascular involvement (observation 19%; radiotherapy 23%; hormone therapy and NSAIDs 42%) and for cases of DF recurrence (observation 21%; radiotherapy 33%; hormone therapy and NSAIDs 21%). There was a tendency towards surgical resection of symptomatic disease progression (59% respondents). Clinical follow up was selected 3 months post intervention in 64% of scenarios. Follow up imaging was selected 3 or 6 months post intervention in 54% and 27% of total cases respectively. Other than a general reluctance to use first line radiotherapy in the 25 year old patient, management strategies were similar regardless of age.

Conclusion: Despite recent publications reporting on the outcome of DF significant variation still exists in clinicians' choices of primary and recurrent DF management. We believe formalised guidelines reflecting the current body of evidence may reduce this problem and optimise care.

<table>
<thead>
<tr>
<th>Patient</th>
<th>Sex</th>
<th>Age</th>
<th>Primary</th>
<th># of PHP Treatments</th>
<th>hPFS (days) ** = ongoing hepatic response</th>
<th>Response by RECIST (% tumor measurement change (+/-) from baseline)</th>
<th>Follow up (months)</th>
<th>Survival overall (months) after Dx of Metastatic disease</th>
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<td>F</td>
<td>55</td>
<td>Ocular</td>
<td>3</td>
<td>413</td>
<td>−58.6 (PR)</td>
<td>35</td>
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<tr>
<td>3</td>
<td>F</td>
<td>68</td>
<td>Ocular</td>
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<td>0</td>
<td>+84.9 (PD)</td>
<td>5.9</td>
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<td>228</td>
<td>−38.6 (PR)</td>
<td>8.3</td>
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<td>5</td>
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<td>47</td>
<td>Cutaneous</td>
<td>4</td>
<td>252</td>
<td>−11.1 (SD)</td>
<td>8.7</td>
<td>8.8</td>
<td>Dead</td>
</tr>
<tr>
<td>6</td>
<td>M</td>
<td>73</td>
<td>Ocular</td>
<td>3</td>
<td>453</td>
<td>−72.1 (PR)</td>
<td>24.2</td>
<td>24.5</td>
<td>Dead</td>
</tr>
<tr>
<td>7</td>
<td>M</td>
<td>65</td>
<td>Cutaneous</td>
<td>2</td>
<td>1528**</td>
<td>−43.6 (PR)</td>
<td>54</td>
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<td>Alive</td>
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<tr>
<td>8</td>
<td>F</td>
<td>59</td>
<td>Unknown primary</td>
<td>3</td>
<td>181</td>
<td>−4.0 (SD)</td>
<td>22</td>
<td>22</td>
<td>Alive</td>
</tr>
<tr>
<td>9</td>
<td>F</td>
<td>51</td>
<td>Ocular</td>
<td>1</td>
<td>121</td>
<td>−8.1 (SD)</td>
<td>4.4</td>
<td>4.4</td>
<td>Dead</td>
</tr>
</tbody>
</table>

(continued on next page)
Conflict of interest:
Advisory board: Delcath Systems
Corporate-sponsored research: Delcath Systems

http://dx.doi.org/10.1016/j.ejso.2014.08.096

101. 99mTc-Tilmanocept (TcTm) provides stably localised detection of lymph nodes (LN) in melanoma across all anatomic locations regardless of body mass index (BMI), or day of surgery

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Background: Two Phase 3 studies evaluating the performance of TcTm for mapping LNs in melanoma patients were completed. Key components of this performance were localization concordance with vital blue dye (VBD), pathology assessment of the LNs and assessment of localization and degree of localization by anatomic region relative to the location of the tumor.

Methods: Two Phase 3, prospective, open-label, multicenter comparative studies of TcTm and VBD as lymphoid tissue targeting agents in patients with melanoma undergoing lymph node mapping were conducted. Both studies were performed in patients with cutaneous melanoma. Patients received TcTm (50mcg) by injection in close proximity to the primary tumor either the day of (0.5 mCi) or the day before surgery (1-2 mCi) and VBD at time of surgery. All patients underwent preoperative imaging for TcTm localization and were imaged intraoperatively. LNs were removed based either on localization of VBD, TcTm or both. An analysis of the overall performance of TcTm was conducted by anatomic region, BMI, and day of surgery for localization time, degree, concordance with VBD, and pathology assessment.

Results: When TcTm was assessed by anatomic region for time to localization, degree of localization (nodes/patient/region) and pathology assessment, there was no difference between any anatomic regions for any of the performance metrics for TcTm. TcTm significantly outperformed VBD on a basis of overall anatomic region diversity. Additionally, there was also no effect of BMI or day of surgery on TcTm performance.

Conclusions: 99mTc-Tilmanocept provides reliable and rapid lymphatic mapping with performance in melanoma patients independent of anatomic location, BMI, or day of surgery (relative to injection day).

Conflict of interest: Other substantive relationships: employees

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102. Aggressive angiomyxoma of the female perineum: Outcomes after conservative organ-preserving surgery

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Background: Aggressive angiomyxoma is a very rare soft tissue tumour that typically arises in the female perineum and is characterised by an infiltrative nature with histological involvement of adjacent perineal organs. It has a propensity for local recurrence but not metastatic spread. In order to confidently gain negative surgical margins histo-pathologically, mutilating exenterative surgery would be necessary as these are large tumours confined to the perineum/pelvis and are often in close proximity to the anal sphincter, uro-genital tract and pelvic floor. We report outcomes after a symptom based conservative approach to management either with conservative management for asymptomatic disease or planned organ-preserving marginal resections large volume symptomatic disease.

Methods: Patients managed at the Royal Marsden Hospital with a diagnosis of aggressive angiomyxoma between 2001-2013 were identified from a prospective pathology database. A retrospective review of electronic patient records was performed to identify demographics, treatment strategies and outcome.

Results: Fifteen patients were referred between 2001 and 2013, including patients primary (n=8) and recurrent (n=7) disease. All patients were female (age 17 to 65 median 48 yrs). The mean tumour size was 9 cm (2-17cm) Most patients (n=11) presented with a swelling in the perineal or gluteal region. Three patients were initially misdiagnosed as a perianal abscess or Bartholin’s cyst. Investigations and surgical approaches for both primary and recurrent disease are shown in Table 1. In total nine patients with symptomatic large volume masses underwent marginal organ preserving resections of the tumour alone. Of these nine patients, seven had R1 resections and there was one R0 and one R2 resection respectively. Mean follow-up was 4 years (0-10 years). Seven of the nine patients who underwent surgery developed local recurrences. Six patients were asymptomatic and treated conservatively with active surveillance by clinical examination and regular pelvic magnetic resonance imaging (MRI). One patient underwent further resection for symptomatic relief and was then placed on surveillance. No patient developed distant disease. All patients on active surveillance remained asymptomatic with no further treatment required.

Conclusions: Although intentional marginal surgery is associated with a high local recurrence rate, most patients are asymptomatic with non progressive small volume recurrences over protracted follow up. Upfront conservative management is also well tolerated. Mutilating exenterative surgery is not necessary for this condition and should be avoided as a primary strategy.

Table 1.

<table>
<thead>
<tr>
<th>Primary Disease (n=9)</th>
<th>Recurrent disease (n=6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Treatment Imaging</td>
<td>9</td>
</tr>
<tr>
<td>MRI</td>
<td>5</td>
</tr>
<tr>
<td>CT</td>
<td>1</td>
</tr>
<tr>
<td>Treatment</td>
<td>5</td>
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<td>Surgery</td>
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<td>Conservative</td>
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<tr>
<td>Surgical approach</td>
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<tr>
<td>Intra-peritoneal</td>
<td>2</td>
</tr>
<tr>
<td>Perineal</td>
<td>1</td>
</tr>
<tr>
<td>Combined</td>
<td>0</td>
</tr>
<tr>
<td>Visceral resection</td>
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</tr>
</tbody>
</table>
103. An analysis of the effectiveness of rapid access primary care referral pathways for the early diagnosis of soft tissue sarcomas over a 10 year period

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**Background:** Survival in Soft Tissue Sarcoma (STS) is determined principally by the size and grade of the primary tumour. In the UK the mean maximum dimension at presentation of a STS is 8cm indicating that late presentation is a major factor in poor outcome. Rapid access pathways for potential STS referred directly from primary care based on clinical features were developed over a decade ago. We have analysed possible changes in the effectiveness of such pathways in diagnosis of STS over a 10 year period with particular emphasis on clinical and radiological referral criteria.

**Materials and methods:** Electronic case records of all patients referred to a Regional Sarcoma Service on a rapid access (Two Week Rule pathway) were studied over two periods a decade apart (60 months commencing Jan 2004 (n=154 referrals) and 12 months commencing Jan 2013 (n=324 referrals)). The final definitive diagnosis of sarcoma was based on definitive histopathology. Supplementary analytical genetic expressions of MDM-2 expression were used to distinguish well differentiated liposarcoma commencing Jan 2004 (n=154 referrals) and 12 months commencing Jan 2013 (n=324 referrals). The final definitive diagnosis of sarcoma was based on definitive histopathology. Supplementary analytical genetic expressions of MDM-2 expression were used to distinguish well differentiated liposarcoma.

**Results:** There was almost a 10 fold increase in annual referral rate over the 10 year study period. The total STS diagnosis rate was 11% (n=36) in 2013 compared with 7% (n=11) in 2004-8. In 2013 a further 13 patients with incidental non-sarcomatous malignancies were identified giving a total malignant diagnosis rate of 15%. The percentage of referrals on clinical criteria alone (as opposed to referrals after imaging or biopsy) was 40% (n=127) in 2013 compared with 66% (n=102) in 2004-8. The STS diagnosis rate based on clinical referral criteria was 6.6% (n=9) in 2013 compared with 1% (n=2) in 2004-8. In 2013 the median maximal tumour dimension in clinically identified STS was 8 cm (range 3-22) and the median length of history was 7 months (range 3-18 months).

Of the 127 patients who were referred on the basis of suspicious imaging, the STS diagnosis rate was 19% (n=24) which was very similar to the diagnosis rate a decade previously. The median maximal tumour dimension in the radiologically identified STS was 10cm (range 3cm -10cm). (Magnetic Resonance Imaging (MRI) was the most accurate imaging modality for identifying malignancy with 20% of putative malignant MRI diagnoses proving to be correct compared with 13% when ultrasound was the sole imaging modality. The commonest non malignant diagnosis were lipomas although a number of other benign solid mesenchymal tumours (such as fibromatosis) were also identified.

**Conclusions:** A considerable increase in the usage of rapid referral pathways has not led to earlier diagnosis of STS. Clinical referrals still result in a low diagnostic rate and large tumours. Radiologically driven referrals have a higher diagnostic rate for STS but patients still present with advanced tumours. Extending the use of rapid referral pathways is unlikely to improve the earlier diagnosis of STS. Emphasis should be placed on easier access to cross sectional imaging when the diagnosis of STS is entertained.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.099

104. The false negative rate (FNR) for $^{99m}$Tc-tilmanocept is crucially low across breast cancer (BC), melanoma (ME), and head/neck squamous cell carcinoma (HNSCC), portending good patient outcome

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1 Navidea Biopharmaceutical, Clinical, Dublin, USA

**Objective:** To evaluate $^{99m}$Tc-tilmanocept for lymph node biopsy FNR multiple solid tumor types, including BC, ME (all sites), and HNSCC (cutaneous and oral, the latter including tongue, floor-of-mouth, gingiva and lip).

**Methods:** A combined evaluation of FNR of three Phase 3 studies of $^{99m}$Tc-tilmanocept was conducted. This involved a pool of 384 patients all of whom were screened, consented, and evaluable in the respective studies as Tis/T1-T4, N0, M0. The 3 studies consisted of two Phase 3 studies (NEO3-05; N=149) and (NEO3-09; N=152) each including BC and ME and providing path-positive patients, and a HNSCC study (NEO3-06; N=83) with complete lymph node dissection and pathology.

**Results:** Table 1 indicates the combined FNR of the performance of $^{99m}$Tc-tilmanocept across a broad range of tumor types (ME, BC & HNSCC). There are no significant differences between tumor types or stage of tumor relative to $^{99m}$Tc-tilmanocept performance.

**Conclusions:** $^{99m}$Tc-Tilmanocept provided stable overall detection of lymph nodes with low to no FNR in specific studies, tumor types and tumor stage. The use of $^{99m}$Tc-tilmanocept in lymphatic mapping for solid tumors appears to be stable across a span of solid tumor types, anatomic locations, and tumor stages.

**Conflict of interest:**

Other substantive relationships: all authors are employees of Navidea Biopharmaceuticals.

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105. Sentinel lymph node biopsy for melanoma using a magnetic technique: Primary outcome of the MELAMAG Multicentre Trial
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1 King’s College London, Research Oncology, London, United Kingdom
2 Norfolk and Norwich University Hospital, Plastic Surgery, Norwich, United Kingdom
3 Guy’s and St Thomas’ Hospitals, Plastic Surgery, London, United Kingdom
4 Medisch Spectrum Twente, Surgery, Enschede, Netherlands
5 University College London Hospitals, Radiology, London, United Kingdom
6 St. Andrews Centre for Plastic Surgery and Burns, Burn Service, Chelmsford, United Kingdom

Background: Sentinel lymph node biopsy (SLNB) in melanoma is currently performed using pre-operative lymphoscintigraphy and dual technique (radioisotope and blue dye). The novel magnetic technique is non-radioactive and provides both a colour change (brown/black) in the sentinel lymph node (SLN) and can be detected intra-operatively using a hand-held magnetometer. The MELAMAG Multicentre Trial (UKCRN ID:14011), a phase II international trial, compared the magnetic technique to the standard dual technique.

Materials and methods: Patients with primary cutaneous melanoma scheduled for SLNB and who were clinically AJCC stages IB-IIC, were recruited from 4 centres in the United Kingdom and the Netherlands. Surgeons at each site were trained in the magnetic technique prior to operating independently. We defined this trial with 80% power, a 5% one-sided significance and a proportion discordance of 0.052. The trial assumed a 97% SLNB identification rate with a limit difference for equivalence of -5%. SLNB procedures were performed after administration of radioisotope (followed by a lymphoscintigram), magnetic tracer (Sienna+, Endomagnetics Ltd.) and blue dye (Patent V Blue, Guerbet, France).

Results: A total of 133 patients were recruited and 129 patients were available for final analysis (4 excluded). In these patients, 166 SLNB procedures were undertaken and 257 nodes were excised. The sentinel node identification rate was 97.7% (126/129) with the standard technique and 95.3% (123/129) with the magnetic technique (2.3% difference; 95% upper confidence limit 5.4%; 5.4% discordance). With radioisotope alone the SLN identification rate was 95.3% (123/129) and compared favourably with the magnetic technique (0.0% difference; 95% upper confidence limit 4.5%; 7.8% discordance). The lymph node retrieval rate was 1.99 nodes per patient overall, 1.78 with the standard technique and 1.88 with the magnetic technique.

Conclusion: The magnetic technique is feasible for SLNB in melanoma with a high SLN identification rate and is non-inferior to the radioisotope alone. Pre-operative lymphoscintigraphy is still required and further research into a non-radioactive alternative, is needed.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.101

106. Initial UK experience of melphalan percutaneous hepatic perfusion (PHP) for treatment of inoperable ocular melanoma metastases
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1 Southampton General Hospital, Department of Radiotherapy, Southampton, United Kingdom
2 Southampton General Hospital, Department of Oncology, Southampton, United Kingdom
3 Southampton General Hospital, Department of Surgery, Southampton, United Kingdom
4 Southampton General Hospital, Department of Anaesthetics, Southampton, United Kingdom

Background: Ocular melanoma (OM) is a rare and aggressive cancer that frequently metastasises to the liver in a diffuse and inoperable pattern, but without extra-hepatic spread. It is resistant to systemic chemotherapy and median survival is 4-6 months. PHP has been reported to prolong hepatic progression free survival in metastatic OM.

Aim: This study reviews experience in a single UK centre using PHP to treat patients with inoperable, hepatic OM metastases.

Results: From June 2012 to June 2014, 15 patients were selected for PHP by the metastatic OM MDT. 25 treatments were completed in 14 patients, (median 2, range 1-3), 1 patient was not possible to treat due to distorted anatomy and died of disease progression within 2 months.

8 Male: 6 Female. Median age 51 years range 27-68
There was no procedure related mortality.
Four patients had complications: 1 reversible cardiac ischaemia, 1 ar- rythmia, 1 neutropenia requiring GCSF, 1 access site haemorrhage. Median length of stay was 3 days (range 1-5). Median procedure time was 168 minutes (range 135 to 246).
Median follow up after first PHP treatment was 8 months (range 1-22), 11/14 patients had a radiological response by RECIST criteria, including 2 patients with a complete response.
Two patients had early progression (1 hepatic, 1 extrahepatic) and died (4 and 9 months respectively) after a single treatment. 4 patients are alive with progressive disease; 2 extra-hepatic (22 and 18 months) and 2 hepatic (7 and 8 months).
8 patients have a sustained response (median 7 months, range 2-19).

Conclusion: PHP can be performed safely in carefully selected patients and achieves good response rates in patients with inoperable ocular melanoma liver metastases. Further follow up is required to quantify the long term survival benefit.

Conflict of interest:
Other substantive relationships: Pearce, Stedman and Fennell have had travel, accommodation and meal expenses paid by Delcath on 4 occasions in the last year as sponsorship whilst attending clinical or scientific meetings

http://dx.doi.org/10.1016/j.ejso.2014.08.102

31 October 2014 11:30 — 12:40
Proffered Paper Session: Liver Metastases

107. High NQO1 expression in primary colorectal cancer predicts chemoresistance in colorectal liver metastases
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1 University of Liverpool, Liverpool, United Kingdom
2 Countess of Chester Hospital, Chester, United Kingdom
3 Aintree University Hospital, Liverpool, United Kingdom

Background: Colorectal cancer is the fourth commonest cancer in the UK, and the second commonest cause of cancer-related death. Liver
surgery for colorectal liver metastases is increasing, because neoadjuvant chemotherapy has brought a greater number of patients to resection. A knowledge of the biological phenotype of colorectal liver metastases would be invaluable in informing clinical decision making; however, deriving this information from the metastatic lesions is not feasible until after resection. By contrast, material from the primary tumour is routinely available. We aimed to establish the feasibility of using biological information from a primary colorectal tumour to inform and predict response to neoadjuvant chemotherapy for liver metastases.

Methods: Fresh tissue from both primary colorectal tumour and liver metastases, and from normal colonic mucosa and liver parenchyma, were acquired at the time of resection in 17 patients and subjected to comparative proteomic analysis using isobaric tagging for relative quantification. Data were analysed with Protein Pilot (Abbott, Framingham, MA, USA); proteins with expression significantly different across the different tissue types were subjected to pathway analysis with Metacore software. Stratification of patients into those showing low or high response to chemotherapy allowed the identification of proteins that were differentially expressed in the two groups and thus represented potential response biomarkers.

Results: 5768 discrete proteins were identified, with 1814 present in all samples and therefore used for analysis. Principal component analysis of relative protein abundance separated liver parenchyma from other tissue types, but did not separate individual patients. No proteins were significantly different between primary and metastatic tumours. 25 proteins were significantly (p<0.05) differentially expressed in the primary tumour compared with normal colon, whereas 53 were different between the liver metastases and normal colon. Five candidate proteins that predict histopathological response to fluorouracil-based chemotherapy regimens were identified, including the FAD binding protein NQO1.

Conclusion: Proteomic sequencing of matched primary and metastatic colorectal cancer samples is feasible with high protein coverage. Analysis of dysregulated proteins revealed putative pathways that might be implicated in carcinoma progression and metastasis or serve as potential novel drug targets. The high degree of similarity between the primary and secondary proteomes suggests that information from primary tissue is predictive of the metastatic phenotype. Further targeted analysis of proteins involved in drug activation and metabolism, as well as the validation of NQO1 as a potential biomarker and drug target, is underway.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.103

108. Liver resection for colorectal liver metastases in an ageing population: A risk worth taking?
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Introduction: Recent advances in surgical technique, anaesthesia and intensive care has greatly reduced morbidity and mortality associated with liver resection for colorectal liver metastases. This could widen the spectrum of candidates suitable for surgical treatment, particularly amongst the elderly population. We assessed the outcomes of the elderly (age 70+) following liver resection for colorectal metastases at our unit and compared these with a younger patient population (age <70).

Method: Patients undergoing liver resection for colorectal liver metastases at our unit from 01/01/03 to 31/12/12 were included for study. Patients were divided into elderly (age 70+) and younger (n=140) cohorts. Patient and tumor demographics were similar in both groups, although the younger cohort tended to have more nodal disease at presentation (p=0.008) and also tended to receive more adjuvant chemotherapy (p<0.001). R1 resection rate was 8.8% with no difference seen between either group (p=ns). Perioperative blood loss, hospital stay, 90-day mortality and morbidity were also similar (p=ns). Overall 5-year survival was 43% and similar in both groups as was disease free survival (p=ns).

Conclusion: Mortality, overall and disease free survival was similar in our elderly compared to younger population, although elderly patients tended to receive less adjuvant chemotherapy. Our data supports growing evidence that elderly patients should not be excluded from liver resection for colorectal liver metastases based on chronological age alone.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.104

109. Surgical resection of colorectal liver metastases: Does nodal status of the primary tumour have prognostic value after surgery for CRLM?
E. Van der Stok1, W.J. Albersda1, M. Reitsma1, J. Rothbarth1, D.J. Grunhagen1, C. Verhoe1
1Daniel den Hoed Cancer Center, Surgery, Rotterdam, Netherlands

Background: Over 50% of patients suffering from colorectal cancer develop metastases, with the liver being prone to distant disease progression. With modern surgical therapies, patients with colorectal liver metastases (CRLM) experience 40-60% 5-year survival. Various prognostic variables determine survival after resection of CRLM, which are included in Fong’s clinical risk score (CRS). Lymph node status of the primary tumour is included in this CRS. Since its publication in 1999, standard adjuvant chemotherapy for lymph node positive colon cancer patients was introduced. No adjuvant therapy is administered in rectal cancer patients in the Netherlands. This study evaluated the prognostic value of nodal status of primary colon tumours in patients undergoing resection for CRLM, in the era of multimodal therapies.

Methods: Between January 2000 and December 2011, 623 patients underwent curative surgery for CRLM. Synchronous metastases were excluded (n=330): thus, systemic treatment had only been administered for the primary tumour (adjuvant), and nodal status of the primary tumour was known before resection of CRLM. In 7 patients nodal status was unknown. The definitive study population comprises 286 patients. Patient characteristics, treatment of primary tumour and its CRLM were analysed with regards to overall survival (OS) after liver resection.

Results: 5-year OS of patients in this study was 41%. Only Fong’s CRS was prognostic (5-year OS: high risk: 33% vs low risk: 43%, p=0.04). 5-year OS was similar for colon and rectal cancer (42% vs 40%, p=0.62). In primary lymph node positive colon cancer, 5-year OS was 42%, similar to lymph node negative tumours (41%, p=0.99). Patient characteristics were akin, except for administration of adjuvant chemotherapy (p<0.001). In primary lymph node positive rectal cancer patients, 5-year OS was 32% vs 49% in lymph node negative cancer (p=0.04). Patient characteristics in this group differed exclusively on basis of T-stage of the primary tumour (T3-4: N+ 87%, NO 53%, p<0.001). However, solely lymph node status was prognostic in primary rectal cancer patients.

Conclusion: The current study demonstrates that nodal status of primary colon cancer has no prognostic value in patients undergoing resection for CRLM. In contrast, nodal status in primary rectal cancer is significantly prognostic. A possible explanation might be the introduction of adjuvant chemotherapy for node positive colon cancer after publication of Fong’s CRS.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.105
Background: Irresectable liver metastases can be treated with systemic therapy, which aims to limit the disease, extend survival or turn the metastases into resectable ones. Some patients however suffer from systemic therapy and its side effects or the disease is progressive under these therapies. For these patients, with metastases confined to the liver, isolated liver perfusion may be an alternative because it has the advantage of controlling liver disease and decreasing treatment related symptoms and complications. In the past this was performed during an extensive surgical procedure, with satisfying results but an increased morbidity and mortality related to the open procedure prohibited wide clinical acceptance. Recently, a new fully percutaneous procedure in which hepatic infusion with simultaneous chemofiltration was developed. Besides decreased morbidity and mortality, this procedure can be performed several times, expectedly leading to a higher percentage of patients that might qualify for a radical resection after perfusion.

Material and methods: A prospective phase II trial is started in the Leiden University Medical Center and Erasmus Medical Center investigating the effects of percutaneous hepatic perfusion (PHP) with melphalan. We aim to include 34 patients with irresectable liver metastases of colorectal carcinoma and 20 patients with uveal melanoma. The primary end-points are the response rate expressed as the RECIST 1.1 criteria after two procedures and the percentage of patients whose metastases turned into resectable. Secondary end-points are safety, overall survival, progression free survival and hepatic progression free survival, duration of stable disease and quality of life, according to EORTC questionnaires.

Results: Seven procedures have been performed in five patients up to now. All procedures were uncomplicated. Post procedural recovery was fast with a mean length of hospital stay of 2.7 days.

On CT scans 5 weeks after the first treatment all target lesions decreased in size and were more hypodense. No new lesions were found in the liver. According to the analyses of the pharmacokinetic sampling, the filter removes up to 93% of the melphalan. The small systemic leakage of melphalan lead to a decrease in white blood cell count and thrombocytes after the first procedure. One severe adverse event, febrile neutropenia, was reported. Anticipating to this, hematopoietic growth factors were administered after the first procedure. One severe adverse event, febrile neutropenia, was reported. Anticipating to this, hematopoietic growth factors were administered after the first procedure.

Conclusion: Up to now, percutaneous hepatic perfusion appears to be an effective and safe procedure in selected patients with irresectable liver metastases of colorectal cancer or uveal melanoma. Moreover, pharmacokinetic analysis showed indeed low systemic exposure to melphalan.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.106

111. Prehabilitation before liver surgery
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²Liverpool Cancer Research UK Trials Unit, Liverpool, United Kingdom
³NHRI Trials Unit, Southampton, United Kingdom

Background: Following surgery fitter patients have shorter hospital length of stay and fewer complications. Prehabilitation programs aim to improve preoperative fitness. No successful prehabilitation program has been delivered in just 4 weeks and none in patients with metastatic cancer. This prospective trial sought to establish the feasibility of a four-week prehabilitation program in patients with colorectal liver metastasis prior to hepatectomy.

Methods: This prospective randomised controlled trial sought to improve the cardiopulmonary exercise test (CPET) assessed anaerobic threshold (AT) by 1.5ml/kg/min. Patients prior to hepatectomy for colorectal liver metastasis were randomised and randomised to either a 4-week supervised cycle interval training program or standard care. A CPET was conducted at baseline and prior to surgery. Secondary outcome measures included quality of life (SF-36, EORTC), and Duke’s activity questionnaire. The study was not powered for perioperative outcomes but data was collected to power future studies.

Results: 38 patients were recruited (20 Prehab, 18 Standard Care), 3 (8%) patients withdrew prior to study completion (2 Standard Care, 1 Prehab). Adherence to the exercise program was high at 98.7%. There was no significant difference in baseline characteristics between the cohorts including CPET values, age, sex distribution, BMI, comorbidities, smoking status, medication and prior chemotherapy treatment. Patients in Standard Care had a drop in AT from 11.4 ml/kg/min to 11.0 ml/kg/min (p=0.09), with no change in VO₂peak (18.7 ml/kg/min) (p=0.96). Patients in the prehabilitation program had an increase in the AT from 11.2 ml/kg/min to 12.2 ml/kg/min (p<0.05) and an increase in VO₂peak from 17.6 ml/kg/min to 19.4 ml/kg/min (p=0.02). When compared to standard care patients on the prehabilitation study arm had a 1.5ml/kg/min higher AT (p=0.03), and a 2.0 ml/kg/min higher VO₂peak (p=0.05) following prehabilitation. There was an improvement in overall SF-36 score by 11 points (17%) in the prehabilitation program (p<0.01).

Conclusions: A four-week prehabilitation program can deliver clinically relevant improvements in patient fitness, and improved preoperative quality of life. A larger prospective study is needed to evaluate the effect of prehabilitation on perioperative outcomes, and the economic cost of delivering care.

No conflict of interest.

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113. Small intestinal neuroendocrine tumours with liver metastases and resection of the primary: Prognostic factors for decision making
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Background: Patients with small intestine neuroendocrine tumors (SI-NETs) present with liver metastases in 50-75% of cases at diagnosis. The aim of this study was to assess prognostic factors in patients with SI-NET liver metastases after primary tumor surgical removal with or without liver surgery or radiofrequency ablation (RFA). The primary endpoint was disease-specific survival (DSS).

Material and methods: Seventy-eight consecutive SI-NET patients with liver metastases who undergone primary tumor surgical removal between 1996 and 2011 were extracted from the institutional tumor registry.

Results: Liver tumor burden was < 25% in 43 (55.1%) 25-50% in 30 (38.5%) and >50% in 5 (6.4%) patients. For the whole cohort of patients DSS at 3, 5 and 8 years was 93.2%, 83.6% and 77.3%, respectively. Fifteen patients who underwent radical liver surgery were all alive with a median survival of 106 months (range 18-152 months). In multivariate analysis the Ki-67 index in a continuous fashion significantly correlate with prognosis.
114. Long term survival following a randomized controlled trial of cetuximab plus chemotherapy for patients with KRAS wild-type unresectable colorectal liver-limited metastases

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Background: We have previously reported the effect of cetuximab plus as first-line treatment for unresectable colorectal liver metastases (CLMs). The aim of the present study is to assess this effect on long term survival.

Patients and methods: After resection of their primary tumors, patients with KRAS wild-type synchronous unresectable liver-limited metastases from colorectal cancer were randomly assigned to receive chemotherapy (FOLFIRI [fluorouracil, leucovorin, and irinotecan] or mFOLFOX6 [modified fluorouracil, leucovorin, and oxaliplatin]) plus cetuximab (arm A) or chemotherapy alone (arm B). The primary end point was the rate of patients converted to resection for liver metastases. Secondary end points included tumor response and overall long term survival.

Results: The intent-to-treat population comprised 138 patients; 70 patients were randomly assigned to arm A and 68 to arm B. After a median of 25.0 months of follow-up, the 3-year overall survival (OS) rate and median survival time (MST) for all patients were 30% and 24.4 months, respectively. The R0 resection rates for liver metastases were 25.7% (18 of 70 patients) in arm A and 7.4% (five of 68 patients) in arm B, which were significantly different (P < .01). Patients in arm A had improved objective response rates (57.1% vs 29.4%; P < .01), increased 3-year OS rate (41% vs 18%; P = .013) and prolonged MST (30.9 vs 21.0 months; P = .013) compared with those in arm B. In addition, in arm A, patients who had resection of liver metastases had a significantly improved MST (46.4 vs 25.7 months; P < .01) compared with those who did not undergo surgery.

Conclusions: For patients with initially unresectable KRAS wild-type CLMs, cetuximab combined with chemotherapy improved the resectability of liver metastases and improved response rates and survival compared with chemotherapy alone. The impact of such treatment on mature long term survival will be presented.

No conflict of interest.

31 October 2014 11:30 – 13:00
Proffered Paper Session: Quality Assurance

115. Implementation and evaluation of a public engagement campaign to enhance awareness and early diagnosis of laryngeal cancer in a targeted at risk population

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Background: Attitudes towards cancer and its treatment have been shown to vary by socioeconomic position, with fearful, negative attitudes being heightened in lower socioeconomic groups. Combined with low awareness of cancer signs and symptoms, this can contribute to delayed presentation of cancer, which in turn has a negative impact on patient outcomes.

The aim of this study was to implement and evaluate a targeted public engagement campaign to encourage earlier presentation of laryngeal cancer.

Methods: This study was divided into 3 parts:

1. An epidemiological survey of the rates of head and neck cancer in Humber and East Yorkshire, correlating sub-site of cancer to the geographic location and socioeconomic status. This allowed identification of the local population at most risk of head and neck cancer.
2. The design and implementation of a 6 week public engagement campaign using focus groups, television and radio interviews, billboards, an interactive website and engagement with local GPs.
3. Evaluation of the effectiveness of the campaign using pre and post-campaign surveys. Change in the number of urgent head and neck cancer clinic referrals was also assessed.

Results: The initial survey allowed targeting of the electoral wards with both the highest incidence of head and neck cancer and also the highest rates of smoking and binge drinking. The post-campaign evaluation revealed a significant increase in awareness of the symptoms of throat cancer and good recall of the main campaign message. An immediate and sustained increase in the number of urgent cancer referrals was also observed.

Conclusions: To our knowledge this is the first public engagement campaign targeting laryngeal cancer in the UK. We have demonstrated how to assess loco-regional populations health and then superimpose geographic and socio-economic data to target at-risk populations. This is a model that can be adapted by others for the same or other cancers.

No conflict of interest.

31 October 2014 11:30 – 13:00
Proffered Paper Session: Quality Assurance

116. Obesity and quality of care in colorectal surgery

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Background: Obesity is a world spreading disease and therefore one of the most concerning problems in healthcare outcome and costs. Moreover necessary structural processes that are adapted to this category of patients are expensive. The Dutch Surgical Colorectal Audit (2009-2013) contains 48162 patients and almost 6000 patients with obesity.

To evaluate the problem of obesity in a surgical population these patients were investigated for results and outcome.
Material and methods: Hospital results were reviewed to discuss best practices in obesity care after colorectal surgery and variation between Dutch hospitals.

Categories of obesity were defined according to World Health Organization (WHO) standards. Analysis of comorbidities, and their relation with outcome was performed. A comparison was made between hospitals to assess differences in outcome of obese patients and define best practice.

Results: Comorbidities are present in more than 70% of the patients with obesity. Cardiovascular comorbidity, diabetes and pulmonal problems are present in at least 30% of the obese population. Multivariate analysis shows a strong relation with postoperative morbidity caused by the presence of comorbidity. Variation between hospitals was evident. There was no relation between experience in obese patient care and outcome. Hospitals that were already one of the best performing in the non-obese population also did for the obese population.

Conclusions: Comorbidity and not obesity alone is responsible for postoperative morbidity. Experience in obesity care does not guarantee best surgical outcome concerning complications. Further evaluation of care in best performing hospitals will improve obesity care and decrease hospital variation.

No conflict of interest.

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117. Colorectal auditing: Improving quality of care leads to reduced hospital costs


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Background: In the last decades, healthcare systems are struggling with rising costs and variation in quality of cancer care. Despite well intentioned attempts – like implementing practice guidelines or focus on volume and profitability of service provided – results have been meager. In order to facilitate the discussion of reducing costs, the primary objective of the current study was to explore the association between quality and hospitals costs of colorectal cancer surgery.

Material and methods: More than 9,000 colorectal cancer patients in 29 Dutch Hospitals who underwent resection between 2010 and 2012 and were registered in the Dutch Surgical Colorectal Audit were analysed. Costs for every patient (from day of primary surgery up to 90 days after discharge) were measured uniform in all participating hospitals using comprehensive Activity Based Costing methodology. Severe complication rate, mortality rate and cost per patient were analyzed between the three participating hospitals. Severe complication (ICU) were measured uniform in all participating hospitals using comprehensive Activity Based Costing methodology. Severe complication rate, mortality rate and cost per patient were analyzed between the three participating hospitals.

Results: A total of 544,530 patients diagnosed in the period 1992-2012 were included in this study, of which 265,520 patients underwent surgical resection. Over this period an increased incidence was identified for all tumour types, except for gastric carcinomas. Additionally, resection rates decreased for all tumour types, with exception of oesophageal (26.2% to 31.6%) and pancreaticoduodenal carcinomas (17.4% to 27.4%). In the past decade a clear trend towards centralization of resections for oesophageal, gastric, pancreaticoduodenal and lung carcinomas was seen. In all types of carcinomas there was a decrease in 30-, 90-day and 1-year mortality, with the strongest decline in pancreaticoduodenal carcinomas (14.1% to 5.9%) after 30 days, gastric carcinomas (13% to 8.1%) and colon carcinomas (9% to 6%) after 90 days. After centralization in 2004, the 30-day and 90-day mortality after pancreaticoduodenal surgery decreased significantly.

Conclusion: The 30- and 90-day postoperative mortality after low-volume high-risk cancer resections has greatly improved over the past 20 years. This study suggests that in the last decade quality improvement efforts initiated by the ASN, through centralization and surgical auditing, have led to marked improvements in patient outcome. In the next years surgical audits will be used to monitor and analyse variation in postoperative outcomes between hospitals performing high-risk cancer resections, so a further decrease in mortality and morbidity can be achieved.

No conflict of interest.

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118. Is cancer surgery getting safer?


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Background: Improvement of patient safety and quality of care provided by surgeons remains main focus for the Association of Surgeons of the Netherlands (ASN), Healthcare Inspectorate and patient associations in the Netherlands. The association between high morbidity and mortality and low volume high-risk cancer procedures is broadly described in many scientific articles and was the subject of numerous public debates in the last decade. In many European countries, including the Netherlands, this has led to measures aiming to prevent morbidity and mortality after high-risk procedures, such as the centralization of these interventions in specialized centres, clinical audits and other measures to improve patient safety. The main questions are whether these interventions have led to an actual decrease in mortality after high-risk cancer surgery, whether this applies to all high-risk cancer resections and to which extent this effect is attributable to increased hospital volumes.

Material and methods: Patients with oesophageal, gastric, pancreaticoduodenal, colorectal, lung, kidney and bladder carcinomas registered in the Netherlands Cancer Registry (NCR) between 1993 and 2012 were selected. Resection rates and 30-day, 90-day and 1-year postoperative mortality were adjusted for patient, tumour characteristics and adjuvant therapies through regression and multivariate analysis. Results: A total of 544,530 patients diagnosed in the period 1992-2012 were included in this study, of which 265,520 patients underwent surgical resection. Over this period an increased incidence was identified for all tumour types, except for gastric carcinomas. Additionally, resection rates decreased for all tumour types, with exception of oesophageal (26.2% to 31.6%) and pancreaticoduodenal carcinomas (17.4% to 27.4%). In the past decade a clear trend towards centralization of resections for oesophageal, gastric, pancreaticoduodenal and lung carcinomas was seen. In all types of carcinomas there was a decrease in 30-, 90-day and 1-year mortality, with the strongest decline in pancreaticoduodenal carcinomas (14.1% to 5.9%) after 30 days, gastric carcinomas (13% to 8.1%) and colon carcinomas (9% to 6%) after 90 days. After centralization in 2004, the 30-day and 90-day mortality after pancreaticoduodenal surgery decreased significantly.

Conclusion: The 30- and 90-day postoperative mortality after low-volume high-risk cancer resections has greatly improved over the past 20 years. This study suggests that in the last decade quality improvement efforts initiated by the ASN, through centralization and surgical auditing, have led to marked improvements in patient outcome. In the next years surgical audits will be used to monitor and analyse variation in postoperative outcomes between hospitals performing high-risk cancer resections, so a further decrease in mortality and morbidity can be achieved.

No conflict of interest.

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119. Avoidance of overtreatment of breast cancer patients of different ages—A EUSOMA database analysis

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M.W.J.M. Wouters4, J.W. Van Sandick4, On behalf of the Dutch B.P.L. Wijnhoven 4, R. Van Hillegersberg 5, N.E. Kolfschoten 1, the oncological surgical care process. Main purpose of the Dutch Upper GI Surgical Oncology, Amsterdam, Netherlands

Background: Aiming to optimize breast cancer care in Europe in 2008 the European Society of Breast Cancer Specialists (EUSOMA) defined a set of quality indicators for screening, diagnosis, treatment and follow-up. For locoregional treatment four indicators were defined for the purpose of minimising overtreatment of breast cancer patients. This study assesses compliance to these four QIs in different age groups.

Material and methods: From the EUSOMA database, women from across Europe diagnosed with breast cancer between 2003 and 2012 were included. They were categorized into 5 age groups (<40, 40-54, 55-64, 65-75, ≥75 years). Primary outcome was QI compliance, defined as reaching the predefined minimum standard for each QI. Proportions of compliance were described for each age group, analyses were stratified by time period (before and after 2008). QI compliance was compared between age groups using multivariate logistic regression models adjusting for the most important tumour characteristics, hospital and year of diagnosis.

Results: Overall, 41,871 patients with in situ and invasive breast cancer were included. Two of the scrutinized QIs reached the minimum standard (QI 11a: patients with invasive cancer not greater than 3 cm who underwent breast conserving therapy; and QI 11b: patients with non-invasive cancer not greater than 2 cm who underwent breast conserving surgery). After stratifying by age, the minimum standard of QI 11b was not reached in the youngest age group. Concerning the other two QIs (11c: patients with ductal carcinoma in situ who do not undergo axillary lymph node dissection; and 11d: patients with invasive cancer with pN0 who do not undergo axillary lymph node dissection), overall, the minimum standards were not reached. However, in the time period from 2008 on, for both QIs, the minimum standards were achieved in all age groups, except in the youngest age group.

Conclusions: Most non-compliance to the EUSOMA QIs for avoidance of overtreatment of breast cancer was found in the youngest (<40 years) patients. This indicates that young breast cancer patients are more frequently overtreated as compared to their older counterparts. However, in young patients, other treatment options are considered, taking into account the likely more aggressive course of the disease and longer life expectancy. Consequently, the definition of overtreatment should probably be attenuated and be different for young and old age groups.

No conflict of interest.

120. Auditing oesophagogastric cancer treatment in the Netherlands using a composite measure for outcome indicators: Textbook outcome


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The Netherlands Cancer Institute/Antoni van Leeuwenhoek Hospital, Surgical Oncology, Amsterdam, Netherlands
Dutch Upper GI Cancer Audit, (DUCA), Netherlands

Background: Quality assurance is acknowledged as a crucial factor in the oncological surgical care process. Main purpose of the Dutch Upper GI Cancer Audit (DUCA) is to improve this quality of care for patients undergoing a surgical procedure for oesophagogastric cancer.

The aim of this study was to develop a composite measure for multiple outcome indicators, defined as ‘textbook outcome’, providing a better insight in the course from the surgical procedure to discharge, potential obstacles and differences between hospitals.

Material and methods: Patients who underwent a resection for oesophagogastric cancer between 2011-2013 in the Netherlands were included in the DUCA. A ‘textbook outcome’ was defined as the percentage of oesophagogastric cancer patients eligible for a curative resection, without perioperative and postoperative complications, with tumour negative resection margins (R0) and with ≥15 lymph nodes examined, no reintervention, no readmission on ICU/MCU, a hospital stay ≤21 days; no in-hospital and/or 30 day mortality and no hospital readmission.

Results: In total, 1910 patients with oesophageal cancer and 1205 patients with gastric cancer eligible for a curative resection were included between 2011-2013. Table 1 shows the number and proportion of all outcome indicators and the composite measure ‘textbook outcome’ for both groups. A ‘textbook outcome’ was achieved in 28% of the patients with oesophageal and gastric cancer. Especially the outcome indicator ‘≥15 lymph nodes examined’ resulted in a significant drop in ‘textbook outcome’. Hospital ‘textbook outcome’ rates varied from 0-50% for oesophageal and gastric cancer.

Table 1. Textbook outcome for oesophageal or gastric cancer (2011-2013).

<table>
<thead>
<tr>
<th>Population</th>
<th>Cumulative Population</th>
<th>n</th>
<th>%</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oesophageal cancer</td>
<td></td>
<td>1910</td>
<td>100%</td>
<td>1205</td>
<td>100%</td>
</tr>
<tr>
<td>Curative resection*</td>
<td></td>
<td>1816</td>
<td>95%</td>
<td>1815</td>
<td>95%</td>
</tr>
<tr>
<td>No perioperative complication</td>
<td></td>
<td>1771</td>
<td>94%</td>
<td>1771</td>
<td>94%</td>
</tr>
<tr>
<td>Tumour negative resection margins ≥ 15 lymph nodes</td>
<td></td>
<td>1056</td>
<td>55%</td>
<td>912</td>
<td>48%</td>
</tr>
<tr>
<td>No postoperative complication*</td>
<td></td>
<td>1608</td>
<td>84%</td>
<td>764</td>
<td>40%</td>
</tr>
<tr>
<td>No reintervention</td>
<td></td>
<td>1510</td>
<td>79%</td>
<td>688</td>
<td>36%</td>
</tr>
<tr>
<td>No readmission ICU/MCU</td>
<td></td>
<td>1645</td>
<td>86%</td>
<td>654</td>
<td>34%</td>
</tr>
<tr>
<td>Hospital stay ≤ 21 days mortality</td>
<td></td>
<td>1459</td>
<td>76%</td>
<td>600</td>
<td>31%</td>
</tr>
<tr>
<td>No in hospital/30 day mortality</td>
<td></td>
<td>1824</td>
<td>96%</td>
<td>600</td>
<td>31%</td>
</tr>
<tr>
<td>No reintroduction</td>
<td></td>
<td>1695</td>
<td>87%</td>
<td>536</td>
<td>28%</td>
</tr>
</tbody>
</table>

Textbook outcome: 536 28% 334 28%

* Patients eligible for curative resection.
* As determined during the surgical procedure.
* Postoperative complication grade 2-4 (Dutch Surgical Complication Registration).

Conclusions: Overall, the perfect surgical process (‘textbook outcome’), was achieved in 28% of the patients with oesophagogastric cancer undergoing a resection. As a composite measure of outcomes of oesophagogastric cancer resections, ‘textbook outcome’ can be used to evaluate hospital performance and variation in outcomes between providers.

No conflict of interest.
121. Predicting adverse postoperative outcome in onco-geriatric patients with a single screening tool?
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Background: Although the geriatric assessment (GA) has been proposed for preoperative risk estimation in onco-geriatric patients, there is debate concerning its value in everyday practice. Less time consuming tools could possibly identify patients at risk of adverse outcome just as well. The predictive ability of twelve screening tools with regard to adverse postoperative outcome as compared to the GA in onco-geriatric patients was investigated.

Materials and methods: In a multicenter study, 340 patients ≥70 years of age undergoing cancer surgery were prospectively recruited. The primary endpoint was major complications, including 30-day mortality. Twelve screening tools as well as the GA were administered, evaluating multiple important geriatric domains. Predictive abilities were calculated by means of absolute risks and logistic regression analyses (odds ratios (OR) and 95% confidence intervals (95%CI)).

Results: The median age was 76 years (70-96). Major complications occurred in 65 patients (19.1%) and the mortality rate was 12 (3.5%). In a multivariate analysis, American Society for Anesthesiologist (ASA)-score, nutritional status (NS) and Timed Up & Go (TUG: a walking test to measure functional status) were predictors of major complications, when adjusted for center, gender and type of surgery (table 1). A deranged GA was predictive of major complications (OR 1.97; 95%CI 1.02-3.83), when adjusted for center, gender and type of surgery. In a multivariate analysis, ASA-score, NS and Brief Fatigue Inventory (BFI) were predictors of mortality, when adjusted for center (table 1). The highest absolute risk of major complications was for patients with a poor TUG-score (48.1%), compared to 27.2% for patients with a poor GA-score. The highest absolute risk of mortality was for patients with a high PS (13.0%), compared to 6% for patients with a poor GA-score.

Table 1. Multivariate logistic regression analysis.

<table>
<thead>
<tr>
<th>Test</th>
<th>Major complication OR (95% CI); p-value</th>
<th>Mortality OR (95% CI); p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BFI ≤3</td>
<td>1</td>
<td>17.77 (2.42-130.18); 0.005</td>
</tr>
<tr>
<td>BFI &gt;3</td>
<td>3.05 (1.03-9.04); 0.045</td>
<td>9.69 (0.63-148.32); 0.102</td>
</tr>
<tr>
<td>Nutritional status</td>
<td>1</td>
<td>3.47 (1.63-7.40); 0.001</td>
</tr>
<tr>
<td>Normal</td>
<td>1</td>
<td>28.97 (2.24-374.06); 0.010</td>
</tr>
<tr>
<td>Mildly impaired</td>
<td>3.16 (1.14-8.75); 0.027</td>
<td>2.56 (1.17-5.62); 0.019</td>
</tr>
<tr>
<td>Moderately or severely impaired</td>
<td>1</td>
<td>4.56 (0.77-26.76); 0.093</td>
</tr>
</tbody>
</table>

Conclusions: Screening tools assessing fatigue, NS and functional and physical status exceeded the predictive ability of the GA in onco-geriatric surgical patients. However, vulnerability to stressors like surgery is unlikely to be grasped by a single screening tool.

No conflict of interest.

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122. The NABON Breast Cancer Audit; quality improvement in three years’ time

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3 On behalf of the Scientific Committee of the NABON Breast Cancer Audit, Pathology, Dordrecht, Netherlands
4 On behalf of the Scientific Committee of the NABON Breast Cancer Audit, Radiology, Maastricht, Netherlands
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7 On behalf of the Scientific Committee of the NABON Breast Cancer Audit, Oncology, Maastricht, Netherlands
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9 On behalf of the Scientific Committee of the NABON Breast Cancer Audit, Surgery, Amsterdam, Netherlands
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Background: The lifetime risk for women of developing breast cancer is 1 in 8. Local recurrence rates are low and survival rates are high in the Netherlands. Unexplained variation in a number of treatment aspects is observed between the hospitals. Clinical audits provide an important tool for quality assessment using a uniform registration of all patients diagnosed with a certain disease. In 2009, the Dutch National Breast Cancer Organization (NABON) initiated a multidisciplinary set of indicators aiming to audit the quality of comprehensive multidisciplinary care for breast cancer patients.

Material and methods: In 2011, the multidisciplinary national NABON Breast Cancer Audit (NBCA) started collecting data of all Dutch hospitals. The NBCA is facilitated by Comprehensive Cancer Centre the Netherlands (IKNL) and Dutch Institute for Clinical Auditing. The NBCA has several purposes: nation-wide evaluation of quality parameters, evaluation of guideline adherence, and providing weekly updated feedback to participating institutions.

Results: In the NBCA all Dutch hospitals participate by providing the data regarding delivered breast cancer care (92). Since 2011, nearly 42.000 breast cancer patients have been included. Within three years, guideline compliance for pre- and postoperative multidisciplinary team meetings as well as percentage of patients starting their treatment within five weeks increased; the proportion of patients with tumor positive margins after first breast conserving surgery decreased (see table). Overall, hospital variation narrowed for the respective quality indicators.

Conclusions: The continuous loop of registration and providing feedback by clinical auditing provides a powerful tool for quality monitoring and improvement. Improvements have been demonstrated in a relatively short period of time. Future objectives are data verification, and incorporation of patient reported outcome measures.

No conflict of interest.

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123. The influence of the region and type of hospital of diagnosis on the probability to receive curative treatment for resectable esophageal cancer

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Background: According to the Dutch guidelines the preferred treatment for resectable esophageal cancer (T1-3,N0-1,M0-1A) is surgery with or without neoadjuvant chemoradiation. Furthermore definitive chemoradiation is a curative option for patients with high age or multiple morbidities. Due to a centralisation process, surgical treatment of esophageal cancer in the Netherlands is reserved to regional referral centres. A recent study in one of the nine regions showed that hospital of diagnosis influenced the probability to receive curative treatment for esophageal cancer. The objective of this study is to determine regional differences in treatment of esophageal cancer and the influence of different types of hospitals in the Netherlands.

Material and methods: All patients with resectable esophageal tumours (C15 and C16.0) according to their stage (T1-3, N0-1, M0-1A) diagnosed between 2003-2010 (n=6556) were selected from the population-based Netherlands Cancer Registry. Logistic regression analyses was conducted to examine the effect of the region and the type of hospital of diagnosis on survival. The type of hospital was expressed as a binary variable with 0 = general hospital and 1 = teaching hospital. The year of diagnosis was included as a covariate in the multivariable analyses.

Results: Sixty-four percent of the patients with a potentially resectable tumour received curative surgery. Furthermore, 9.8% received definitive chemoradiation and 26.1% palliative treatment or no treatment at all. A significant difference was observed in patients receiving curative treatment between the different regions with percentages ranging from 66% to 82% (p<0.001). Furthermore there was no significant difference in type of hospital receiving curative treatment ranging for 71% to 74% (p=0.179). Multivariate logistic analyses showed that patients diagnosed in seven regions received curative surgery significantly less often (with odds ratio’s (OR) ranging 0.4 up to 0.7). Furthermore there was no significant difference in type of hospital to receive curative treatment. Multivariate Cox regression analyses showed that patients diagnosed in two regions had a worse overall survival (Hazard Ratio (HR) 1.1, p=0.035 and HR 1.3, p=0.003). Furthermore patients diagnosed in an academic hospital had a better overall survival compared with a general hospital (HR 0.9, p=0.006).

Conclusions: Remarkable regional differences in treatment of esophageal cancer in the Netherlands were observed. The region of diagnosis influenced the probability to receive curative treatment and overall survival. Type of hospital appears to be of less importance.

No conflict of interest.

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Conclusions: We presented evidence showing that thermal coagulation of liver tissue involves significant spectral changes which could be linked to irreversible thermal tissue damage. Our method permits evaluation of ablation margins during RF ablation and well after the ablation has been completed. Therefore, a fiber-optic based spectroscopic monitoring system, in conjunction with other imaging modalities, could aid in detecting when tissue becomes adequately ablated. Currently, a more extensive in vivo human study is being performed as a next step towards clinical implementation.

Conflict of interest: Corporate-sponsored research: This study was supported by Philips Research, Eindhoven, The Netherlands. The author who is affiliated with Philips Research and Philips Healthcare (B.H.) only has financial interests in the subject matter, materials, and equipment, in the sense that he is an employee of Philips. The prototype system described in this article is currently only a research prototype and is not for commercial use. None of the other authors (J.S., E.T. D.E., W.P. and Th.R.) have any conflicts of interest.

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125. Minimally Invasive Esophagectomy (MIE) – adequacy and short term perioperative outcomes – our experience
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Background: Surgery is the most effective treatment for the resectable esophageal cancers of the middle & lower third and Gastro-Esophageal Junction (GEJ) tumors. Various studies have shown that the Minimally Invasive Esophagectomy (MIE) is associated with a lower rates of complication and hospital stay. We hereby scrutinise our experience in MIE and evaluate the adequacy of the procedure and its short term perioperative outcomes.

Method: The study included 99 patients who were enrolled to one of the surgical oncology units at the hospital from January 2010 to August 2013 (44 months). Depending on the location of the tumor, the patient underwent one of the two MIE procedures. Thoraco Laparoscopic Esophagectomy (TLESE) in the prone position or Laparoscopic Esophagectomy (LSE) in the supine position. 2 field comprehensive nodal dissection were part of both the surgical procedures.

Results: 05 patients were excluded, 18 were inoperable and 12 had open surgery. 64 patients underwent MIE (LSE-37, TLSE-27). Male: Female=31:33.

Adequacy: Mean Nodal Harvest: LSE=14.27 nodes, TLSE=14.77 nodes. Margins (mean): LSE-Proximal (P)-6.70cm, distal (D)-2.51 cm, TLSE: (P)-5.41 cm, (D)-5.11 cm.

Short term perioperative outcomes:

<table>
<thead>
<tr>
<th>Surgical Anastomotic Leak (Neck)</th>
<th>LSE</th>
<th>TLSE</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major</td>
<td>02</td>
<td>02</td>
<td>05</td>
</tr>
<tr>
<td>Minor</td>
<td>02</td>
<td>01</td>
<td>03</td>
</tr>
<tr>
<td>RLN Palsy</td>
<td>03</td>
<td>02</td>
<td>05</td>
</tr>
<tr>
<td>Tracheostomy</td>
<td>01</td>
<td>02</td>
<td>03</td>
</tr>
<tr>
<td>Chyle Leak</td>
<td>-</td>
<td>01</td>
<td>01</td>
</tr>
<tr>
<td>Expl. Lap.</td>
<td>01</td>
<td>-</td>
<td>01</td>
</tr>
<tr>
<td>A.W. Infection</td>
<td>03</td>
<td>-</td>
<td>03</td>
</tr>
<tr>
<td>Emphysema</td>
<td>-</td>
<td>01</td>
<td>01</td>
</tr>
</tbody>
</table>

Table: 30 days morbidity

<table>
<thead>
<tr>
<th>Complications</th>
<th>LSE</th>
<th>TLSE</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Respiratory</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aspiration</td>
<td>01</td>
<td>04</td>
<td>01</td>
</tr>
<tr>
<td>Bronchospasm</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Pneumonia</td>
<td>02</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Cardiac</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M.I.</td>
<td>-</td>
<td>01</td>
<td>02</td>
</tr>
<tr>
<td>Arrhythmias</td>
<td>-</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>Cerebral</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stroke</td>
<td>01</td>
<td>01</td>
<td></td>
</tr>
</tbody>
</table>

Overall: 15 11 26 40%

Conclusion: 79% of properly selected & evaluated cases underwent MIE, with one Mortality and 26 events of morbidity. 6% of cases required conversion. The procedure detected inoperability in 14% cases. The nodal yield, status of margins, operative time, blood loss and hospital stay indicates that MIE has a future to become a standard of care in the treatment of esophageal cancers.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.121

126. Outcomes after laparoscopic versus open wedge resection for suspected gastric gastrointestinal stromal tumours: A matched-pair case-control study
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Background: Laparoscopic resection of gastric gastrointestinal stromal tumors (GISTs) has been shown to be technically feasible and associated with favorable outcomes when compared to the open approach. However, most previous studies demonstrating the superior results of laparoscopy were retrospective unmatched case control studies which raised the concern that this may be due to selection bias in favor of the laparoscopic approach. This study aims to mitigate this bias by performing a case-control study of laparoscopic (LWR) versus open wedge resection (OWR) matched by resection type, location and tumor size.

Methods: We retrospectively identified 50 attempted LWR from a prospective database of 114 consecutive patients who underwent wedge resection of suspected gastric GIST without concomitant organ resection between 1998 to2013. These patients were matched with 50 of the 64 patients who underwent OWR according to tumor location and size. The patients’ baseline clinicopathological features and outcomes were compared.

Results: There was no statistical difference between the key baseline clinicopathological features of patients who underwent LWR versus OWR. Patients who underwent LWR had longer operating times [150 (range,65-270) minutes vs 92.5 (25-200) minutes, P < .001] but decreased median blood loss [0 (0-300) ml vs 0 (1-1200) ml, P = .015], decreased frequency of intraoperative or postoperative blood transfusion [1 (2%) vs 8 (16%), P =.031], decreased median time to liquid diet [2 (0-5) vs 3 (1-7) days, P <.001], decreased median time to solid diet [3 (1-6) vs 5 (2-11) days, P < .001] and decreased postoperative stay [4 (2-10) vs 4.5 (3-17), P < .001] compared to OWR. There was no difference in postoperative morbidity and oncological outcomes such as frequency of close margins (< 1 mm) and recurrence-free survival between the 2 approaches.
Conclusions: This matched case-control study provides supporting evidence that LWR results in superior perioperative outcomes compared to OWR without compromising on oncological outcomes. No conflict of interest.

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127. Transanal mesorectal excision with laparoscopic assistance for rectal carcinoma—Preliminary results
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Aim: to evaluate preliminary results of transanal mesorectal excision (ME) using laparoscopic assistance in terms of feasibility and oncological adequacy.

Materials and methods: 15 patients with rectal carcinoma (cT2-4aN0-M0) were operated with transanal approach and laparoscopic assistance. Selection criteria included primary operable rectal cancer patients or ‘good’ responders after Chemoradiation Therapy (CRT). There were 6 males and 9 females. Mean age was 52 (30-69), BMI 23.2 (20.0-38.6). The distal edge of the tumors was median 7 (3-13) cm from the anal verge. 4-cm in diameter rigid rectoscope which provides stability and comfort with no need for assistance was used. After full-thickness circumferential rectal incision with purse-string occlusion of rectum had been carried out the rectoscope was inserted and total or partial mesorectal excision (TME/pTME) till entering abdominal cavity was performed using a ‘bottom-up-to’ approach. High ligation of Inferior Mesenteric Artery (IMA) and splenic flexure mobilization was carried out laparoscopically in all the cases. For the first seven cases laparoscopic assistance was done after completion of transanal mobilization of the rectum and median operation time was 350 min. For other 7 cases both approaches had been started simultaneously by 2 teams of surgeons, so that the operation lasted median 260 min.

Results: Operation time markedly decreased if transanal and laparoscopic approaches were carried out simultaneously. In one obese patient with BMI - 38.6 operation was converted to ‘open’ surgery after completion of transanal TME due to technical difficulty. Blood loss was minimal (30 ml - except converted one). Hand sewn coloanal anastomoses were performed in 11 and stapler anastomoses in 4 cases; among them 3 with J-pouch, 6 ‘side-to-end’ and 6 ‘straight’. Pathology showed TME grade 3 specimens in 11 cases, grade 2 in two and grade 1 in 2, with ypT2No in 4 cases, ypT3No in 1, ypT2-3N1 in 3 cases, ypT2N0 in 4 and pT2N0 in 3. Surgical complications occurred in 3 cases as urinary retention, which was treated by the 10th POD (postoperative day). Other patients were discharged on mean 9-th (range 6-18) POD.

Conclusion: Transanal ME in rectal cancer surgery offers potential technical advantages due to facilitating mobilization of the rectum. It is feasible and meets the oncologic requirements and may become an alternative method to open and laparoscopic TME in the future, especially in cases of morbid obesity or narrow ‘male’ pelvis. Further investigations are needed to confirm the effectiveness of method. No conflict of interest.

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128. The short-term outcomes of conventional and pure single-incision laparoscopic distal gastrectomy for early gastric cancer
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Background: The purpose of this study was to show the feasibility and safety of pure single-incision laparoscopic distal gastrectomy (SIDG) by comparing its short-term outcomes with those of conventional totally laparoscopic distal gastrectomy (TLDG).

Materials and methods: Prospectively collected data of 50 gastric cancer patients who underwent pure SIDG from November 2011 through October 2013 were compared with the matched data of 50 TLDG patients.

Results: The mean operation time and the number of harvested lymph nodes were comparable (144.5 vs. 140.3 min, P = 0.561; 51.7±16.3 vs. 52.4 ± 17.9, P = 0.836). The estimated blood loss was less in the SIDG (50.5 ± 31.5 vs. 87.5 ± 79.6 ml, P = 0.007). Postoperative recovery was faster in the SIDG group, in terms of less maximum pain score on the operative day and postoperative day 1 (6.1 ± 1.4 vs. 6.9 ± 1.5, P = 0.015; 4.6 ± 1.0 vs. 5.5 ± 1.4, P < 0.001), less usage of parenteral analgesics (0.8 ± 1.0 vs. 1.4 ± 1.0, P = 0.020), and less increased level of C-reactive protein on the postoperative day 5 (4.57 ± 6.26 vs. 8.51 ± 5.25 mg/L, P = 0.008). Postoperative morbidity occurred in 6 (12%) and 5 (10%) patients in the SIDG and TLDG group, respectively.

Conclusions: This study shows that pure SIDG is both safe and feasible for early gastric cancer, and has similar operation time and better short-term outcomes than does TLDG in terms of postoperative pain, EBL, inflammatory reaction, and cosmetic result. No conflict of interest.

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129. CDDP filled carbon nanotubes may inhibit cancer recurrence—Animal model nephron sparing surgery study
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2 Nicolaus Copernicus University in Torun, Department of Chemistry Physicochemistry of Carbon Materials, Torun, Poland
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4 Ludwik Rydygier’s Collegium Medicum in Bydgoszcz Nicolaus Copernicus University in Torun, Department of Clinical Pathomorphology, Bydgoszcz, Poland

Background: Nanotechnology gives a new hope and possibility for obtaining the new precisely prepared and targeted drug delivery systems. The aim of our work was to evaluate the usefulness of carbon nanotubes combined with cisplatin as a new experimental concept of innovative hemostatic dressings preventing local cancer recurrence after experimental neplphon sparing surgery (NSS) performed in the xenografted murine model.

Materials and methods: The drug-carrier system obtained from cisplatin doped SWCNT (Single Walled Carbon Nanotubes), modified and purified by H2O2 hydrothermal treatment, was studied. In the in vivo neplphon sparing surgery (NSS) study we used 35 BALB/c nude mice with induced renal cancer using adenocarcinoma 786-o cells.
Animals were divided into four groups: CDDP(M-), CDDP(M+), CONTROL(M-) and CONTROL(M+). In CDDP(M-) and CDDP(M+) groups we used intraoperatively.

Results: In the CDDP(M-) group we haven’t observe any local tumor recurrences. In Group CDDP(M+) only one animal was diagnosed with tumor recurrence. In control groups the recurrent tumor formation were observed.

Conclusions: In our study it was shown that CDDP filled carbon nanotubes inhibit cancer recurrence in animal model NSS study.

No conflict of interest.

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130. Visualization and demarcation of colorectal cancer using an uPAR recognizing NIR fluorescence conjugate
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In cancer surgery evaluation of resection margins remains extremely challenging, with incomplete tumor removal, local cancer recurrences and a worsened patient prognosis as result. Visualization of malignant cells during surgery could help the surgeon to identify and remove all cancer cells. Image-guided-surgery using near-infrared (NIR) fluorescent imaging aims at visualizing tumor cells during surgery. For this purpose NIR fluorophores are conjugated to tumor specific tracers. One potential target for tumor visualization is urokinase Plasminogen Activator Receptor (uPAR). uPAR plays an important role in tumor invasion and metastasis and overexpression of uPAR is found on the majority of human carcinomas. This study describes the development and pre-clinical validation of a tumor specific NIR fluorescent labeled anti-uPAR antibody for the identification and visualization of tumor cells.

The NIR fluorophore ZW800-1 was conjugated to a humanized monoclonal uPAR specific antibody and an isotype control IgG. The conjugation and binding capacity of both conjugates were validated in vitro. Athymic mice were subcutaneously injected with HT-29 cells (human colon adenocarcinoma cell line) or orthotopically in the tongue with OSC-19 cells (metastasizing human squamous cell carcinoma of tongue). After injection of 1 nanomol of the conjugates, images were captured at sequential time points, till 120 hours, with the PEARL Impulse imager and the clinically validated NIR camera system. A dosaging study was performed, to explore the ability of micro-dosing. Ex vivo fluorescence and histology was evaluated and correlated to demonstrate the tumor specificity and tumor distribution of both compounds.

Labeling ratios (antibody/dye) of the specific and control conjugates were respectively 1.2 and 1.2.5. Tumors were delineated with tumor-to-background ratios (TBR) of 3.5 ± 0.5 (SD) in the HT-29 model and 2.2 ± 0.2 in the OSC-19 model. The control compound showed lower mean TBRs of 1.8 ± 0.1 and 1.3 ± 0.2 respectively. Additional fluorescence signals were identified in the cervical region of the OSC-19 mice, which turned out to be cervical lymph node metastases. No significant differences were found between different doses groups, underscoring its potential to be used in the micro-dosing range. Ex vivo evaluation showed tumor specific signal in both the solid tumor and the OSC-19 lymph node metastases.

This study describes the feasibility of a new tumor specific fluorescent probe, targeting uPAR, which gives the ability to visualize both solid tumors and metastasis in real time using a NIR fluorescence camera system during surgery.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.126

131. Progressing multi-modal therapies of pancreatic cancer by rational-based drug targeting of the oncogenic Hedgehog/GLI signaling network
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Background: Pancreatic cancer is a highly aggressive malignancy, with a five year survival rate of less than 5%. This desperate prognosis urgently calls for the development of innovative and efficacious multi-modal treatment strategies combining targeted drug therapy and surgery. Hedgehog(HH)/GLI signaling plays a fundamental role in the development and growth of a broad variety of human cancers and numerous clinical trials are currently evaluating the therapeutic benefit of novel HH/GLI inhibitor drugs targeting the essential HH effector Smoothened (SMO). In pancreatic cancer, HH/GLI signaling contributes to activation of the tumor microenvironment and controls malignant behavior of cancer stem cells (CSCs), accounting for tumor initiation, metastasis and drug resistance. In depth analysis of the role of HH/GLI in pancreatic cancer and rigorous validation of pathway targeting is predictive in vivo models and key to the development of improved treatments.

Material and methods: Patients who underwent resection for pancreatic adenocarcinoma were included in this study. Besides primary resectable tumours, borderline-resectable tumours (after neoadjuvant chemotherapy) and even locally recurrent cancer with limited hepatic metastasis were subject to our study. To evaluate the efficacy of novel treatment regimens, xenotransplantation of tumour specimens to immune-deficient recipient mice (NOD-scid IL2rnull and athymic nude mice) was carried out. In parallel, additional tumour tissue was subject to immunohistochemical, molecular and biochemical analysis including transcriptome and systematic pathway analysis. We performed genetic and chemical perturbations of interacting pathways and crucial signal effectors including HH-EGFR target genes to decipher the therapeutic potential of rational-based combination treatments.

Results: We identified the FGF19/FGFR4 signaling cascade to cooperate with Hedgehog/GLI in pancreatic cancer. Chemical and genetic targeting of both FGF19 and FGFR4 has a profound repressive impact on pancreatic CSCs and in vivo tumor initiation. A comprehensive data analysis will be presented as some of the data is still reviewed as writing of this manuscript.

Conclusions: Combinatorial targeting of the Hedgehog/GLI, EGFR and FGFR4 signaling axis is a promising therapeutic approach to target the malignant behavior of pancreatic CSCs. We also propose strategies of how this knowledge can be translated into better therapeutic regimens by combining rational-based drug therapy targeting with surgery in borderline-resectable or recurrent/metastatic pancreatic cancer.

No conflict of interest.

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132. The relationship between the multifocality of breast cancer and thyroid diseases

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Background: Approximately 10% of the women with breast cancer have multifocal disease at presentation. Synchronous appearance of few malignant tumors in the breast is as theoretical as practical puzzle. Underlying causes for multifocal presentation of breast cancer are not clearly known.

Materials and Methods: This is a retrospective study based on clinical and pathological data of 212 patients with multifocal breast cancer. As a control group we randomly selected 684 patients with unifocal breast cancer, treated in our hospital in the same time period.

Results: Mean age of patients with multifocal breast cancer was slightly lower than the age of the patients with unifocal breast cancer - 56.5 vs 59.5 years (P = 0.003). We found no relationship between multifocality and a family history of malignant disease (Table). There was no correlation between multifocality and the use of HRT after menopause (Table).

10.8% of patients with multifocal breast cancer (23 of 212 patients) had evidence of thyroid disease, and this rate was significantly higher than in the group of patients with unifocal breast cancer 6.1% (42 of 684 patients) (P = 0.021). The differences in the prevalence of thyroid disease were found in the group of patients with invasive ductal, but not lobular breast cancer. Infiltrative lobular breast cancer was associated with thyroid diseases in 8.3% (4 of 48) of patients with multifocal disease and in 10.8% (7 of 65) of patients with unifocal cancer (P = 1.0). In infiltrative ductal carcinoma the incidence of thyroid diseases was 12.2% (19 of 156 patients) and 5.6% (32 of 570 patients), respectively (p = 0.004).

Conclusion: The results of our study indicate that multifocality of breast cancer is associated with higher rate of thyroid disease. The reasons for this phenomenon needs further evaluation.

No conflict of interest.

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133. The biological and prognostic value of tumour size (T1a, T1b and T1c) in breast cancer stage I

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Background: To study the biological and prognostic significance of tumor size in breast cancer stage I.

Material and methods: In our study included 1341 women (21–88 years, median age-52) with breast cancer stage I, treated in RCRC, Clinic of RMAPE from 1985 to 2012 (radical surgery ± adjuvant systemic therapy and radiotherapy). The size of invasive tumor was <2.0 cm in all cases: T1a (<0.5 cm) - in 2.2%; T1b (0.5–1.0 cm) - 14.8%; T1c (1.0–2.0 cm) - was in 83% cases. We found the prevalence of ductal
cancer (81.2%) and G2-tumor grade (79.3%); ER-negative cancer was in 25.9% cases; PR-negative in 28.5%; HER2-overexpression was seen in 9.7% tumors; Ki67-high expression (>20%) was found in 57.8% cases. During the follow-up time (median-75 months) recurrences have appeared in 21.9% patients; 16.3% women died (in most cases, 14%—from cancer progression). We studied the biological and prognostic value of T1a, T1b and T1c tumor size, statistic analyses was made by SPSS 20.0.

**Results:** We did not find any statistic differences between age of women and different tumor size (T1a, T1b and T1c). However, T1a-tumors were significantly less aggressive (G1-42.3%, G2-57.7% and G3-absent at all) than T1b tumors (G1-26.1%, G2-67.6%, G3-6.3%) and T1c tumors (G1-9.9%, G2-82.8%, G3-7.4%), p<0.0001. And we saw higher rate of Luminal A cancers (ER+PR+HER2-Ki67<20%) in T1a-group (66.7%) comparison with T1b (47.8%) and T1c (31.4%). In contrast to it the part of luminal B (ER+PR+HER2-Ki67>20%) tumors were lower in T1a-group (6.7%) comparison with T1b (20.9%) and T1c-group (27.3%); triple negative cancer (ER-PR-HER-) was found in 13.3% (T1a), 11.9% (T1b) and 26.2% (T1c) cases, p=0.011. But the part of HER2-positive subtype was the same in T1a, T1b and T1c-groups (p>0.05). The rate of 5- and 10-years relapses-free survival was significant higher in women with T1a-tumors (100% and 83.3%) than T1b (89.9% and 78.8%) and T1c (82.6% and 74.1%), p=0.021. The rate of 5- and 10-years overall survival was the same in groups (p>0.05); however, 5- and 10-years cancer-specific survival was the best in women with T1a-tumors (100% and 95.7%) and significant lower in T1b (96% and 85.8%) and T1c (93.7% and 81.5%), p=0.046.

**Conclusion:** Breast cancer T1N0Mo-stage is a heterogeneous group with less aggressive T1a-tumors and significant more aggressive T1c-tumors. **No conflict of interest.**

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134. *Mycobacterium abscesses* infection following mastectomy and immediate implant based, acellular dermal matrix assisted breast reconstruction: Case report and literature review

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**Background:** Implant based reconstruction accounts for 37% of immediate breast reconstruction following Mastectomy in United Kingdom. Surgical site infection is one of the complications of immediate breast reconstruction that can result in prolonged use of antibiotics. The infecting organisms are bacterial skin flora, usually Staphylococcus aureus and the coagulase negative staphylococci. Treatment of these cases often requires further surgical interventions and may result in suboptimal cosmesis and can lead to explantation in non responding infections.

We are presenting two cases of infection with atypical mycobacterium to share the dilemma of sterile cultures in such patients.

**Methods & material and Results:** Two patients who underwent mastectomy and immediate implant based reconstruction assisted by acellular dermal matrix (Strattice) were discharged from hospital with no immediate post-operative complications. These patients presented weeks after surgery with symptoms and clinical signs suggestive of surgical site infection. Periprosthetic fluid was aspirated under sterile conditions with coagulase negative staphylococci. Treatment of these cases often requires further surgical interventions and may result in suboptimal cosmesis and can lead to explantation in non responding infections.

**Methods and Results:** Two patients who underwent mastectomy and immediate implant based reconstruction assisted by acellular dermal matrix (Strattice) were discharged from hospital with no immediate post-operative complications. These patients presented weeks after surgery with symptoms and clinical signs suggestive of surgical site infection. Periprosthetic fluid was aspirated under sterile conditions with coagulase negative staphylococci. Treatment of these cases often requires further surgical interventions and may result in suboptimal cosmesis and can lead to explantation in non responding infections.

The patients underwent explanation with resultant bad cosmetic result. Prolonged cultures showed growth of *Mycobacterium Abscessus* and the patients were prescribed anti-mycobacterial antibiotics. Patient made a slow recovery with progressive resolution of wound infection although it delayed the start of Chemotherapy.

**Conclusions:** These two cases signify the identification of these slow growing organisms in the setting of immediate implant based reconstruction assisted by ADMs. Experience with such postoperative complications is limited due to the fact that these cases represent a minority of the peri-prosthetic infections. A delayed onset of infection, no growth on early culture reports, and no response to conventional antibiotics are important features to prompt necessary investigation and treatment. **No conflict of interest.**

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135. The retrospective study of sentinel lymph node biopsy by an indocyanin green fluorescence imaging

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**Background:** Sentinel lymph node biopsy (SLNB) in breast cancer is said to be one of the standard surveys before operation. Pigment method and radioisotope method (RI method) are the standard surveys of SLNB. However, pigmentation method is influenced by surgeons’ ability in many cases, and since not all institutions are capable of using RI method, CT lymphography and indocyanin green fluorescence imaging (ICG method) are used instead. Since out hospital cannot use RI method, we have been using ICG method for SLNB since May, 2013. We have examined whether using ICG method is appropriate compared to pigment method or RI method for SLNB in breast cancer.

**Material and Methods:** 24 cases of breast cancer patients had axil dissection followed by SLNB using ICG method, from May 2013 to August 2013. Before the operation, ICG (2.5mg/ml) 0.5ml was injected intracutanenously under the areola. Sentinel lymph node was observed and identified by infrared observation camera system (PDE) in the operating room.

**Results:** 24 cases went through operation including 10 cases of breast conserving surgery and 14 cases of mastectomy. All cases required axil dissection after SLNB by ICG method. The identification rate of SLNB was 95.8%. The sensitivity was 1/1 case (100%), and the specificity was 21/23 cases (91.3%). There was false negative in 1 case.

**Conclusion:** Although more data and cases are needed for further discussion about SLNB by ICG method which is simple with small invasion, we thought that the sensitivity and the specificity are equal to that of pigment method or RI method. We are planning to do further studies using combination of pigment method and ICG method for breast cancer patient. **No conflict of interest.**

http://dx.doi.org/10.1016/j.ejso.2014.08.132

136. Expression of Bcl2 and p53 as a prognostic factor in high grade infiltrating duct carcinoma of the breast


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**Background:** p53 and bcl-2 are known as key regulators of apoptosis. Bcl2 expression was positively associated with favorable prognostic features and better survival, alterations in p53 are associated with poor prognosis in breast cancer. The possible relationship of bcl-2 and p53 expression with different biological types of breast cancer and their significance for prognosis in high grade breast cancer is not studied in depth.

**Methods:** 126 patients with high grade infiltrating duct carcinoma were selected and for this study, bcl-2 and p53 expression were studied immunohistochemically. bcl-2 and p53 expression was considered as positive in cases when more than 25% of tumor cells were stained.

**Conclusions:** These two cases signify the identification of these slow growing organisms in the setting of immediate implant based reconstruction assisted by ADMs. Experience with such postoperative complications is limited due to the fact that these cases represent a minority of the peri-prosthetic infections. A delayed onset of infection, no growth on early culture reports, and no response to conventional antibiotics are important features to prompt necessary investigation and treatment. **No conflict of interest.**

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Results: The distribution of patients according to Bcl-2 expression was as follows: Score 0 - 45/126 (35.7%); Score 1 - 19/126 (15.1%); Score 2 - 25/126 (19.8%); and score 3 - 37/126 (29.4%). 48/64 patients (75.0%) of Bcl-2 negative tumors were ER-negative compared with 12/62 patients (19.4%) with Bcl-2-positive tumors (p < 0.0001). Bcl-2-negative tumors were associated with PR-negative tumors in 55/64 patients (85.9%), as compared with 33/62 (53.2%) of PR-negative tumors in the group of patients with Bcl-2 positive tumors (p < 0.0001). The distribution of patients according to p53 expression was as follow: Score 0 - 40/126 (31.7%); Score 1 - 29/126 (23.0%); Score 2 - 18/126 (14.4%); and score 3 - 39/126 (30.9%). Twenty-four out of 69 patients (34.8%) with p53 negative tumors were ER-negative as compared with 36/57 patients (63.2%) with p53 positive tumors (p = 0.035). Tumors that were p53-negative were associated with PR-negative tumors in 40/69 (58.0%) as compared with 48/57 (84.2%) of PR-positive tumors in the group of patients with p53-positive tumors (p = 0.021). There were no significant differences in Her2-overexpression and Bcl2 or p53-expression. The subtypes Bcl-2(−)/p53(+) were found to be predominantly triple-negative (ER−; PR−; Her2−) (53.1%) or Her2 over-expression (ER−; PR−; Her2+) (31.3%) types. These subtypes of breast cancer were rare in Bcl-2(−)/p53(+) tumors, 5.4% and 2.7%, correspondingly. In contrast to this, the Bcl-2(+)/p53(−) patients were found to be luminal A type (ER+; PR+; Her2−) in 75.7% of cases versus only 3.1% in Bcl-2(−)/p53(+).

Conclusion: p53 and Bcl-2 overexpression has specific distribution according to biological type of the tumor, but the prognostic significance was observed only for Bcl2 overexpression.

The association of Bcl2/p53 expression with different biological types of primary breast cancer (p < 0.0001)

<table>
<thead>
<tr>
<th>Biological type of tumor</th>
<th>ER-PR-Her2-</th>
<th>ER-PR-Her2+</th>
<th>ER±PR±Her2-</th>
<th>ER±PR±Her2+</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bcl2-negative/p53-negative</td>
<td>10 (31.3%)</td>
<td>9 (28.1%)</td>
<td>8 (25%)</td>
<td>5 (15.6%)</td>
<td>32 (100%)</td>
</tr>
<tr>
<td>Bcl2-positive/p53-negative</td>
<td>2 (5.4%)</td>
<td>1 (2.7%)</td>
<td>28 (75.7%)</td>
<td>6 (16.2%)</td>
<td>37 (100%)</td>
</tr>
<tr>
<td>Bcl2-negative/p53-positive</td>
<td>17 (53.1%)</td>
<td>10 (31.3%)</td>
<td>1 (3.1%)</td>
<td>4 (12.5%)</td>
<td>32 (100%)</td>
</tr>
<tr>
<td>Bcl2-positive/p53-positive</td>
<td>7 (28%)</td>
<td>2 (8%)</td>
<td>11 (44%)</td>
<td>5 (20%)</td>
<td>25 (100%)</td>
</tr>
<tr>
<td>Total</td>
<td>36 (28.6%)</td>
<td>22 (17.5%)</td>
<td>48 (38.1%)</td>
<td>20 (15.9%)</td>
<td>126 (100%)</td>
</tr>
</tbody>
</table>

No conflict of interest.

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137. Clinical — pathological findings of sentinel lymph node invasion in breast cancer

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Aims: Breast cancer is particularly recognized as highly unpredictable, even from early stages. The natural evolution of breast cancer is however determined by both clinical and histopathological features. The aim of the study is to evaluate these features from a lot of 93 patients with early stages of breast cancer and subsequently to determine which are the factors with statistical significance that are rather linked to more aggressive forms of the disease, in which the invasion of the sentinel lymph node had already occurred.

Methods: The lot consisted of 93 patients with breast cancer that underwent oncologic treatment at the Institute of Oncology Bucharest. We assessed data that included histopathological issues such as tumor size, sentinel lymph node involvement, receptor status, and immunohistochemistry parameters ranging. Also, a comparison to data obtained from similar published studies was made.

Results: Cases with aggressive types of breast cancer, that had already spread to sentinel axillary lymph nodes, were characterized by early age, poor Bloom Richardson grading, the presence of peritumoral infiltrate, and high levels of Ki67, PCNA and p53.

Conclusions: Daily practice has shown the need for personalised treatment in cancer patients. If possible, it is highly useful to establish the aggressiveness profile of a malignant breast tumor, in order for a specific patient with a particular set of tumor features to benefit from a targeted and optimized treatment plan.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.135

138. The results of 15 years of oncoplastic surgery at the Institute of Oncology Bucharest

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The 20th century witnessed continuous changes in breast cancer surgery. Surgical treatment has evolved mainly due to a better understanding of the natural evolution of cancer, increased efficacy of the other antineoplastic therapies, early disease detection, as well as the wish to improve the quality of life for cancer patients.

As well as many surgical oncology principles which have emerged from breast cancer surgery, the beginning of the 21st century marked the development of breast cancer oncoplastic surgery.

This paper aims to present the results of 15 years of oncoplastic surgery at the Institute of Oncology Bucharest, as well as the indications and techniques that make it.

Nowadays, at the Bucharest Institute of Oncology, we perform intra-clinical breast lesion surgery, vacuum assisted breast biopsy, sentinel node detection and biopsy, breast conserving surgery and skin-sparing mastectomies, as well as breast reconstruction techniques using implants or autologous tissue. All of the above assert that we are in line with the European diagnostic and treatment guidelines and shed light on the major changes that have affected breast cancer surgery.

The long-term results of post mastectomy breast reconstruction are shown here. The reconstruction was performed immediately following mastectomy, during the same operating procedure. Case selection was made based on disease stage and prognosis, oncologic therapy planning, anatomical proportions and the patient’s informed consent. This type of reconstruction was performed on 71 patients.

The results show that post mastectomy breast reconstruction using implants delivers a good cosmetic outcome while at the same time assuring local control of the oncological disease. Immediate breast reconstruction helps patients maintain a positive self image reducing the psychological trauma associated with breast cancer.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.135

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.133
Aims: Mammographic screening and the increasing resolution output of mammography have raised the identification number of small-size mammary lesions without clinical expression. The aim of this study was to evaluate in a prospective study the localization technique and concomitant sentinel lymph node biopsy for breast cancer (SNOLL - Sentinel lymph Node biopsy and Occult Lesion Localization).

Methods: We identified by means of imaging techniques a number of 107 patients with clinically occult suspicious breast tumors. All patients preoperatively underwent a protocol in which the injection of 99mTe-nanocolloid underimaging procedures was performed. Surgical excision was performed, guided by the hand held gammaprobe. The sentinel lymph node was identified as an axillary hot spot on the probe.

Results: All primary lesions were identified and were clear of invasive margins needing excision. 98 tumors proved to be malignant on frozen sections. 7 lesions could not be clearly examined through frozen section and 2 proved to be benign. 6 out of 7 suspicious lesions confirmed to be malignant on paraffin embedded sections. Sentinel lymph node was identified in a number of 95 out of 98 patients. In 14 cases complete axillary lymphadenectomy was performed. The average specimen weight was 40 grams.

Conclusions: Using this technique, we removed the lesions identified prior to surgery in all cases, achieving a complete pathologic diagnostic, the necessary surgical treatment and also prognostic data by axillary lymph node assessment.

No conflict of interest.

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140. Surgical choices for breast cancer in older women
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Background: Breast cancer is a major cause of mortality. Older patients are becoming more suitable for surgery; surgical technique, increasing healthy life expectancy and improved assessment of patients aid this trend. The authors wished to investigate the potential for surgery in the older breast cancer patient.

Methods: A literature search was performed, alongside consulting surgeons within this field. The PubMed database and Cochrane Library were searched using keywords Breast, Cancer, Older, Surgery, Medical and Frailty. This yielded a number of related publications; articles were identified with our selection criteria. This included articles published with data specific to management of breast cancer in the older patient. The definition of older is varied within the literature; we used patients over 60 years of age, as per agreed United Nations definition. Articles preferentially selected had published RCT data or meta-analyses; lower class evidence was used where no RCT was available. We then produced a detailed outline of the current surgical options available for older women with breast cancer, as well tools to detect fitness for surgery.

Results: It was shown that age alone may not be an accurate predictor of treatment outcomes. A study into DCIS in older patients showed no excessive mortality in the surgery cohort. Other randomized trials showed that there was no difference with survival between groups of elderly patients with breast cancer treated with tamoxifen alone (medical management) or surgery alone, but the surgical group benefited from better local-regional control. This evidence was further confirmed by The Early Breast Cancer Trialists’ Collaborative Group, confirming the importance of adequate local treatment in primary operable breast cancer management. A Cochrane review demonstrated that there was a statistically significant difference in terms of progression-free survival, with the surgical group with or without endocrine therapy, compared with the non-surgical group. The decision for surgery should also be based on an accurate assessment of the patient’s fitness for successful surgical management, not just on age or ‘presumed’ fitness. Tools such as the Comprehensive Geriatric Assessment (CGA) have been shown to be useful for these cases. In addition, the concept of frailty was found to be relevant; frailty assessment tools may highlight the fitness of older patients for surgery, when they were previously thought to be unsuitable.

Discussion: Surgery in the elderly is advantageous for local disease control when compared to medical management alone, with no excessive increase in mortality demonstrated by some studies. In addition it has been shown to improve progression-free survival in the older breast cancer patient. Combined with suitable geriatric assessment, the stigma attached to older patients being unfit for surgery can be evaluated, to allow for surgical intervention to be performed in these patients.

No conflict of interest.

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141. Can exercise modulate pro-inflammatory cytokines and C-reactive protein in breast cancer survivors? A metaanalysis
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3 Andalusian School of Public Health, Granada Cancer Registry, Granada, Spain

Background: Epidemiological evidence has indicated that exercise can modulate hormone levels, immune function, systemic inflammation and oxidative damage in cancer patients, although this evidence remains unclear. This study aimed to investigate the effects of exercise in modulating inflammatory cytokine (interleukin [IL]-2, IL-6, IL-8, and Tumor necrosis factor alpha (TNF-α)) profile and C-reactive protein (CRP) in breast cancer survivors.

Methods: PRISMA statement was followed. MEDLINE, Ovid, EMBASE and Cochrane Central Registers were searched for randomized controlled trials until February 2014. The fixed-effects and random-effects models were used to assess the pooled estimates in addition to sensitivity analyses, whilst heterogeneity was evaluated using the Chi2 test (P<0.10) and I2 statistics (I2>50%).

Results: Data from seven studies were analyzed (n=395). Significant differences were observed for CRP (MD=-0.3741, 95CI% 0.0401 to 0.708, P= 0.02; IL-2 (MD=-6.0403, 95CI% -11.4083 to -0.6723, P=0.02) and IL-8 (MD= 2.1321, 95CI% 0.5949 to 3.6693, P<0.0001). There were no significant differences for IL-6 analyses (MD= 0.0012, 95CI% -0.1305 to 0.1328, P=0.9) and TNF-α (MD= -0.0699, 95CI% -0.1479 to 0.0082, P= 0.07). Reporting bias was not observed.

Conclusions: Exercise can modulate CRP and other pro-inflammatory cytokines related to carcinogenic environment and angiogenesis in breast cancer survivors. These findings represent an attractive target for therapeutic and oncologic rehabilitation development.

No conflict of interest.

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142. Determining the role and effectiveness of surgery in the management of T4 breast cancer tumours
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2 University of the Witwatersrand, Johannesburg, South Africa

Background: Locally advanced breast cancer at initial presentation is a common entity in South Africa. Historically almost all patients with T4
breast cancer were categorized as inoperable but current recommendations for developing countries suggest a multimodal approach to management, with surgery as a fundamental component normally after neo-adjuvant chemotherapy. The impact and success of surgery on this disease is still poorly described and this study aims to determine the role of surgery in the management of patients presenting with T4 breast cancer.

Material and Methods: This was a retrospective records review over a three-year period of consecutive patients diagnosed with breast cancer at the Helen Joseph Breast Clinic in Johannesburg, which is a government hospital treating an uninsured population.

Patient medical records were reviewed to collect demographics, including age and race. T4 stage was described according to American Joint Committee on Cancer TNM Staging for Breast cancer and all patients with a histologically confirmed invasive breast cancer of any subtype presenting with the clinical stage T4N0M0 were included (nodal status and metastases are not in the recruitment criteria). Radiology, histology and treatment plans were recorded. Follow up including recurrence and survival was also assessed.

Results: 87 patients were included with T4N0M0 diagnosis. 65 (74.7%) were black, 13 (14.9%) were white and the remaining were either Indian or coloured (10.2%). Median age at presentation was 62 (range: 31-103 years). Young patients (<40 years) comprised 10% of the study population.

Treatment plans were recorded for 70 (80.5%) of patients. 91.4% received neo-adjuvant chemotherapy, 4.3% had surgery first and 2.8% had radiation first. One patient refused all treatment. Surgery was carried out in 36 (51.4%) patients, and local recurrence occurred in 9 (25%). Patients with N2/3 nodal disease at presentation were significantly more likely to recur (p<0.022) however this became less significant when alterations in treatment regimen were controlled for, as more patients with early nodal disease recurred. There was no significant difference in adjuvant radiation rates or biological sub-type between those who recurred and did not.

Conclusion: Patients with T4 tumours are not a homogenous group. Some patients will benefit from surgery as part of a multi-modal treatment regimen but a significant rate of recurrence (one quarter in this study) should be expected. This is increased by nodal disease and non-adherence to conventional multi-modal therapy. Recurrence is least likely to occur when neo-adjuvant chemotherapy is followed by surgery and then radiation in patients with a low burden of nodal disease.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.139

143. Abdominal cocoon syndrome secondary to peritoneal venous shunt used to treat breast cancer ascites: What you and your dog might want to know about tamoxifen
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Background: A 70 year old woman became unable to eat due to very tense malignant ascites from a lobular breast cancer treated 21 years earlier. She was hormone naive and a peritoneal venous shunt was inserted to buy time for a response to oral letrozole. Having then remained well for 2 years, she was readmitted with vomiting. CT abdomen indicated a dilated fluid-filled stomach. On surgical exploration, the small intestine bowel was encapsulated by fibrous tissue (‘abdominal cocoon syndrome’) which was freed by long & careful dissection.

Methods: We searched Ovid Medline for ‘abdominal cocoon syndrome’, ‘sclerosing encapsulating peritonitis’ or ‘encapsulating peritoneal sclerosis’ & ‘peritoneovenous shunt’. Abstracts were scanned for possible causes and treatment.

Results: Abdominal cocoon syndrome is a recognised and often fatal consequence of long term peritoneal dialysis. We found 4 cases associated with peritoneal venous shunt insertion. Six case studies and one multi-centre study reported a successful outcome after treatment of this condition with tamoxifen. They included a dog who developed the syndrome following abdominal penetration by a stick. After surgery, our patient’s hormone treatment was changed to tamoxifen and she remains well a further 12 months on.

Conclusions: Abdominal cocoon syndrome presents with vague symptoms and is often diagnosed at surgery. A high index of suspicion is required in patients with in dwelling abdominal catheters. Reported mortality ranges from 26 to 58%. Recent studies have shown promising results with tamoxifen, used alone or following surgery.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.140

144. Physical activity and Insulin-like growth factors in breast cancer survivors: A metaanalysis
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2Universidad de Granada, Facultad de Enfermería, Grenade, Spain
3Andalusian School of Public Health, Instituto de Investigacion Biosanitaria de Granada, Grenade, Spain

Background: Epidemiological data suggest that Insulin-like growth factor 1 (IGF1) and IGF binding protein 3 (IGFBP3) are associated with breast cancer risk, apoptosis and other carcinogenic mechanisms. This metaanalysis evaluated the effects of physical activity in controlling Insulin-like growth factors (IGF1-IGF2) and IGF binding protein-3 (IGFBP3) in patients with breast cancer. Secondary outcomes included insulin, glucose and waist circumference as a body composition measure.

Methods: PRISMA statement was followed. MEDLINE, Ovid, EMBASE and Cochrane Central Registers were searched for randomized controlled trials until March 2014. The fixed-effects and random-effects models were used to assess the pooled estimates in addition to sensitivity analyses, whilst heterogeneity was evaluated using the Chi² test (P<0.10) and I² statistics (I²>50%). STATA 12.0 was used for metaanalysis procedures.

Results: Six studies were included in the pooled analysis involving 321 patients. Effect estimates showed that physical activity can improve IGF1 (MD=-12.9, 95CI% -16.73 to -9.14, P<0.001), IGF-II (MD=-43.4, 95CI% -58.5 to -28.3, P<0.001), IGFBP-3 (MD=-0.61, 95CI% -0.69 to -0.53, P<0.001) and waist circumference (MD=-1.133, 95CI% -2.20 to -0.05, P=0.03). Conversely, non-significant differences were observed for Insulin (MD=0.046, 95CI% -0.249 to 0.34, P=0.7), Glucose (MD=0.227, 95CI% -0.32 to 0.78, P=0.419) and Insulin Resistance (MD=0.64, 95CI% -0.006 to 1.296, P=0.05). There was no evidence of publication bias.

Conclusions: This findings demonstrated that physical activity is an effective intervention in improving serum levels of insulin like growth factors (IGF1-IGF2) and IGFBP3 in breast cancer patients; strengthening the physiological effects of physical activity in regulating cellular proliferation and apoptosis in breast cancer.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.141

145. Can radiofrequency ablation be an alternative to breast-conserving surgery in early breast cancer?
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Background: Recent advances of screening mammography and primary chemotherapy make it possible to identify small size of breast cancer (BC) and minimize surgical management. Previously we reported the
result of radiofrequency ablation (RFA) immediately followed by breast-conserving surgery (BCS) in 30 patients with T1N0 BC (Breast, 2009). Complete pathological ablation was found in 26 patients (87%) from the pathological diagnosis of tumor specimens stained with hematoxylin–eosin and nicotinamide adenine dinucleotide dehydrogenase. Thus, we conducted a phase II study to evaluate the safety and reliability of RFA alone in BC.

Material and methods: T1 and sentinel node-negative BC patients were eligible. BC with diffuse calcification or extensive intraductal component (EIC) was excluded. RFA was performed using a LeVeen needle electrode system (Boston Scientific Corporation, USA). Primary endpoint was breast deformity after RFA, which was evaluated by calculating absolute difference of measurement from nipple to several points of the breast.

Results: Twenty patients were enrolled from Apr. 2009 to Feb. 2013. There were no adverse events like skin burn, bleeding and infection. As of Jan. 2014, all patients were free of recurrence at the median follow-up of 34 months. Breast deformity after RFA was very limited in most patients.

Conclusion: RFA is a promising alternative to BCS in stage I BC without EIC.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.142

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146. Positive predictive value of breast lesions of uncertain malignant potential (B3): Implications in the surgical treatment and value of a multidisciplinary team

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Background and Aim: Use of conventional needle core biopsy for palpable masses and vacuum assisted biopsy for micro-calculcations has increased the preoperative diagnosis, but still remains controversial the strategy for those patients with lesions of uncertain malignant potential (B3). The aim of this study is to evaluate the positive predictive value (PPV) of malignancy of the B3 lesions to establish the correct management in the setting of a multidisciplinary care pathway.

Methods: Data from all patients who had a NCB or a VANCB between 2005 and 2013 were retrospectively collected and analyzed. B3 patients were discussed at the MDT deciding the need for surgery or for follow-up. PPV of malignancy of all surgical excided B3 lesions was calculated.

Results: One-hundred forty-five B3 NCB were included in the study and AEDPT was the most represented subcategory. The final histopathological report of the 105 operated patients showed 73 benign lesions and 33 malignant. PPV of B3 patients referred to surgery was 30%.

Conclusion: B3 patients must be evaluated by a breast MDT in order to make the right therapeutic choice, in particular for patients with contrasting clinical/diagnostic findings. Larger prospective studies are required to assess definitive PPV of each B3 subcategory.

No conflict of interest.

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148. Management of micro-metastasis in sentinel lymph node biopsy during breast cancer operation

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Background: According to the results of ACOSOG Z0011 trial, ASCO and NCCN guideline showed that women with one to two metastatic SLNs planning to undergo breast-conserving surgery with whole-breast radiotherapy should not undergo ALND (in most cases). However, some prudent surgeons are still undergo ALND if SLN positive in accordance with Z0011 criteria. We evaluated the cases with micrometastasis in sentinel lymph node (SLN) during operation in our hospital.

Patients and Method: From May 2004 to Dec 2013, 861 cases were performed SLN biopsy by the combination of RI (99mTc-tin colloid) and dye(Indocyanine Green). SLN were sliced 2mm thin and examined by HE stain during operation. Permanent sections were examined by HE and immunohistochemistry (cytokeratin). During this period, if SLN was positive including micrometastasis we have performed AXLD.

Results: One hundred forty two cases (16.8%) were positive in 861 cases except fourteen cases (1.6%) that could not detect SLN. Of them, thirty four cases showed micrometastasis(24.0%) in SLN. ALL34 cases performed AXLD and 4 cases (11.8%) showed LN metastasis in additional dissected LNs. One case was seen ITC and one was seen single node micrometastasis in dissected LNs. Others were male breast cancer patient and preoperative hormone therapy case.

Conclusion: In case with micrometastasis in SLN, the proportion of additional dissected LN metastasis is 11.8%(4/34), and micrometastasis is 2.9% (1/34) according to the guideline. This is a small case study, however, avoiding further LN dissection in case with SLN micrometastasis during operation is almost acceptable in accordance with the guideline.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.144

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149. Lateral approaching stereotactic vacuum assisted biopsy using 8G probe with auto-moving tube

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Background: Stereotactic vacuum assisted biopsy has been established as a standard method for histologically diagnosis of mammographically detected microcalcification. But, there are few reports regarding the lateral approaching technique. The purpose of this study was to evaluate clinical utility of lateral approaching stereotactic VAB using 8G probe with auto-moving tube.

Material and Method: 53 women (mean age 51.2 years) with mammographically detected microcalcification underwent lateral approaching stereotactic vacuum assisted biopsy using 8G probe with auto-moving tube. In all cases, we obtained mammography of the specimens for identification of microcalcifications and post-procedure mammography after 6 months. We reviewed mean procedure time, pieces of specimen, comport of patients, pathology and follow up mammography.

Results: The procedure took approximately 25 min (range, 15-34 min). Average number of obtained specimen was 8.5 pieces. (range 6–12 piece) Microcalcifications were confirmed both specimen mammography and microscopic slides. In 53 cases, 5 cases was diagnosed Ductal carcinoma in situ, so additional breast conserving surgery was performed. 49 cases was diagnosed benign breast lesions and they were not interval change in post-procedure mammography after 6 months. 4 patients had mild hematoma, but, no patients had significantly major complications and vasovagal syncope.

Conclusion: Lateral approaching stereotactic VAB using 8G probe with auto-moving tube can be applied for diagnosis of microcalcifications or non-palpable breast lesions on mammography. This procedure takes less time and requires smaller specimens. Also we believe that to reduce anxiety and vasovagal reaction in patients.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.145
150. Scope for intra-operative sentinel lymph node assessment with one step nucleic acid amplification (OSNA) for CK19 messenger RNA in the light of American College of Surgical Oncology Group (ACOSOG) ZOO11 Trial, in an average District General Hospital in the UK

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Background: Patients with a positive sentinel node on postoperative histology are subjected to axillary node dissection (ALND) as a second procedure. We assessed the Scope for Intra-operative sentinel lymph node assessment with One step nucleic acid amplification (OSNA) for CK19 messenger RNA in the Light of American college of surgical oncology group (ACOSOG ) ZOO11 Trial, in an average District General Hospital in the UK.

Material and methods: In breast cancer treatment, it is now standard practice to stage the clinically negative axilla with sentinel node biopsy (SNLB). Intra-operative detection of sentinel node metastasis until now has only been possible with frozen section histology or imprint cytology. The lack of sensitivity, specificity and other logistic problems have inhibited the widespread use of frozen section histology and imprint cytology for this purpose. Patients with a positive sentinel node on postoperative histology are therefore subjected to axillary node dissection (ALND) as a second procedure, with the additional costs of readmission to hospital, physical and psychological morbidity for the patient and a potential for the delay of adjuvant therapy. Intra operative assessment of sentinel node, with OSNA for CK19 has been shown to have good concordance with conventional histology.

Consequently many UK and European centres have adopted OSNA for CK-19, to avoid the need for second operation of axillary node clearance. ACOSOG Z0011 Trial shows that in patients with one or two Positive Sentinel nodes, having adequate systemic therapy, there is no benefit in outcome for ALND.

We performed a retrospective analysis of the data for 363 cases of SLNB, at our institution from 13/12/2006 to 10/02/2010. The positivity rate and percentage of SLNB was determined in each subgroups. Histology of 10 patients were not included as 9 of the 10 were pure DCIS and one had axillary node sampling as no radioactivity and dye was detected in the axilla.

Results: Of the 353 patients with invasive cancer, 87 had mastectomy while 266 had WLE. The overall rate and percentage of positive SLNB was determined in all the 353 patients. Ours is an average District General Hospital in the UK and 84 patients in our series being positive for metastasis would have needed further axillary treatment.

<table>
<thead>
<tr>
<th>Type of operation</th>
<th>No of patients</th>
<th>Positive SLNB</th>
<th>Positive SLNB%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total No of operation</td>
<td>353</td>
<td>84</td>
<td>23.7%</td>
</tr>
<tr>
<td>MX group</td>
<td>87</td>
<td>34</td>
<td>39%</td>
</tr>
<tr>
<td>WLE GROUP</td>
<td>266</td>
<td>50</td>
<td>18.7%</td>
</tr>
<tr>
<td>Mastectomy ( Mx), Wide local excision (WLE), Ductal carcinoma in-situ (DCIS),</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Conclusions: Many UK and European centres have adopted OSNA for CK-19, to avoid the need for second operation of axillary node clearance.

When ACOSOG, ZOO11 trial findings are to be fully implemented, may reduce the benefit of OSNA to avoid the need for ALND at a second operation. However OSNA will probably continue to have significant Psychological benefit for the patients, knowing immediately postoperatively that the Sentinel node is free from metastasis.

No conflict of interest.

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151. Survival rates in patients with breast cancer diagnosed by screening in Middle Hungarian Region

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Background: Breast cancer is one of the most frequent invasive cancers for women worldwide. At 2011 in Hungary, the National Cancer Registry registered nearly 7,000 new cases of breast cancer in women and the number of death was more than 2,000. Breast cancer incidence has steadily been increasing in Eastern European countries including Hungary. Decrease of breast cancer mortality has to be achieved through high quality screening associated with adequate oncologic therapy of diagnosed tumors. The objective of this study was to assess survival rates in patients with breast cancer diagnosed by screening in Middle Hungarian Region, and presents the results.

Material and methods: Between 2002 and 2009, 47 718 women were examined by organized nationwide screening program in the National Institute of Oncology in Budapest. According to physical examination, mammogram and the result of breast ultrasound 1361 women had fine needle aspiration cytology performed and a total of 298 patients with a diagnosis of breast cancer were discovered. We reviewed medical records and pathology reports and collected information on HER-2, ER and PR status of study participants, as well as data on age at diagnosis, disease grade, stage, death, and other clinical covariates. In total, we analyzed data from 257 female patients, who undergone multidiscipline oncologic treatment in the National Institute of Oncology in Hungary. We grouped the patients into four tumor categories by receptor expression: Luminal-A, Luminal-B, triple-negative (TN) and HER-2 over-expressed. The average of the follow-up was 55.77 months (range 3-127 months).

Results: Early diagnosed tumors (stage 0, I and II) accounted for 88 % of all the cases analyzed. Overall, 78.2% were Luminal-A (n=201), 10.2% Luminal-B (n=26), 5% of cases were TN (n=13) and 6.6% were HER-2 over-expressed (n=17). Significant differences in the clinical characteristics studied were observed by breast cancer subtypes (p<0.05). A total of 47 deaths occurred during the follow-up period. The overall survival rate of breast cancer patients at the end of the study was 81.71%. Women with TN had higher risk of death as compared to the other subtypes of breast cancer.

Conclusions: Survival as the major clinical outcomes defines the efficacy and quality of health care system. The evaluation of breast cancer diagnosed by screening survival outcomes and comparison of results with neighbor countries in the Middle and Eastern Europe can help to extend our knowledge of breast cancer screening and effective treatment.

No conflict of interest.

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152. Predictors of complementary and alternative medicine use in breast cancer care: Results of multicenter survey in Bandung, Indonesia

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Background: Although studies have shown that the use of Complementary Alternative Medicine (CAM) is common in cancer patients, few surveys have assessed CAM use and associated factors in breast cancers in Bandung, Indonesia.
Methods: We explored factors predicting CAM use among a nationally representative sample of breast cancer patients. In total 267 breast cancer patient were administered questionnaires about their CAM use and factors that might predict CAM use including socioeodemographics, clinical and quality of life factors (EQ5D), time since diagnosis, trust in conventional treatment, trust in national health insurance policy, satisfaction and informational needs (CNAT). Data were analyzed using Pearson test and multivariable logistic regression analysis.

Result: Overall 75.5% reported that they had used or were using CAM. Lower income, presence of late stage, poor national health care insurance system, lower average satisfaction to conventional treatment and high degree of informational need were significantly associated with CAM use. 

Conclusion: The use of CAM in breast cancer patient can be interpreted as an attempt to explore all possible options, expression of an active coping style or expression of unmet needs in the breast cancer care. The oncologist need to openly discuss the use of CAM with the patients and identify whether they have other unmet supportive needs.

No conflict of interest.

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154. Breast cancer and pregnancy
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Backgrounds: Pregnancy-related breast cancer (PBC) is one of the most common malignancies during pregnancy. Since maternal age at the time of pregnancy is increasing consistently with breast cancer, PBC rate is expected to increase. Diagnostic delays are common.

Material and Methods: Retrospective observational study that analyse twelve pregnant patients with breast cancer underwent surgical treatment during the period of March 2008—August 2013 at the Department of Surgery I, University of Insubria Varese.

Results: The median age of the pregnant patients was 34 y.o. (range 26—44 y.o.). Three patients were affected by BRCA2 mutation. In six patients diagnosis was made during gestation (range 10—35 weeks); in six patients were discovered breast cancer during breast feeding. Ten patients underwent breast-conserving surgery. Sentinel lymph node (SLN) biopsy was performed in six patients; all were negative and no axillary dissection was performed. Six patients underwent axillary dissection ab initio. In all cases the histological type was for all invasive ductal carcinoma, grading 3. The biological type was in 3 patients triple negative, 3 were Luminal B c-erbB2negative and 6 was Luminal B c-erbB2 positive. Eleven of twelve patients received adjuvant chemotherapy, two patients both adjuvant and neoadjuvant. In two cases also radiotherapy was performed after delivery. In all cases healthy babies were born. Nine patients are still alive and disease free, after a median follow-up of 21 months (range 3-52 months). Three patients died after 12 months from diagnosis.

Conclusion: There are no significant series of patients in worldwide literature to develop standard protocols; randomised trials are impossible and only national and international registries can allow to accrue a sufficient number of cases in order to reach definitive conclusions. Pregnant women must be followed by a multidisciplinary and specialised centre which includes also neonatology, gynecology and obstetrics.

No conflict of interest.

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155. Male breast cancer
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Background: Male breast cancer (MBC) is a rare disease accounting for less than 1% of all breast cancers and less than 1.5% of all malignancies in men. The incidence of MBC remained stable over the past four decades. Few males present with breast symptoms and the majority of MBC appears in men with pre-existing gynaecomastia. The prevalence of MBC increases with age (mean age at presentation is 60-65 y.o., approximately 10 years older than for breast cancer in women). This may contribute to an overall worse prognosis in men compared to women.

Material and Methods: Retrospective observational study including eighteen MBC patients underwent surgical treatment during the period of December 2002 — October 2012 at the Department of Surgery I, University of Insubria Varese.

Results: The median age at diagnosis was 63 y.o. (range 40—85 y.o.) according to the data reported in literature. No patient presented a BRCA mutation. The average diameter of the newly discovered nodule was 2 cm(range 0.9-3.5 cm). Seventeen patients underwent unilateral mastectomy, only for one patient a bilateral mastectomy was performed because of a contralateral gynaecomastia. Sentinel lymph node biopsy was performed in four patients; in one of them it was positive so complete axillary dissection was simultaneously performed. Fourteen patients underwent axillary dissection ab initio for preoperative positive cytology of the lymph node. In sixteen cases the histological type was invasive ductal carcinoma, in one case invasive ductal carcinoma plus invasive lobular carcinoma and in another one the histological type was intracystic ductal carcinoma with focal invasion. Fifteen of eighteen patients (83%) received adjuvant hormonal therapy. Five patients received adjuvant chemotherapy and subsequent hormonal therapy. Three cases received only radiation therapy and hormonal therapy. Three patients had recurrence and two of them underwent surgery for radicalization. The median of survival was 58 months (range 7—156 months).

Conclusion: Most of the existing information about MBC comes from small series, and treatment recommendations have generally been extrapolated from the results of clinical trial conducted in women. It is important to develop specific prospective and randomized clinical trials to establish tailored guidelines for the management of MBC patients.

No conflict of interest.

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156. Is mammaglobin-A tissue expression associated with angiogenesis, lymph-angiogenesis or cell proliferation in human breast cancer? 
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2 University Hospital of North Tees, Professorial Unit of Surgery, Stockton on Tees, United Kingdom

Background: Human mammaglobin has been shown to be specifically expressed in breast tissue, over-expressed in some breast cancers and has been associated with less aggressive phenotypes. Vascular endothelial growth factor receptor 3 (VEGFR3) is a marker for angiogenesis and lymph-angiogenesis, and Ki67 is a marker for cell proliferation. It is currently unknown how mammaglobin-A relates to these markers of tumour growth.

Materials and Methods: A total of 80 patients who have undergone breast surgery for either benign reasons or for breast cancer were randomly selected after stratification for tumour grade. Tissue sections were analysed by immunohistochemistry for mammaglobin-A, VEGFR3 and Ki67 expression. Expression was then compared against previously collected histological and clinical parameters including histological grade, tumour type and size and receptor status (where available). The study had ethics approval.

Results: There was no association found between either VEGFR3 or Ki67 with mammaglobin expression (P=0.925 and P=0.768 respectively) however, there was a significant association between Ki67 and VEGFR3 (P=0.037). Significant associations were also found between Ki67 and...
tumour grade (P<0.001), Ki67 and metastasis (P=0.045) and between VEGFR3 and tumour grade (P=0.002). No associations were found between mammaglobin expression and breast tumour histology.

**Conclusion:** The results of this study contrast with previous reports on mammaglobin and further research is needed to assess whether cell proliferation and/or angiogenesis are associated with tumours that express mammaglobin.

**No conflict of interest.**

http://dx.doi.org/10.1016/j.ejso.2014.08.151

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157. Comparing medical oncologists’ and surgeons’ treatment recommendations in early stage HR+, HER2− breast cancer (BC) patients (pts): A subanalysis of the Multidisciplinary Application of Genomics in Clinical Practice (MAGIC) survey

C. Markopoulos1, M. Aapro2, E. Mamounas3, R. Rouzier4, C. Thomassen5, J.E. Bargallo Rocha6, M. De Laurentiis7, D. Rea8, P. Neven9, B. Linderholm10

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2 Clinic of Genolier, Multidisciplinary Oncology Institute, Genolier, Switzerland
3 Orlando Health, University of Florida Cancer Center, Orlando, USA
4 Institut Curie-Université Versailles-Saint-Quentin, Department of Surgery, Paris-Saint-Cloud, France
5 Martin-Luther-University Halle-Wittenberg, Department of Gynecology, Halle (Saale), Germany
6 Instituto Nacional de Cancerologia, Department of Surgery, Mexico City, Mexico
7 National Cancer Institute G. Pascale Foundation, Department of Senology, Naples, Italy
8 University of Birmingham, Birmingham, United Kingdom
9 Multidisciplinary Breast Centre and Gynaecological Oncology, UZ Leuven, Leuven, Belgium
10 Sahlgrenska Academy and University Hospital, Department of Oncology, Gothenburg, Sweden

**Background:** The decision to offer adjuvant chemotherapy (AdjCT) or not to early stage HR+, HER2− BC pts depends on many factors. The MAGIC survey aimed to identify criteria clinicians use regarding AdjCT need, and to characterize pts for whom available data are sufficient to suggest AdjCT or not and those for whom more data are required for informed decision-making. The data presented here in show the effect of the physician on MGA adoption.

**Materials and methods:** The online survey was available to physicians working in multidisciplinary BC teams (≥5 years BC treatment experience). The survey contained modules regarding respondent characteristics (country-specific trends were evaluated for countries with >30 respondents) and AdjCT decisions for 896 simulated patient profiles. A conjoint analysis evaluated patient attributes considered for AdjCT decisions.

**Results:** From August 2013 to January 2014, 911 respondents (52 countries) completed the survey. The table summarizes overall results.

<table>
<thead>
<tr>
<th>Attributes considered for AdjCT decision (in order of importance)</th>
<th>Age, tumor grade, tumor size, nodal status, Ki67, ER, PR expression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of patient profiles ≥50% probability of AdjCT recommendation</td>
<td>66%</td>
</tr>
<tr>
<td>Proportion of patient profiles ≥50% probability of no AdjCT recommendation</td>
<td>18%</td>
</tr>
<tr>
<td>Factor leading to most heterogeneity in treatment recommendations</td>
<td>Respondent’s country of residence</td>
</tr>
</tbody>
</table>

For the present analysis, the physicians were categorized into 3 groups: clinical and medical oncologists (Group 1, n=491), surgeons and gynecologists (S&G) who prescribe AdjCT (Group 2, n=97), and S&G who do not prescribe AdjCT (Group 3, n=241). The majority in all 3 groups had >10 yr experience in BC treatment (79% vs 84%/vs 77%), always/often consulted international BC guidelines (98% vs 99% vs 98%), and multidisciplinary teams were involved in treatment decision (82% vs 93% vs81%). The simulated treatment recommendation showed limited differences between the physician groups, although both S&G groups tended to request “more information” at a higher rate.

**Conclusions:** The MAGIC survey revealed substantial heterogeneity in treatment recommendations on an international level for early stage HR+, HER2− BC pts; pts with extreme low- or high-risk characteristics had more homogeneous recommendations. There was more heterogeneity by country of residence than by specialty. The data indicate a need for broadly available tools to help make more-informed treatment decisions.

**Conflict of interest:** Advisory board: Matti Aapro - Genomic Health Inc. Michele De Laurentiis - Genomic Health Inc. Eleftherios Mamounas - Genomic Health Inc. and GE Healthcare Daniel Rea - Genomic Health Inc. Roman Rouzier - Genomic Health Inc., Roche and GSK Christoph Thomassen - Genomic Health Inc. Board of directors: Barbro Linderholm - Steering committee for EORTC 10085 Male Breast Cancer study EORTC/BIG/NABCG collaboration. Corporate-sponsored research: Matti Aapro - CarisLifeSciences and Champions Roman Rouzier - Roche and GSK Christoph Thomassen - American Diagnostica Other substantive relationships: Christs Markopoulos – speakers’ honoraria Genomic Health Inc. Matti Aapro - NGS Agora Eleftherios Mamounas - Genomic Health Inc. (speakers’ bureau)

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158. Comparing medical oncologists and surgeons in adoption of multigene assays for early stage HR+, HER2− breast cancer patients: A subanalysis of the Multidisciplinary Application of Genomics in Clinical Practice (MAGIC) survey

R. Rouzier1, M. Aapro2, E. Mamounas3, C. Thomassen4, C. Markopoulos5, J.E. Bargallo Rocha6, M. Martin7, V. Smids7, L. Landherr8, A. Petrovsky9

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2 Clinic of Genolier, Multidisciplinary Oncology Institute, Genolier, Switzerland
3 Orlando Health, University of Florida Cancer Center, Orlando, USA
4 Martin-Luther-University Halle-Wittenberg, Department of Gynecology, Halle (Saale), Germany
5 Athens University Medical School, Department of Surgery, Athens, Greece
6 Instituto Nacional de Cancerologia, Department of Surgery, Mexico City, Mexico
7 Hospital General Universitario Gregorio Marañón, Medical Oncology Service, Madrid, Spain
8 Leiden University Medical Center, Department of Pathology, Leiden, Netherlands
9 Uzsoki Teaching Hospital, Department of Oncoradiology, Budapest, Hungary
10 Russian Cancer Research Center, Moscow, Russian Federation

**Background:** Multigene assays (MGA) have been demonstrated to provide prognostic and/or predictive information beyond traditional parameters. The MAGIC survey aimed to identify criteria physicians use regarding breast cancer (BC) adjuvant chemotherapy (AdjCT) need, and to characterize patients (pts) for whom available data are sufficient for informed decision-making or for whom more data are required. The survey also assessed the adoption of MGA, MGA usage, and reasons for not using MGA. The data presented herein show the effect of the specialty of the physician on MGA adoption.

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Materials and methods: From August 2013 until January 2014, physicians working in multidisciplinary BC teams (>5 years BC treatment experience) could complete the online survey. Some modules evaluated respondent demographics and clinical tools used for AdjCT decision-making. For analysis, the physicians were categorized into 3 groups: clinical/medical oncologists, surgeons and gynecologists (S&G) who prescribe AdjCT (S&G AdjCT+), and S&G who do not prescribe AdjCT (S&G AdjCT−).

Results: Overall, 911 respondents (52 countries) completed the survey; 829 respondents were included in this analysis.

S&G seemed to use MGA more often than medical/clinical oncologists. Among MGA users in all 3 groups, 829 respondents were included in this analysis. The heterogeneity of physician groups would like to incorporate MGA in their practice, and most, followed by MammaPrint (S&G), Oncotype DX® and univariate analyses performed to assess correlation.

Conclusions: The MAGIC survey showed that S&G used MGA more often than medical/clinical oncologists and that there are differences in the MGA they use and their reasons for not using MGA.

Conflict of interest: Advisory board: Roman Rouizer — Genomic Health Inc. (Consultancy), Roche and GSK Matti Aapro — Genomic Health Inc. Eleftherios Mamounas — Genomic Health Inc. and GE Healthcare Christoph Thomssen — Genomic Health Inc. Vincent Smit — Genomic Health Inc.

Corporate-sponsored research: Roman Rouizer — Roche and GSK Matti Aapro — CarisLifeSciences and Champions Christoph Thomssen — American Diagnostica Christoph Thomssen — Research support from American Diagnostica

Other substantive relationships: Matti Aapro — NGS Agora Eleftherios Mamounas — Speakers’ bureau for Genomic Health Inc. Christos Markopoulo — Genomic Health speakers’ honoraria Miguel Martin — Speakers honoraria from Genomic Health Inc.

<table>
<thead>
<tr>
<th>Usage of tools (overall)</th>
<th>Oncologists (n=491)</th>
<th>S&amp;G AdjCT+ (n=97)</th>
<th>S&amp;G AdjCT− (n=241)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjuvant! Online®</td>
<td>74%</td>
<td>75%</td>
<td>66%</td>
</tr>
<tr>
<td>Nottingham Prognostic Index</td>
<td>17%</td>
<td>15%</td>
<td>32%</td>
</tr>
<tr>
<td>Predict</td>
<td>12%</td>
<td>11%</td>
<td>11%</td>
</tr>
</tbody>
</table>

Usage of MGA

<table>
<thead>
<tr>
<th>Overall</th>
<th>&gt;20% of their HR+, HER2−, lymph node+ BC pts (% of MGA users)</th>
<th>&gt;20% of their HR+, HER2−, lymph node+ BC pts (% of MGA users)</th>
</tr>
</thead>
<tbody>
<tr>
<td>47%</td>
<td>69%</td>
<td>69%</td>
</tr>
<tr>
<td>32%</td>
<td>43%</td>
<td>45%</td>
</tr>
<tr>
<td>20%</td>
<td>36%</td>
<td>34%</td>
</tr>
</tbody>
</table>

Used assays (% of MGA users)

<table>
<thead>
<tr>
<th>Oncotype DX®</th>
<th>77%</th>
<th>82%</th>
<th>80%</th>
</tr>
</thead>
<tbody>
<tr>
<td>MammaPrint®</td>
<td>38%</td>
<td>9%</td>
<td>39%</td>
</tr>
<tr>
<td>EndoPredict®</td>
<td>3%</td>
<td>28%</td>
<td>2%</td>
</tr>
</tbody>
</table>

Reasons for not using MGA (% of MGA nonusers)

<table>
<thead>
<tr>
<th>Lack of reimbursement</th>
<th>48%</th>
<th>57%</th>
<th>28%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td>39%</td>
<td>60%</td>
<td>55%</td>
</tr>
<tr>
<td>No availability</td>
<td>41%</td>
<td>27%</td>
<td>38%</td>
</tr>
<tr>
<td>Not in relevant guidelines</td>
<td>19%</td>
<td>17%</td>
<td>26%</td>
</tr>
<tr>
<td>Lack of evidence</td>
<td>16%</td>
<td>30%</td>
<td>16%</td>
</tr>
</tbody>
</table>

160. Optimising magnetic sentinel lymph node biopsy in an in vivo porcine model
M. Ahmed1, B. Anninga1, J. Poon2, S. Vreeman3, M. Peek2, M. Van Hemelrijck1, B. Ten Haken1, Q.A. Pankhurst1, M. Douek1

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2 Universiteit Twente, Institute for Biomedical Technology and Technical Medicine, Enschede, Netherlands
3 King’s College London, Cancer Epidemiology Group, London, United Kingdom
4 University College London, Institute of Biomedical Engineering, London, United Kingdom

Background: Magnetic sentinel lymph node biopsy (SLNB) is in its early stages of clinical application. We developed an in vivo porcine model to optimise the magnetic technique by evaluating the effect of differing volume of magnetic tracer and time of injection.

Materials and Methods: Magnetic tracer was injected in escalating volumes between 0.06 mL and 2 mL neat. A handheld magnetometer was then used to localize any in vivo signal from draining inguinal lymph nodes up to 4 hours after injection when bilateral magnetic SLNB of groin nodes was consequently undertaken, followed by groin node clearance. The iron content of excised sentinel lymph nodes (SLNs) was quantified and univariate analyses performed to assess correlation.

Results: Magnetic SLNB was successful in all 48 procedures. There was a significant correlation between the magnetometer counts and the iron content of excised SLNs (r=0.82; p<0.001). Total number of SLNs increased with increasing volumes of magnetic tracer (P<0.001). Transcutaneous magnetometer counts increased with increasing time from injection of magnetic tracer (P<0.001) and reached a plateau within 60
minutes. A non-statistically significant trend was observed between volume of magnetic tracer injected and iron content of SLNs (P = 0.07).

Conclusion: Magnetic SLNB is feasible with a range of volumes of magnetic tracer. The manipulation of volumes of magnetic tracer injected can determine the level of echelon nodes excised and increasing the time between injection and SLNB improves truncatable ‘hotspot’ identification. Application of these findings may help to improve clinical outcomes.

Conflict of interest: Board of directors: Professor Quentin Pankhurst is the co-founder and sits as a non-executive director on the Board of Directors of Endomagnetics Ltd (Cambridge, UK).

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161. Validating the ‘10 per cent Rule’ for magnetic sentinel lymph node biopsy in breast cancer
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Background: Magnetic sentinel lymph node biopsy (SLNB) is an emerging technique in the axillary staging of breast cancer. There is no evidence available to determine a suitable threshold of ex vivo magnetometer counts for node excision. Consequently, the ‘10 per cent rule’ derived from radioisotopes is applied. We assess the largest study of magnetic SLNB (SentIMAG Multicentre Trial) to determine the validity of the ‘10 per cent rule’.

Materials and methods: A total of 347 patients across 7 centres underwent SLNB with both magnetic and standard techniques. The ex vivo counts and histopathology of all nodes was prospectively collected. The distribution of magnetometer and radioactive counts of all nodes was assessed. The nodes excised for each patient were then classified as a percentage of the node with the highest count (hottest node). The false negative rates (FNR) as a decreasing function of the threshold of magnetic (62 per cent) and radioactive (58 per cent) uptake. The application of these findings may help to improve clinical outcomes.

No conflict of interest.

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162. Why should breast surgeons use ultrasound?
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2Universiti Kebangsaan Malaysia Medical Centre, Division of Breast Reconstructive Surgery Department of Surgery, Kuala Lumpur, Malaysia

Background: Portable ultrasound is now used in a variety of clinical settings by specialties outside of radiology. Despite increased accessibility to ultrasound the overall performance of ultrasound by breast surgeons is consistently low. We discuss the reasons why this is unacceptable for future patient care and answer the question, ‘Why should breast surgeons use ultrasound?’

Methods: We reviewed the literature for evidence assessing the outcomes of breast surgeon-performed ultrasound both intra-operatively and in the outpatient department.

Results: Intra-operative ultrasound (IOUS) performed by surgeons reduces re-excision rates in breast conserving surgery. Outpatient-based ultrasound performed by surgeons frees up the resources of radiology departments, allowing them to focus upon patients requiring more complex diagnostic and interventional procedures. For surgeons to competently perform intra-operative and outpatient-based ultrasound a period of formal ultrasound training is necessary to acquire knowledge of ultrasound skills and techniques. This should be followed by a period of mentorship and supervised training with an experienced breast radiologist.

Conclusions: Breast surgeon-performed ultrasound is beneficial to the multi-disciplinary care of breast cancer patients. To further improve multi-disciplinary care, breast surgeons and radiologists should work more collaboratively, to optimise imaging applications both in the operating theatre and outpatient department. Current advances in therapeutic percutaneous techniques are of interest to both surgeons and radiologists. In future a hybrid specialization should be considered to incorporate accreditation in both specialties for breast interventional procedures.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.157

163. Male breast cancer — the same disease as female breast cancer?
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1Institute of Oncology and Radiology, Surgery, Belgrade, Serbia

Introduction: Breast cancers (BC) in males are rarely diagnosed and comprise about 1% of all BC pts.

Patients and methods: We analyzed a group of male BC pts who were treated at the Institute of Oncology and Radiology of Serbia from 1994 to 2010. The majority of them were operated on depending on disease stage at diagnosis (and) adjuvant chemotherapy [(N)ACT] with CMF and FAC and Tamoxifen were given where indicated. Postoperative radiotherapy was performed in all N+ and T4 BC pts. Hormone receptors (HR) were determined prospectively either by biochemical DCC method, or by immunohistochemistry (IHC), while HER2 status was determined by IHC. Study endpoints were DFS, DFS and OS. Statistics includes Hi square and Log rank tests.

Results: In total 110 male pts median ages of 65 (range 29-84) years were analyzed. After median follow-up period of 56.6 mos (range 5-199 mos) disease relapse were confirmed in 42/110 (38%) pts, while 55/110 (50%) died. Sixty three pts (57%) were diagnosed in stage I/II 86/110 (78%) had ducal invasive and 81/110 (74%) grade 2 BC. HRs were determined in 68/110 (62%) pts and among them 63/68 (93%) were ER+ and/or PR+, while HER2 status was negative in 21/21 pts in whom it was measured (only 2/21 were triple neg BC). Radical surgery was performed in 87/110 (79%) of pts, radiotherapy in 77/110 (70%) of pts, (N)ACT received 45/110 (42%) and Tamoxifen 71/110 (66%) of pts. The following factors significantly influenced the disease outcome: a) stage 1/2 vs. stage 3 at diagnosis: longer DFS (Log-Rank test, p = 0.0), PFS (p = 0.0) and OS (p = 0.0); b) T1/2 vs. T3/4: longer DFS (p = 0.05), DFS (p = 0.0) and OS (p = 0.0); c) number of involved regional lymph nodes in radically operated pts: N0 vs. N1:4 longer DFS (p<0.0001), PFS (p<0.001) and OS (p = 0.0001) and N1:3 vs. N1:4: longer DFS (p = 0.007) and DFS (p = 0.01). Patients who were radically operated had better disease outcome compared to pts w/o radical surgery: longer DFS (p = 0.01) and OS (p = 0.002). Type of systemic therapy and radiotherapy did not influence disease outcome. Similarly, PR status did not influence disease outcome in ER+ BC pts.

Conclusion: Endocrine responsiveness was shown in a majority of pts with known HRs and luminal A/B subtypes were detected in almost all pts with known HER2 status. Our results confirmed that stage of disease at diagnosis, radical surgery and nodal status in operated pts are the most important factors influencing disease outcome.
164. Open access follow up for breast cancer patients at East Surrey hospital: The way forward for breast cancer care
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Background: In the UK there has been a nationwide movement towards patient led follow up care after breast cancer treatment. This open access follow up has been found to be more effective, enabling cancer survivors to take control of their condition and get on with their lives. This study aimed to assess the impact of an open access follow up system for breast cancer patients at East Surrey hospital. Instead of a routine appointment, follow up patients with a benign mammogram would be given open access telephone contact with breast care nurses and offered a hospital appointment only when necessary.

Materials and methods: Mammogram results were reviewed for follow up breast cancer patients attending clinic for their annual review. Results were divided into those reported as benign and those as indeterminate or suspicious. Patient selection for entrance to open access was determined by questionnaire consent. Following the introduction of open access, breast care nurses monitored phone calls received over a one month period. Questionnaires were used to grade the appropriateness of the queries and any actions required to resolve them.

Results: Of 100 clinic encounters analysed, 69 had mammograms that were reported as benign and 31 as indeterminate or suspicious. On average, 2080 breast cancer patients are seen in follow up clinics at East Surrey hospital per annum. Of these approximately 69%, or 1435 patients, will have a benign mammogram. Following introduction of open access, an increase in call volume was reported by breast care nurses. However, further analysis showed that 98% of telephone encounters were entirely managed by breast care nurses and none required a hospital appointment. The cost of a single follow up clinic appointment is £150, so £215,250 per year is spent at East Surrey hospital on patients who may not have needed to attend.

Conclusions: This study demonstrated that open access follow up provided adequate and timely support for patients after breast cancer treatment, while simultaneously preventing unnecessary hospital attendances. Furthermore, there are clear financial benefits to the introduction of open access follow up for this patient group. As a result, open access is being proposed by the East Surrey Breast Unit for follow up patients with a benign mammogram. Further analysis is needed to evaluate the longer term impact. Nevertheless, the initial results are promising.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.159

166. Patterns of care in the administration of neoadjuvant chemotherapy for breast cancer: A population based study
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Background: Neoadjuvant chemotherapy (NAC) is used to facilitate radical surgery for initially irresectable or locally advanced breast cancer. The indication for NAC has been extended to clinically node negative (cN0) patients in whom adjuvant systemic therapy is foreseen. No definitive evidence exists regarding the timing of the sentinel node biopsy (SNB) in relation to NAC. NAC could theoretically sterilize the axilla and thus reduce the need for axillary lymph node dissection (ALND). On the other hand, patients could be subjected to a potentially worse oncological outcome if SNB is performed after NAC due to the higher false negative rate. A population based study was conducted to evaluate the use of NAC and the timing of SNB.

Methods: All female patients with breast cancer, treated in 10 general hospitals in the Eindhoven Cancer Registry area in the Netherlands between 2003 and June 2012 were included (N=18,427).

Results: A total of 1,402 patients (7.6%) were treated with NAC during this period, increasing from 2.5% in 2003 to 13.0% in 2011. This increase was significant (P<0.001) for all tumour sizes. Use of NAC increased from 0.5% up to 2.3% for clinically T1 tumours, from 2.8% to 27.0% for T2, from 30.6% to 70.9% for T3 and from 40.5% to 58.1% for T4 tumours. In clinically N0 patients use of NAC increased from 1.0% to 4.4% and in clinically N+ from 12.0% to 57.5% (P<0.001). Patients receiving NAC were younger (P<0.001) and showed a higher clinical T and N status (P<0.001) compared to those undergoing surgery first.

No conflict of interest.

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167. Immune checkpoints in breast cancer surgery
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Background: Immune checkpoints refer to a plethora of inhibitory pathways built into the immune system that are crucial for maintaining self-tolerance, but recent research has underlined their role in carcinogenesis.

The aim of our study was to evaluate two major immune checkpoints (CTLA-4, PD-1) peripherally in the serum of breast cancer patients undergoing breast conserving surgery (BCS) and sentinel node biopsy (SNB).

Material and methods: We enrolled 35 patients with stage I and II breast cancer, aged between 28- and 81-years-old, mean age 61.2 years. 2.7 ml of blood was collected from the patients to determine serum concentrations of CTLA-4 and PD-1 at three time points i.e. preoperatively, during anesthesia after harvesting of SN and 24 hours after BCS and SNB (105 blood samples). Control blood samples were taken from 25 healthy age-matched women (after obtaining Ethics Committee approval). Assessment of CTLA-4 and PD-1 levels by flow cytometry was carried out by a dedicated hematologist using CD152P2-labeled anti-human CTLA-4 and HU CD279 anti-PD-1 antibodies (Becton Dickinson). A dedicated breast pathologist, blinded towards laboratory results, examined all postoperative specimens.

Results: A statistically significant difference was found between PD1 expression in breast cancer patients preoperatively and healthy controls (26.31±/11.87 vs 12.72+/8.15; p < 0.0001). A statistically significant correlation was found between CTLA4 and PD1 levels before surgery (r=0.43; p=0.0084) but disappeared in the two subsequent measurements during (r=0.08; p=0.62) and after surgery (r=0.14; p=0.43). CTLA4 expression was associated with age (r=0.33, p=0.0453). Elevated levels of CTLA4 were present in older breast cancer patients. There was a trend towards significance between PD1 levels and tumor size before surgery and intraoperatively (T2=31.41+/14.14 vs T1=22.47+/8.28; p=0.07 and T2=32.81+/13.21 vs T1=24.61+/10.68 p=0.08, respectively). A decrease in PD1 levels was observed after harvesting SN with metastasis, but not in SN- negative patients (p=0.05). There was a negative correlation between PD1 expression and progesterone receptor (PR) status after BCS and SNB (r=-0.39; p=0.024).

Conclusions: The results provide an essential basis for further studies to investigate the potential role of immune checkpoints in breast cancer and provide an immunological justification for purely surgical procedures, particularly axillary lymph node surgery, and enrich the already well-established position of chemotherapy, endocrine therapy and anti-HER2 therapy, with the option of fine-tuning of the immune system. Breast cancer patients show an altered profile of immune checkpoints markers, with higher concentrations of PD1 noted in larger tumors. Surgical removal of lymph nodes containing tumor cells alters the immunologic response by diminishing PD1 levels.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.161

168. A systematic review of the clinical impact of the PIP breast implants
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Background: The recent controversy regarding the use of industrial silicone in mammary implants marketed by Poly Implant Prothèse (PIP) raised serious questions regarding their safety in humans. The implants from PIP were used extensively worldwide for augmentation or breast reconstruction. In this systematic review, we intend to examine the evidence pertaining to the clinical impact of mammary implants manufactured by PIP.

Materials and methods: Articles were identified by searches of Medline, PubMed, Embase and Google Scholar databases up to March 2014 using the terms: 'PIP', 'Poly Implant Prothèse', breast implants' and 'augmentation mammoplasty' or 'silicone'. In addition the websites of regulating bodies in Europe, USA and Australia were searched for reports related to PIP mammary implants.

Results: PIP mammary implants are more likely to rupture than other implants and can cause adverse effects in the short to the medium term related to the symptoms of rupture such as pain, lumps in the breast and axilla and anxiety.

Conclusions: There is no evidence that PIP implant rupture causes long-term adverse health effects in humans so far. The long-term adverse effects usually arise from inappropriate extensive surgery, such as axillary lymph node dissection or extensive resection of breast tissue due to silicone leakage.

No conflict of interest.

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169. Can lymphovascular invasion detected in preoperative core biopsy predict sentinel node positivity in early breast cancer?
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Background: Sentinel node biopsy is accepted gold standard care in early breast cancer with normal axillary lymph nodes assessed with preoperative ultrasound or fine needle aspirate. About 30% of these patients require further operative intervention for completion node clearance.

Aims: To retrospectively study the correlation between lymphovascular invasion (LVI) detected in preoperative breast core biopsy and post operative sentinel node positivity.

Materials and Methods: All patients undergoing core biopsy and sentinel node biopsy for invasive breast cancer processed in a regional central laboratory, were identified over a period of 14 months.

Data collected included the LVI status reported on core biopsy sample, sentinel node status and histopathology details on post operative tissue specimens (including type, size and grade of tumour).

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.162
Results: A total of 298 patients were identified, of which 270 patients were diagnosed with Invasive ductal Carcinoma (IDC), and 28 with invasive lobular carcinoma (ILC).

The Chi-squared test was used to analyse data, and a strong statistically significant relationship was found between LVI and sentinel node positivity (p<0.001) for all patients observed in this study.

There was also a statistically significant association between LVI in core biopsy tissue and IDC overall, and was particularly so for Grade 2 and 3 (p<0.001). This strong association remains so even after adjusting for tumour size.

Conclusions: Our study suggests that a subgroup of breast cancer patients with Grade 2 and 3 IDC, could be offered Axillary lymph node clearance on the basis of LVI in their pre-operative core biopsy. Further large scale prospective studies are required to substantiate our findings and also to fully assess the link for ILC of all grades with LVI.

No conflict of interest.

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170. High intensity focused ultrasound (HIFU) ablation in the treatment of breast cancers: A systematic review
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Background: High intensity focused ultrasound (HIFU) is a non-invasive technique that may be used for the treatment of breast lesions. For breast cancer, it has the potential to improve cosmetic outcomes and allowing earlier administration of systemic therapies due to shorter postoperative recovery times. This systematic review evaluates the current evidence on outcomes (cosmetic, imaging and/or histopathology) of HIFU in the management of breast cancer.

Material and Methods: All studies published up to December 2013 evaluating the role of HIFU in the treatment of breast cancers were identified using Medline/PubMed library databases. Studies were considered suitable if they were performed on human subjects with breast cancers and objectively recorded at least one clinical outcome measure of response (imaging, histopathological and/or cosmetic) to HIFU treatment.

Results: A total of nine studies fulfilled the inclusion criteria. No residual tumour was found in 100% (31/31 patients) of cases with SN (-) pN1 non-dissection. Distant recurrence was observed in: group(A) 23/995 cases (2.3%), group(B) 4/38 cases (10.5%) and group(C) 1/11 cases (9.1%), respectively. Deaths were reported in: (A) 55/995 cases (5.5%), (B) 11/94 cases (11.7%) and (C) 42/227 cases (18.5%). With regard to (B) and (C), macrometastasis was found in (B) 22/227 cases (18.5%). With regard to (B) and (C), macrometastasis was found in (B) 7/56 cases (12.5%) and (C) 39/204 cases (19.1%) and micrometastasis in 38 cases. However, additional dissection was only performed in 1 case and the other 94 cases were followed up by observation. Median follow-up period was 67.3 months. Axillary recurrence was observed in: group(A) 4 of the 995 intra-operative-SN (-) pN0 cases (0.4%), group(B) 3 of the 94 intraoperative-SN (-)-pNI non-dissection cases (3.2%) and group(C) 1 of the 227 intraoperative-SN (+) dissection cases (0.4%). Distant recurrence was observed in: (A) 55/995 cases (5.5%), (B) 11/94 cases (11.7%) and (C) 42/227 cases (18.5%). With regard to (B) and (C), macrometastasis was found in (B) 7/56 cases (12.5%) and (C) 39/204 cases (19.1%) and micrometastasis in 38 cases. (B) 4/38 cases (10.5%) and (C) 1/11 cases (9.1%), respectively. Deaths were reported in: (A) 23/995 cases (2.3%), (B) 3/94 cases (3.2%) and (C) 20/227 cases (8.8%), respectively.

Conclusions: In cases in whom dissection was omitted, no increase in axillary recurrence was observed, and the long-term prognosis of these patients was comparable to that of patients who underwent dissection. It was suggested that it is possible to control the axillary lymph node area locally with systemic treatment and that there is no significance of adhering to dissection.

No conflict of interest.

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172. Evaluating assessment tools to predict axillary status postneoadjuvant chemotherapy in locally advanced breast carcinoma
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Background: With the widespread concept of sentinel lymph node (SN), axillary dissection is now only performed in limited cases, even in cases with SN metastasis, exploring the possibility of avoiding radical dissection. Based on the results of a retrospective observational study in patients who had been treated at a single institution with a consistent therapeutic strategy, we discuss the long-term prognosis of sentinel lymph node-positive breast cancer patients without dissection.

Materials and Methods: The subjects comprised patients with cT1-3N0 invasive breast cancer, who had undergone SN biopsy (SNB) during the period from May 2003 to February 2014. Patients with bilateral breast cancer and those who had undergone SNB before preoperative treatment were excluded. Intraoperative diagnosis was conducted by imprint cytology with serial sectioning at 2 mm intervals. Patients diagnosed with SN (+) underwent axillary dissection. Permanent pathological diagnosis was conducted using combined cytokeratin immune histochemistry. In principle, patients were recommended to undergo axillary dissection if they were found to be positive for metastasis. However, many cases were followed up with observation without undergoing dissection under the suitable systemic therapy.

Results: SNB was performed in 1323 patients. During the intraoperative diagnosis, 233 cases were diagnosed with SN (+) and 1090 cases with SN (-). Of the SN (+) cases, 227 cases underwent additional axillary level 1 and level 2 dissection or dissection for sampling. Permanent diagnosis demonstrated macro metastasis in 204 cases, micrometastasis in 11 cases and ITC in 5 cases, no metastasis in 7 cases. The permanent pathological diagnosis of patients with SN (-) was a definitive diagnosis of pN0 in 995 cases and pN1 in 95 cases (8.7%). Breakdown of the 95 cases was macrometastasis in 57 cases (60%) and micrometastasis in 38 cases. However, additional dissection was only performed in 1 case and the other 94 cases were followed up by observation. Median follow-up period was 67.3 months. Axillary recurrence was observed in: group(A) 4 of the 995 intra-operative-SN (-) pN0 cases (0.4%), group(B) 3 of the 94 intraoperative-SN (-)-pNI non-dissection cases (3.2%) and group(C) 1 of the 227 intraoperative-SN (+) dissection cases (0.4%). Distant recurrence was observed in: (A) 55/995 cases (5.5%), (B) 11/94 cases (11.7%) and (C) 42/227 cases (18.5%). With regard to (B) and (C), macrometastasis was found in (B) 7/56 cases (12.5%) and (C) 39/204 cases (19.1%) and micrometastasis in 38 cases. (B) 4/38 cases (10.5%) and (C) 1/11 cases (9.1%), respectively. Deaths were reported in: (A) 23/995 cases (2.3%), (B) 3/94 cases (3.2%) and (C) 20/227 cases (8.8%), respectively.

Conclusions: In cases in whom dissection was omitted, no increase in axillary recurrence was observed, and the long-term prognosis of these patients was comparable to that of patients who underwent dissection. It was suggested that it is possible to control the axillary lymph node area locally with systemic treatment and that there is no significance of adhering to dissection.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.166
Background: This study proposes to replace the completion axillary dissection with the confirmation of a complete pathological response to neoadjuvant chemotherapy among the axillary nodes.

Methods: From May 2010 to April 2012 we prospectively studied 50 women with locally advanced operable breast cancer histologically confirmed by thick needle biopsy puncture that had undergone preoperative primary systemic chemotherapy, breast cancer surgery and SLNB with immediate axillary lymphadenectomy.

Results: Complete pathological nodal response (pCR) occurred in 16 (31.4%) axillae and no pathological complete nodal response in 35 (68.9%) axillae. The sentinel lymph node was successfully identified in 39(76.5%) axillae out of 51 axillae; yielding a detection rate of about 76.5%. Out of 39 axillae in which SLN were identified there were 32 (82.1%) axillae showed metastatic deposits, while SLN were free of metastatic disease in 7 (17.9%) axillae by both: hematoxylin and eosin, together with immunohistochemical examination. Correlation of US response of ALN versus pathological results (considered as the gold standard) showed that the sensitivity US assessment of ALN was 82.9%, specificity was 68.8%, accuracy was 78.5%, with highly significant p value <0.001. Correlation of SLNB assessment of ALN versus pathological results (considered as the gold standard) showed that Sensitivity of SLNB was 94.1%, specificity was 100.0%, accuracy was 94.9% with highly significant p value <0.001.

Conclusion: We suggest that formal ALND can be avoided post NACT in patients with LABC with cytologically proven metastatic ALN if there were complete clinical, sonographic response and negative SLNB post NACT.

No conflict of interest.

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174. Oncological safety of skin sparing mastectomy (SSM) with immediate breast reconstruction (IBR) in locally advanced breast carcinoma

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Introduction: The safety and efficacy of skin sparing mastectomy (SSM) in patients with high-risk disease have not been well studied. The implementation of neoadjuvant chemotherapy for a selected group of patients with locally advanced breast cancer followed by skin sparing mastectomy and immediate reconstruction expands the scope of preservation to encompass more and more patients with large tumors and additionally improves the final aesthetic outcome

Materials and methods: Prospective, non-randomised study on 70 patients with stage IIIA breast carcinoma, enrolled from 2008-2012, who received anthracycline based neoadjuvant chemotherapy with good response, were allocated to either SSM and immediate reconstruction or CM. The choice between SSM or CM was based on a joint decision by the patients and physicians. There was no attempt to randomize patients. Studied parameters included both oncological and aesthetic assessment. Patient, tumor, and treatment characteristics were evaluated and compared between the SSM and CM groups. Data was analyzed using SPSSwin statistical package version 12. Disease-free and overall Survival analyses were estimated using Kaplan-Meier method. Comparison between two survival curves was done using Log-rank test.

Results: The seventy patients who showed good response to neoadjuvant anthracycline based chemotherapy [mean post neoadjuvant mammographic tumor size was 2.44±0.704 Std. cm and the median was 2 cm (range 0-4)] were divided to two groups: Group (A); underwent skin sparing mastectomy followed by immediate reconstruction either by latissimus dorsi flap or TRAM flap, while Group (B) underwent modified radical mastectomy. Postoperative complications as wound infection, flap necrosis and seroma were more in group (A). Total no of wound infection was 24 cases (68.6%) in SSM versus 17 cases (48.6%) in MRM. The incidence of seroma was high in SSM with LD reconstruction mainly in the donor area. There was significantly more necrosis in skin sparing mastectomy than in MRM. Partial flap necrosis was seen in 5 cases; including the skin paddle or the underlying fatty layer, total sloughing of the LD flap muscle was seen in one case 10 days postoperative and converted to MRM. Aesthetic result was acceptable in 88% of cases in group (A). During follow up for two years for patients in both group , local recurrence in group (A) was observed in 3 cases while it was 4 cases in group (B) and the difference was insignificant. Metastasis observed in 12 cases (34.3%) in group (A) and 11 cases 31.4% in group (B) and the difference was insignificant. Overall survival was similar in both groups (A&B), this was 94.3% and 97.1% respectively.

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173. Evidence suggestive of interactions between DAP1 and DAP3 in the context of human breast cancer

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Background: Recent literature suggests a significant role for DAP1 in the control of autophagy, likely preventing autophagy from devolving into type II autophagic cell death.

DAP3 has been identified as a significant component of the external apoptosis pathway, especially in relation to Fas-related death signalling complex.

Previous studies by our group suggested that increased DAP1 and DAP3 are favourable prognostic markers in human breast cancer

There is currently no evidence of a relation between DAP1 and DAP3. DAP1 and DAP3 can be taken as surrogates of autophagy and apoptosis respectively. In this pilot study, we intend to study the relation of DAP1 and DAP3 in context of human breast cancer in a clinical cohort and in vitro studies.

Materials and methods: The mRNA expression of both molecules was previously studied in a clinical cohort. The correlations of DAP1 and DAP3 with each other and with other significant members of the autophagy and apoptosis pathways were examined (caspase 3, caspase 8, caspase 9, DELE, IPS1, mTOR, Rictor).

In addition, the mRNA expression of DAP1 and DAP3 was studied in DAP1 and DAP3 knock-down strains of MDA-MB-231.

Results: In the clinical cohort, DAP1 has a direct relation with the expression of mTOR (r=0.173, p=0.0878, n=98), Rictor (r=0.337, p=0.00632, n=100), and caspase 3 (r=0.247, p=0.0133, n=100), and an inverse relation with caspase 8 (r=-0.257, p=0.00997, n=100).

DAP3 had a direct relation with caspase3 in this cohort (r=0.205, p=0.041, n=100). DAP1 and DAP3 have a significant direct correlation (r=0.357, p=0.000216, n=104).

In the MDA-MB-231 knock-down strains, knock-down of DAP1 was associated with suppression of DAP3 expression, and vice versa.

Conclusion: We believe this is the first study purporting significant interactions between DAP1 and DAP3 in the context of human breast cancer. This is suggestive of potentially novel instances of cross-talk between the autophagy and apoptosis pathways. A better understanding of these possible may open further possibilities for therapeutic targeting in human breast cancer.

No conflict of interest.
175. MEK inhibitors are effective for specific breast cancer cell subtypes
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**Background:** The MAPK pathway is essential for normal cellular functions; however, it is dysregulated in one third of all cancers and facilitates progression of the disease. MEK 1 & 2 are component kinases responsible for activating specific downstream targets ERK1 and ERK2, which in turn enable cell proliferation, differentiation, motility, apoptosis etc. MEK1/2 are targets for intervention and MEK inhibitors (MEKI) have been approved for treating BRAF-mutated melanoma (Trametinib) and are currently in clinical trials (e.g. metastatic non-small cell lung cancer). The study aim was to examine the effects of different MEKI on breast cancer cells and evaluate therapeutic potential.

**Materials and Methods:** A panel of 10 breast cancer cell lines (including ER+, ER-, HER2 normal, HER2 amplified) were treated with a range of concentrations of the MEKI: AZD6244 (AZD), PD98059 (PD) and U0126 (U0). ER+ cells were treated with MEKI ±17b-Oestradiol (E2; 10nM). Responses to treatment were examined by (i) metabolic activity via MTT assay and (ii) ability to inhibit phosphorylation of ERK1/2 by Western Blot.

**Results:** Metabolic activity was inhibited significantly in MDA-MB-231 cells by all 3 MEKI (AZD, U0, PD p<0.001) while SkBr3 cells were unaffected by the MEKI at all concentrations. U0 inhibited activity significantly (p<0.001) in a further 6 cell lines (5 ER+ & 1 ER-); 3 of the ER+ cells were also inhibited by AZD (p<0.001) while the remaining 2 ER+ were unaffected (ER- cell line not tested). Paradoxically: U0 & AZD stimulated activity significantly (p<0.001) in MDA-MB-175 cells while U0 alone stimulated activity in ZR-75-1 cells (p<0.001). None of the MEKI were able to block E2-stimulated activity. Ability to inhibit phosphorylation of ERK1/2 varied considerably across the cell panel, with each inhibitor and their concentration.

**Conclusions:** MEK inhibition may be an effective way of treating triple negative breast cancers that harbour both KRAS and BRAF mutations, as indicated by the response of MDA-MB-231 cells. The lack of consensus across the other cell lines supports the genetic and signalling complexity of breast cancer cells, although there is potential for treating those harbouring KRAS or BRAF mutations (suggested by the responses of Hs578T, SkBr3 and ZR-75-30 cells) with MEKI in combination with other therapeutics; while E2-responsive/ER+ cancers are unlikely to benefit from MEKI alone.

No conflict of interest.

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176. Are we doing too many re-excisions? Review of practice in breast conserving surgery
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**Background:** With the advancement of techniques, breast conservation surgery (BCS) is gold standard for early-stage breast cancer. Breast cancer recurrence thought to be related to incomplete margin excision. The purpose of this study was to evaluate re-excision rate in BCS in Dorset County Hospital for invasive cancers and DCIS, and compare it against the national UK guidelines. (20% average rate of re-excision).

**Materials and methods:** Data was collected retrospectively between July 2012 to June 2013 after audit department approval. Clinical and pathological features of the cancer were reviewed. The local trust standard for re-excision is <2mm radial margin both for invasive and non-invasive disease.

**Results:** Our data sourced identified 108 patients with a median age of 66 years (47-89). Of these patients, 26 had at least one re-excision representing 24% of the total patients. Of the 26 patients who had one re-excision, 5 had an additional re-excision or mastectomy representing 4.62% of the original data pool. No patient had more than 3 operations which is compliant with the NHSBP guidelines.

**Conclusion:** In order to minimize the rate of re-excision, we considered taking extra margins when margins of excision are <10mm on the intraoperative specimen X-ray (Faxitron). Better communication with Histopathologists regarding tissue orientation may also affect the statistical results of re-excision. We are also considering marking margins with ink in theatre by the operating surgeon. The change of practice will be audited with a prospective study to evaluate their impact on re-excision rates.

No conflict of interest.

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177. Vitamin D insufficiency as a cause of bone pain in the breast clinic can we avoid isotope bone scans?
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**Background:** Women who have had breast cancer often complain of bone pain which can be related to metastatic disease, a side effect of aromatase inhibitors or musculoskeletal. In recent years Vitamin D deficiency has been reported as a common public health issue. Vitamin D deficiency is variable depending on the population studied. In a study of healthy controls, Vitamin D deficiency was observed in 37.5% of the study cohort. Influence of vitamin D on breast cancer incidence and outcome is complex and controversial. One study of 1295 breast cancer patients of all stages, suggested that the lower the Vitamin D the poorer the survival. Vitamin D and its role in bone health is well known and is important during breast cancer follow up. Anecdotally in our unit breast cancer patients in follow up complaining of bone pain seemed to be found to have normal bone scans in the presence of Vitamin D insufficiency. We would like to know if bone scans could be omitted in patients shown to be Vitamin D deficient.

**Methods:** All patients over a 14 month period, who had a Vitamin D level performed for bone pain as part of their breast cancer follow up results were reviewed. Both their Vitamin D blood test and bone scan results were reviewed.

**Results:** 54 female patients were identified, with a median age of 63 and range 27-92 years. 43 patients (79.6%) had vitamin D insufficiency (<75nmol/L). 32 (59%) patients also had a bone scan requested.

<table>
<thead>
<tr>
<th>Vitamin Status</th>
<th>Bone Scan Normal (%)</th>
<th>Bone Scan Abnormal (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin D Normal</td>
<td>5 (16%)</td>
<td>3 (9%)</td>
</tr>
<tr>
<td>Vitamin D Insufficiency</td>
<td>16 (50%)</td>
<td>8 (25%)</td>
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</tbody>
</table>
Conclusion: A low vitamin D can cause bone pain. We feel this shows a high proportion of breast cancer patients have vitamin D insufficiency. (79.6% vs 37.5% healthy controls) We feel this should be tested routinely for patients with bone pain prior to extensive bone scan during follow-up. However in our small cohort 25% of patients with low Vitamin D also had bone metastases; these results do not support omission of bone scan in patients with Vitamin D insufficiency and history of breast cancer. However patients with low levels of vitamin D should be treated to improve their symptoms and reduce anxiety about metastatic disease.

No conflict of interest.

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178. Breast cancer: Analysis of the first 1000 sentinel lymph node dissections at The Royal Alexandra Hospital
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Background: The status of the axillary lymph nodes is a key determinant of prognosis and further treatment in early breast cancer. Traditionally the axilla was cleared by axillary lymph node dissection (ALND). This operation is associated with significant post-operative morbidity. More recently sentinel lymph node dissection (SLND), which is associated with less morbidity, has been found to be a safe alternative for axillary staging in those with clinically negative axillae.

In our institution, despite not having a nuclear medicine department, SLND began in 2007. Upon completion of the first 1000 cases we sought to audit our performance against standards reported in the literature.

Methods: The first 1000 SLNDs were identified via a prospectively maintained database. There were no exclusion criteria, patients with both palpable and impalpable tumours and patients who had previously had surgery were included. The database recorded: date of injection of radioactive colloid, date of surgery, the responsible surgeon and whether or not a SLN was successfully identified.

Results: The SLN was successfully identified in 95.1% of cases. Most cases were injected with radioactive colloid on the same day as surgery (55.9%) with 97.7% having a SLN identified. This was significantly better than the group injected the day prior to theatre where only 91.8% had a SLN identified (P<0.05).

There were 49 unsuccessful procedures. Of these, 3 were attributed to a 'technical fault', previous axillary surgery was cited as a factor in 3 cases, 1 case had an extensive tumour found in the axilla but in 85.7% (42 cases) no reason was recorded. Most unsuccessful procedures (73.5%, n=36) were in patients injected on the day prior to theatre. Following further surgery 28 (57.1%) of the axillae where there had been an unsuccessful SLND were found to be negative.

One surgeon (surgeon A) was responsible for the majority of SLNDs (54.7%). Surgeons B and C were responsible for 29.9% and 15.4% of cases respectively. All 3 surgeons identified the SLN in >90% of cases.

Conclusions: Our overall 95.1% success rate is comparable to rates quoted in most published series. Our experience demonstrates that SLND can be successfully introduced to institutions with no nuclear medicine facilities, that surgeons can be effectively trained using the 'Newstart' model and that there is a need to further study the effect of timing of isotope injection on the successful identification of sentinel nodes.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.173

179. Mammographic screening in the 3-million population region of Lower Silesia, Poland: Cost of cancer detection during initial and subsequent round
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Background: Potential benefit of nation-wide population-based breast cancer screening programme needs to balanced against the financial burden for the health care system. The aim of this study was to assess the cost of cancer detection in the initial and subsequent screening round.

Material and methods: Population-based nation-wide breast cancer screening programme targets women aged 50-69 without breast cancer history. Biennial two-view screen-film mammography is used as a standard screening test. Data for this study were prospectively collected using the SIMP® official electronic system for monitoring of prophylaxis programmes, as well as the databases of the regional branch of National Health Fund and the Lower Silesian Cancer Registry. The amount of expenses was obtained from the Regional Coordinating Centre for Screening Programmes. The number of screen-detected and pathologically proven cancers (both invasive and ductal in situ) was calculated. Costs of cancer detection were measured and converted into US dollars and Euros (USD/EU) using official tables of the Polish National Bank.

Results: The total expense for the programme in the region of Lower Silesia during the initial (2007-2008) and the subsequent (2009-2010) round was 4,214,811 USD / 3,087,680 EU and 5,412,613 USD / 3,962,344 EU, respectively. The number of detected cancers was 1049 and 987. The average cost of breast cancer detection in the screening programme during 2007-2010 was 4730 USD / 3460 EU. The cost-effectiveness ratio obtained in initial and subsequent screening was respectively 4020 USD / 2940 EU and 5480 USD /4010 EU per cancer found.

Conclusions: Comparison between costs and effects among different screening programmes is difficult. However, our programme looks not expensive when considering reports of mammographic screening at its start in Western Europe (Italy 1991-1992, Spain 1995-1996). Despite the one-third rising in the subsequent screening, cost of breast cancer detection remains low during both rounds making the programme applicable for middle-income country.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.174

180. Quality of initial and subsequent breast cancer screening in the 3-million population region of Lower Silesia (Poland)
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Background: Population-based mammographic screening was widely introduced in Poland in 2007. Aim of this study was to assess the quality of programme and compare performance indicators between initial (2007-2008) and subsequent (2009-2010) screening.

Material and methods: Programme covers 50-69 aged women without breast cancer history. The standard test is screen-film two-view (cranio-caudal and oblique) mammography performed every two years. Attendees are examined every two years. Quality evaluation

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was done using early performance indicators recommended by European Guidelines.

Results:

Conclusions: The main weakness of screening programme remains poor coverage of eligible population through initial and subsequent round suggesting both the failure of centrally organized invitation system as well as low acceptance rate. Low participation rate decreases the programme effectiveness in reducing overall breast cancer mortality in the future, despite high quality of examination.

No conflict of interest.

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181. Preference for surgical treatment of breast cancer in women from rural and urban areas
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2 Medical University of Lublin, Department of Surgical Oncology Student Research Group, Lublin, Poland

Background: Breast cancer is the most frequently diagnosed cancer in women. Mastectomy is still a standard procedure and it was dominant way of breast cancer surgery in the end of the last century in Poland. Nowadays, the percentage of the breast conserving surgery is steadily increasing. The aim of this study was to analyze the preferences for the type of surgical treatment between rural and urban breast cancer patients taking into account clinical and pathological differences of the disease.

Materials and methods: 1505 women with pathologically proven breast cancer, surgically treated during the last 10 years in a breast care unit were evaluated. The analysis concerned: place of living, type of surgical treatment including neoadjuvant chemotherapy (NACTH) and intra-operative radiotherapy (IORT), tumour size (T), lymph node status (N) and staging.

Results: 958 (63.6%) urban and 547 (36.3%) rural, were surgically treated. Mastectomy was done to 50% urban and 55% rural patients. 49% urban and 45% rural women underwent breast conserving surgery (BCS). SNB allowed to preserve axillary lymph nodes in 79.2% of all group. (78.6% rural vs. 79.5 urban). The similar percentage of rural and urban pts. obtained NACTH or received IORT. No significant differences regarding application of NACTH before mastectomy or BCS. Tis (4%) and T1 (40%) tumours occurred more often in urban patients; T2 (49.1%) and T4 (9.5%) in rural (chi²; p=0.007). Stages 0 and I were more commonly diagnosed in urban patients (35.9% vs. 30.9%; chi², p=0.039), stages II and III in rural (63.4% vs 58.1%).

Conclusions: Although rural women were diagnosed significantly more frequent in higher stage of breast cancer, and thus more often decided to undergo mastectomy, the frequency of NACTH and IORT were similar. For rural women living far from the oncological centres, both NACTH and IORT seems to be feasible.

No conflict of interest.

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182. What ever happened to the patented aromatase inhibitors in treatment of breast cancer?
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Introduction: Drugs go off patent and the market is flooded by non branded alternatives. Patients who are on patent drugs might get them changed to cheaper alternatives by their GPs. The aim is to check the sales demographics of the patented Aromatase Inhibitors (AIs) since their loss of brand patent.

Method: Sales figures for Arimidex®, Femara® and Aromasin® were obtained from official company end of year sales publications by Astrea Zeneca, Novartis and Pfizer, from 2009 to 2012.

Results: Arimidex® (anastrozole) went off patent in 2010. Femara® (letrozole) went off patent in 2011. Aromasin® (exemestane) went off patent in April 2011(USA) and July 2011 (Europe).

Conclusion: The figures indicate a significant drop of patent drug sales after loss of patenty. Multiple brands in the market need quality control by respective regulatory authorities to ensure patients are not receiving inferior products that might affect their cancer care.

Worldwide sales figures as income (millions dollars) and percentage change in sales.

<table>
<thead>
<tr>
<th>Aromatase inhibitor</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arimidex® (1)</td>
<td>878 (+16%)</td>
<td>494 (-44%)</td>
<td>42 (-91%)</td>
<td>21 (-50%)</td>
</tr>
<tr>
<td>Femara® (2)</td>
<td>572 (+18%)</td>
<td>651 (+14%)</td>
<td>219 (-66%)</td>
<td>22 (-52%)</td>
</tr>
<tr>
<td>Aromasin® (3)</td>
<td>483 (+4%)</td>
<td>483 (0%)</td>
<td>361 (-25%)</td>
<td>209 (-42%)</td>
</tr>
</tbody>
</table>

References


No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.177
183. Role of PET CT scan in evaluation of the axilla in diagnosed breast cancer patients

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Background: Since the introduction of sentinel node biopsy (SNB) it is being widely adopted to access axillary nodal status. In this retrospective study, our goal is to investigate the accuracy of PET CT scans in predicting axillary nodal metastasis and to determine whether axillary surgery can be limited in PET CT negative, sentinel node positive patients.

Methods: Female patients with breast cancer diagnosed from January 2012 to December 2013 in a tertiary care hospital in India were included in the study. Patients with distant metastasis or neoadjuvant chemotherapy were excluded.

All patients had biopsy proven breast cancer and underwent FDG-PET CT prior to surgery. Patients with PET avid nodes in the axilla underwent axillary dissection, barring a few who had low FDG activity with subcentimetre nodes. These patients underwent a sentinel node biopsy.

All patients with PET CT negative axillae underwent SNB. Sentinel nodes were identified using both radioactive dye (Tc 99 calcium phytate) and blue dye (Patent Blue V). The sentinel nodes were analysed intraoperatively and node positive patients proceeded to axillary dissection.

Results: 112 patients (mean age 50 years), were included. Mean tumor size was 29 mm.

PET CT scan showed FDG uptake in axilla in 44 patients with no evidence of nodal involvement in 68 patients. Out of the 44 patients with PET positive axillae, direct axillary clearance was done in 39 patients. Final histopathology confirmed axillary metastasis in 36 patients, with the remaining 3 showing reactive nodes only. Five patients with PET positive axillae underwent a sentinel node biopsy as FDG uptake in the nodes was low. Four out of these five patients had positive nodes on intraoperative cytology and thus proceeded to axillary clearance. The median number of involved nodes in patients with PET positive axillae was 6.

All the 68 patients with PET CT negative axilla, underwent sentinel node biopsy. Median number of sentinel nodes examined was 2. Intraoperative analysis was negative for malignancy in 47 patients. This was confirmed on paraffin section in 45 patients, with 2 patients showing micrometastasis. 21 patients had positive intraoperative cytology and proceeded to axillary clearance. Non sentinel node metastatic involvement was found in 12 patients. Median number of axillary nodes involved in this group of PET negative axilla was 3.

The positive predictive value of PET CT scan in our series was 93% and negative predictive value was 68%.

Conclusions: A positive FDG PET CT correctly guides to disease burden in axilla as nearly all patients with increased uptake had metastatic disease in axilla. The extent of node involvement is lower in PET negative disease. Non sentinel node involvement is significant even in FDG PET negative axilla.

No conflict of interest.

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184. Methylation of the BRCA1 gene promoter in triple negative breast cancer

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Background: Germline mutations in the BRCA1 gene are associated with the Triple Negative (TN) breast tumour phenotype. However, BRCA1 mutations are rarely seen in sporadic cases of breast cancer. This has led to the hypothesis that epigenetic mechanisms, such as methylation of promoter regions, may be responsible for inactivating the BRCA1 gene in some cases. This study is investigating whether levels of methylation detected in peripheral blood DNA correlates with tumour DNA methylation levels, and whether levels of tumour methylation are associated with tumour phenotype and receptor status.

Materials and methods: Blood and FFPE tumour samples were obtained from 71 women recruited into the Sheffield Breast Cancer Study (full ethical approval is in place). FFPE tumour tissue was macro-dissected and DNA extracted. Bisulphite modification and pyrosequencing was performed to determine the methylation levels at 11 CpG sites within a ~500bp region adjacent to the BRCA1 transcription start site. Tumours were scored for nine morphological features of BRCA1 associated tumours; trabecular growth pattern, high mitotic index, necrosis, circumscribed growth pattern, moderate or intense lymphocytic infiltrate, syncytial growth pattern, malignant nuclear grade, pushing margins (>50%) and little or no tubule formation.

Results: There was no correlation between overall or individual CpG site methylation levels between paired tumour and blood DNA samples. However, tumours with high average levels of methylation were more likely to be TN than moderately methylated tumours and poorly methylated tumours (Table 1; p=0.02). When tumours were scored for BRCA1 associated morphological features, those with ≥5 features are more likely to be TN compared to those with <5 features (69% versus 37%; p=0.03) and have higher levels of methylation (18.2% versus 12.5%).

Table 1

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Mean blood methylation %</th>
<th>Mean tumour methylation %</th>
<th>Mean level methylation 11 sites</th>
</tr>
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<tbody>
<tr>
<td>≥30%</td>
<td>7.7</td>
<td>44.2</td>
<td>88</td>
</tr>
<tr>
<td>≥10 &lt;30%</td>
<td>6.7</td>
<td>16.7</td>
<td>36</td>
</tr>
<tr>
<td>&lt;10%</td>
<td>7.5</td>
<td>6.9</td>
<td>33</td>
</tr>
</tbody>
</table>

Conclusions: Contrary to previous studies there does not appear to be any correlation between blood and tumour methylation levels at CpGs within this region of the BRCA1 promoter. The association between tumour morphological features, receptor status and tumour methylation may reflect epigenetic inactivation of BRCA1 in these tumours.

No conflict of interest.

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185. Is microdochectomy a procedure of relevance in diagnosing early breast cancer in an era of ‘high-tech’ diagnostics?

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Background: Nipple discharge is a common presentation in breast disease. In the absence of other sinister clinical or radiological findings, it might present a challenge to the treating surgeon. Unilateral, unducal, blood stained or serous nipple discharge is a red flag symptom of breast cancer. Microdochectomy (excision of the offending duct) is used to provide a definitive histological diagnosis. In addition, it has a role in symptom control, as nipple discharge can be distressing to patients.
Methods: This is a retrospective analysis of prospectively maintained data. A pre-designed proforma was filled for all patients presenting to a symptomatic breast clinic at a district general hospital. The data of patients who underwent microdochectomy between 02/2003 and 03/2014 was retrieved, entered onto an Excel database and analysed. Additional information, if required, was obtained from computerized records. The procedures were performed by a single surgeon.

Results: 59 patients underwent 63 microdochectomy operations. Two patients underwent simultaneous bilateral procedures, while 2 patients had 2 procedures consecutively on the same side. All patients but one were female, and all patients but one presented with isolated nipple discharge. Bloody discharge was reported in 63.5% of cases, 31.7% had serous discharge, and only 2 cases were negative for blood on dipstick.

87% of cases were benign. Duct ectasia was reported as the only pathology in 42% of these, benign intraductal papilloma in 38%, while the two conditions were reported simultaneously in 5 cases.

13% of cases showed ductal carcinoma in situ (DCIS), one of which showed lobular carcinoma in situ as well. All 8 patients presented with bloody discharge, and had benign radiology (M2/U2). Seven patients had insufficient or normal cytology (C1/C2), except one patient who had a B3 core biopsy result.

Conclusion: A significant proportion of patients undergoing microdochectomy (13%) were diagnosed with non invasive breast cancer. All those patients had normal or benign radiology reported prior to surgery. Microdochectomy remains a useful diagnostic tool in patients presenting with isolated uniductal nipple discharge in the absence of other breast symptoms.

No conflict of interest.

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186. Reducing margin width following breast conserving surgery increases risk of residual disease in the breast
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Background: In breast conserving surgery histologically involved margins i.e. tumour at the ink margin are associated with an increased risk of local recurrence compared to patients with negative margins. It is therefore generally accepted that patients with ink positive margins should undergo further surgery to achieve a clear margin. What is less clear however is the adequacy of the margin that should be achieved. Current NICE guidance suggests a margin of 2mm for DCIS, but doesn’t commit for invasive disease. ASCO guidance now recommends that an ‘ink negative margin’, no tumour at the cut edge is sufficient. The aim of this study is to determine the effect of adopting the ASCO guidance on our surgical practice in particular the effect on the surgical reoperation rate for margins.

Materials and Methods: Patients who underwent breast conserving surgery between May 2011 and December 2013 were retrospectively identified from the cancer database. Patients with a radial margin less than 2mm underwent a further excision of margins. Pathology reports were analysed for these patients. Re-excision rates were then determined for this cohort based on the current ASCO guidance.

Results: A total of 450 patients underwent breast conserving surgery in the study period. Of these 111 had a margin of less than 2mm and underwent a further excision of margins. Pathology reports were analysed for these patients. Re-excision rates were then determined for this cohort based on the current ASCO guidance.

Conclusion: Adopting the ASCO guidelines would have reduced the reoperation rate for surgical margins by 36.9%. However 53.7% of these patients had residual disease. It is unclear if subsequent adjuvant therapies in the form of radiotherapy, chemotherapy and endocrine therapy would have controlled this disease and prevented future local recurrence, but there is clinical concern from this data that adopting these guidelines may increase local recurrence rates.

No conflict of interest.

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187. Pre-operative axillary ultrasound in clinically negative breast cancer
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Objective: To evaluate the efficacy of using pre-operative axillary ultrasound in determining lymph node status for clinically negative breast cancer.

Methodology: The studies were derived from PUBMED and Cochrane Library using key search terms. Systematic Literature search yielded 842 results. Out of these, 10 studies were deemed acceptable for meta-analysis and were analyzed using PASW V18 software.

Results: Results showed that in terms of sensitivity, Ultrasound alone with a statistical pooled mean difference of -4.61 is more sensitive compared to Ultrasound with FNAB. However, when compared based on specificity and positive predictive value, Ultrasound with FNAB with values of -1.23 and -0.40 respectively yielded relatively higher percent-ages. Negative predictive value between axillary ultrasound alone and axillary ultrasound with FNAB showed no statistical difference. Patients who tested positive on Ultrasound with FNAB were spared sentinel lymph node biopsy.

Conclusion: The meta-analysis showed that Ultrasound is a useful screening tool for the clinically negative axilla. Sonographic features suggestive of malignancy on ultrasonography can help determine if the lymph nodes are metastatic. However, it is the addition of cytological examination of lymph nodes that are metastatic. However, it is the addition of cytological examination by FNAB that increases the accuracy of detecting axillary metastasis. Pa-tients who tested positive on ultrasound with FNAB were triaged to undergo axillary lymph dissection sparing them from unnecessary sentinel lymph node procedures.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.182

188. Outcomes of post-mastectomy breast reconstruction: Comparison of tertiary centre, district general hospital and the National Mastectomy and Breast Reconstruction Audit
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Background: The National Mastectomy and Breast Reconstruction Audit (NMBRA) evaluated quality outcomes after breast reconstruction. Our primary aim was to evaluate reconstruction outcomes in a tertiary teaching centre, Belfast City Hospital (BCH) and a District General Hospital, Craigavon Area Hospital (CAH) in Northern Ireland and compare to NMBRA standards.

Methods: Medical charts and pathology reports were retrieved from BCH records on patients who underwent breast reconstruction from Jan 2011 to Dec 2011 following mastectomy for breast cancer. Data was collated and recorded on an Excel spreadsheet. Data from the NMBRA was retrieved from the third national report. Statistical analysis was performed using Graphpad software, t-test was used to compare means of continuous data and Fishers exact test for categorical data. Significance was set as p value <0.05.
Conclusion: Quality outcomes at the regional teaching centre (BCH) and the district general hospital (CAH) were comparable. Complication rates recorded in both centres were in line with those reported in NMBRA. Limitations of our study include disparity in sample sizes and the retrospective nature of this audit. The case mix also differs from the NMBRA in that there are no free flap reconstructions in this series. Ongoing quality improvement studies are required to further develop the standard of care delivered to patients with breast cancer who are offered reconstruction.

No conflict of interest.

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189. Treatment options in patients with malignant phyllodes tumour of the breast
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2 Centre of Oncology Maria Sklodowska-Curie Memorial Institute Kraków Branch Poland, Department of Radiotherapy, Krakow, Poland
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Background: The primary treatment of choice in patients with malignant phyllodes tumor of the breast (MPTB) is surgical. However, the extent of surgery [breast conserving surgery (BCS) vs. mastectomy] and the role of adjuvant radiotherapy have been controversial. We report a single institution’s experience with MPTB. The aim of this work is to discuss therapeutic options of this rare tumor.

Material and methods: From 1980 to 2008, seventy patients with MPTB treated primarily with surgery were evaluated. The age ranged from 21 to 76 years (mean 50) and the mean size of the tumor was 6 cm. In 34 (48.6%) patients total mastectomy was performed, and 36 (51.4%) patients were treated with BCS (lumpectomy or wide local excision). Microscopic surgical margins were free of tumor in all cases. In 64 (91.4%) patients, margins were ≥1 cm. In the remaining 6 (8.6%) patients treated with BCS margins were <1 cm and subsequently radiotherapy was performed.

Results: In all 70 patients, 58 (82.9%) had no evidence of disease (NED) after 5 years. The 5-year NED survival rate was not significantly related to the extent of surgery (82.4% in patients who underwent mastectomy and 83.3% in patients who underwent BCS only or BCS with adjuvant irradiation). The 5-year NED survival rates in BCS (tumor-free margin ≥1 cm) and BCS with irradiation (tumor-free margin <1 cm) groups were identical (83.3%).

Conclusion: Our data supports the potential use of breast conserving surgery in patients with MPTB. Mastectomy is indicated only if tumor-free margins cannot be obtained by BCS. Adjuvant radiotherapy may be considered if tumor-free margins are <1 cm.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.184

190. Expression and circulating levels of perlecan in breast cancer
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Background: Breast cancer is the most common cancer and cause of cancer death among women. Localised breast cancer can be cured by surgery but the mortality remains high as some tumours metastasize early. Perlecan is a basal membrane protein, which is involved in promoting angiogenesis and invasiveness of cancers. Here, the expression pattern of Perlecan during tumour progression and related to the molecular subtypes of breast cancer (Luminal A, Luminal B, Luminal H, ErbB2 and Basal cell-like cancer) was studied. In addition, the pre- and postoperative circulating levels of Perlecan in plasma were measured in patients with breast cancer, and compared with controls.

Methods: Perlecan expression in tissues was visualized using immunohistochemistry. Circulating levels of Perlecan were measured using an ELISA assay. The results were statistically analyzed by using one way ANOVA, independent t-test and the Kruskal-Wallis test.

Results: As expected, in normal breast tissue Perlecan is expressed both in epithelial and vascular basal membranes and absent in the stroma. In breast cancer tissue the basal membrane is fragmented and sometimes completely disrupted. There is also a marked upregulation of Perlecan expression in the stroma. However, the Perlecan expression was not different between the molecular subtypes of breast cancer. The concentration of Perlecan in plasma was significantly higher in oestrogen receptor positive breast cancer compared with receptor negative breast cancer both in the pre- (p-value: 0.029) and the post-operative setting (p-value: 0.022). There was a borderline significance in Perlecan levels between the different subtypes of breast cancer (p-value: 0.097).

Conclusion: Perlecan is expression becomes upregulated in the breast cancer stroma and seems to be related to hormone receptor positive breast cancer. In order to evaluate the prognostic impact for Perlecan expression in the tumour and whether Perlecan can be used as a tumour marker, larger cohorts with longer follow-ups are needed.

No conflict of interest.

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191. Causes of variation in immediate breast reconstruction after ablative surgery for invasive breast cancer

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Background: A third of breast cancers are diagnosed in women aged ≥70, yet this group is severely under-represented in clinical studies. As a result there is limited evidence to guide appropriate treatment selection for elderly breast cancer patients.

A major issue in the UK is that a large proportion of elderly patients with operable disease do not receive surgery. For women with ER+ disease primary endocrine therapy (PET) is a well tolerated alternative, but there is limited data on short- and long-term outcomes available to help clinicians and patients make informed decisions.

Bridging The Age Gap in Breast Cancer is an NIHR funded research programme which aims to improve decision making for clinicians and older patients based on high quality observational evidence. Alongside an ongoing multi-centre cohort study, retrospective data from cancer registries has been analysed to investigate the relationship between patient characteristics, non-surgical treatment and survival outcomes for older women with non-metastatic breast cancer.

Materials and Methods: Data were acquired for a total of 23,960 women aged 70 and over with a first diagnosis of breast cancer between 2002–2010 from two UK cancer registry regions (West Midlands and Northern & Yorkshire). Analysis was restricted to patients with Stage I–III disease and ER+ tumours (n = 17,129).

Missing data on covariates were handled using multiple imputation. Treatment effects were derived using covariate adjusted competing risks Cox hazards models. To adjust for observed confounding between treatment and survival, patients from each group were matched based on propensity to surgical treatment given observed characteristics.

Results: Cumulative incidence of both breast cancer specific and other cause mortality is higher for patients treated non-surgically. Estimates for the effect of surgery on breast cancer specific survival are almost unchanged between the unmatched (no surgery vs surgery HR = 3.27, 95% CI 2.90-3.68) and matched groups (HR = 3.34, 95% CI 2.99-3.73). Other cause survival is not analysed further as it is clearly subject to confounding after matching, suggesting that unobserved factors explain survival differences.

Conclusions: This retrospective analysis suggests that non-surgical treatment of elderly women with early breast cancer increases the risk of breast cancer death regardless of age, co-morbidity and disease characteristics. The cohort study will provide more detailed data on outcomes for both survival and disease progression, which combined with this data will allow for a more evidence based approach to clinical decision making for this important subgroup of patients.

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192. Omission of surgery in elderly women with non-metastatic breast cancer and its effects on survival

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Background: In recent years there has been an increased interest in performing immediate breast reconstruction after ablative surgery for invasive breast cancer. However, in the Netherlands, considerable variation exists in the performance of immediate breast reconstruction between hospitals. Possible explanations for this variation could be related to several patient, surgeon, or hospital factors, but the exact causes are not known.

Aims of this study were: 1) to investigate the causes of variation between hospitals in immediate breast reconstruction after ablative surgery for invasive breast cancer; and 2) to identify causes which could be optimized so that the number of immediate breast reconstructions will increase and variation between hospitals will decrease.

Methods: Data was gathered from all hospitals (n=92) in the Netherlands using data of the national NABON Breast Cancer Audit (NBCA). All primary invasive breast cancer patients without distant metastatic disease diagnosed between January 1, 2011, to September 30, 2013 were selected. Hospitals were compared on immediate reconstruction after ablative surgery and causes for variation were determined by multivariate analyses.

Results: In total 34,041 patients with invasive breast cancer were registered. Forty percent of the patients were treated with a ablative surgery (n=13,258). Of these patients, 16% received an immediate reconstruction, varying from 0 to 63% between hospitals. A slight increase in immediate reconstructions was seen throughout the years. Prosthesis reconstruction was performed most often (88%). Other reconstructive techniques, autologous or latissimus dorsi-prosthesis reconstruction occurred in less than 1% of the patients undergoing ablative surgery. Increasing age, axillary lymph node dissection and post-operative radiotherapy were factors influencing the percentage of immediate reconstructions. Information of hospital related factors such as availability of plastic surgeon, surgeon preferences and organisational structure in a hospital needs to be evaluated in order to completely understand the variation seen. At the conference, these results will be presented.

Conclusions: A large variation was found in immediate breast reconstruction between hospitals treating patients with ablative surgery for invasive breast cancer. Multivariate analyses revealed that patient as well as treatment factors cause this variation. Hospital related factors will also be investigated which could give focus to improvement projects.

No conflict of interest.

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193. The correlation between breast cancer stage and anticancer therapy and the risk of lymphoedema

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Background: Radical surgical therapy of breast cancer associated with removal of axillary lymph nodes, combined with irradiation, may cause development of severe early and delayed complications, including...
lymphoedema of the upper limb. The therapy of lymphatic edema is life-long and of limited efficacy. Therefore it is highly important to select the group of patients, in whom development of lymphoedema is expected.

**Objective:** Association between the applied anti-cancer therapy and the risk of lymphoedema of the upper limb based on lymphoscintigraphic evaluation.

**Methods:** 77 patients after radical surgery for breast cancer treatment were analyzed. The patients were prospectively followed-up for a mean period of 36 months. Metric measurements of the upper extremities and diagnostic investigations (lymphoscintigraphy) were performed.

**Results:** In 47 of 77 patients (61%) there were clinical symptoms of lymphoedema, and in 30 patients (39%) no symptoms were observed. In patients with clinical lymphatic oedema lymphoscintigraphy revealed signs of lymphatic failure, and flow asymmetry index was abnormal. The applied anti-cancer therapy (i.e. type of surgery, chemotherapy, radiotherapy and hormonal therapy) was not significantly correlated with the development of lymphoedema, or with the flow asymmetry index (p > 0.05). The association between application of chemotherapy and development of lymphoedema showed a tendency for significance. The total number of lymph nodes removed during the surgery and number of positive nodes were not significantly associated with both the risk of development of lymphoedema and the flow asymmetry index (p > 0.05). The association between the number of metastatic lymph nodes and development of lymphoedema tended to be significant (p = 0.057)

**Conclusions:** The applied anti-cancer therapy (radiotherapy, chemotherapy, hormonal therapy), lateralization of cancer as well as pT and pN were not associated with an increased risk of upper limb lymphoedema in patients operated on for breast cancer with axillary dissection.

No conflict of interest.

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**194. Outcome of breast conservation therapy in early breast carcinoma in Egyptian female patients. Clinico-pathological study for the patterns of treatment failure**

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**Background:** The general aim of this study is to gain insight into the problem of local recurrence after breast conserving surgery for early invasive breast carcinoma in Egyptian females.

**Materials and Methods:** In a population based cohort of 200 women with invasive breast cancer, operated upon from January 2005-December 2009 and followed through 2012-2013. We studied breast conserving surgery and the prognostic factors and their effect upon local recurrence, distant metastases, disease free survival and overall survival.

**Results:** The incidence of LR (local recurrence) at 5 years was 7% and that of DM (distant metastases) was 10.5%. The incidence of LDFS (local disease free survival), DDDFS (distant disease free survival), DFS (disease free survival) and OS (overall survival) at 5 years was 91.6%, 84.6%, 79.3% and 85.3% respectively.

None of the prognostic factors turned out to be correlated to LR, however; both LN status (lymph node status) and adjuvant systemic treatment were correlated to DM and DFS, while HR status (hormone receptor status) was correlated to DFS. IBTR as a variable was strikingly related to DM and consequently decreased survival where the 5 year DDDFS of patients who developed IBTR was 60.6% compared to 87.1% of people who did not.

**Conclusion:** The most important determinants of distant metastases were lymph node status and adjuvant systemic treatment. Local recurrence is a significant risk factor for distant metastases and consequently decreased survival.

No conflict of interest.

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**195. Skin sparing mastectomy and immediate reconstruction for locally advanced breast cancer after neoadjuvant chemotherapy**

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**Background:** Skin-sparing mastectomy (SSM) followed by immediate reconstruction (IBR) is a safe and commonly used treatment for patients with early-stage breast cancer. However, the safety and efficacy of SSM in patients with high-risk disease have not been well studied. The implementation of neoadjuvant chemotherapy for a selected group of patients with locally advanced breast cancer followed by skin sparing mastectomy and immediate reconstruction expands the scope of breast preservation to encompass more patients with large tumors and improves the final aesthetic outcome.

**Materials and methods:** Prospective, study on 70 patients with stage IIIA breast carcinoma, enrolled from 2008-2012, who received anthracycline based neoadjuvant chemotherapy with good response at the National Cancer Institute, Cairo University, Egypt. Patients were divided into two groups: Group (A); underwent skin sparing mastectomy followed by immediate reconstruction either by latissimus dorsi flap or TRAM flap, while Group(B); underwent modified radical mastectomy. The choice between SSM or MRM was based on a joint decision by the patients and physicians. Studied parameters included both oncological and aesthetic assessment.

Patient, tumor, and treatment characteristics were evaluated and compared between the two groups.

**Results:** The duration of operation and blood loss were more longer in group (A) than group (B). Postoperative complications as wound infection, flap necrosis and seroma were more in group (A). Total no of wound infection was 24 cases (68.6%) in SSM versus 17 cases (48.6%) in MRM. There was significant more seroma in skin sparing mastectomy than in MRM. Partial flap necrosis was seen in 5 cases; including the skin paddle or the underlying fatty layer, total sloughing of the LD flap muscle was seen in one case 10 days postoperative and converted to MRM. Aesthetic result was acceptable in 88% of cases in group (A). During follow up for two years for patients in both groups, local recurrence in group (A) was observed in 3 cases while it was 4 cases in group (B) and the difference was insignificant. Overall survival was similar in both groups, this was 94.3% and 97.1% respectively.

**Conclusion:** In our study the feasibility of skin sparing mastectomy in down staged selected locally advanced breast cancer after neoadjuvant chemotherapy suggested that it is oncologically safe.

No conflict of interest.

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**196. Extended rotational flap for closing defects of upper-lateral segment of the breast. The useful trick in oncoplastic breast conserving surgery**

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**Background:** Breast tumors occur mostly in the upper-lateral quadrant. Simple wide local excision leads to deformities. Rotational flap (RF) is effective, leads often to the decrease of the breast size, although it saves breast shape. But asymmetry requires additional operation. We believe that optimal oncoplastic technique allows saving shape and size of the breast. It can be achieved by volume replacement from the axillary region — lateral thoracical flaps (LTF), which are reliable (Holmstrom 1986, Munhoz 2006). However, such flaps also can lead to deformities.
Material and methods: We propose using combination of rotary glan-
dular and lateral thoracical flaps to improve aesthetic effect --- the
extended rotational flap (ERF). The marking have to use lateral section
of the breast with lower base and join to it a wide portion of axillary region
with taking into account natural folds and borders. Circumareolar mobiliz-
ation of nipple-areola complex also must be performed. All of these help
us minimize defects and changes of breast size and shape. Proper patient
selection and planning for extended rotational flap can achieve excellent
aesthetic results and save the patient from symmetrizing operation.

Results: There were performed 222 oncoplastic breast conserving sur-
geries (OBCS) for 218 patients in LISSOD private oncological hospital
during 2007-02.2014. Tumor location in the upper-lateral quadrants was
observed in 58.8% of patients. Defect closing with RF, LF, and ERF
was performed for 43 patients. Middle age was 51.7 years. All patients
were discussed on multidisciplinary oncological conference. Treatment
plan was formed according to NCCN guidelines. Operational plan was dis-
cussed with each patient. Defects closing with RF were performed for 6
patients, with LTF for 26 patients, with ERF - 11. Oncoplastic surgery
was combined with axillary lymph node dissection in 20 patients, with
sentinel node biopsy - in 28 patients. The average weight of specimen
was 127.7g. Complications were observed in 13 (30,2%) patients
- 2 patients had hematomas, 4 - cellulites, 4 - seromas, 1 had ischemia of wound
margins, 2 had marginal flap necrosis. I patient had tumor in surgical mar-
gins, she needed re-excision.

Conclusion: Rotational flap and lateral thoracical flap are effective
methods of OBCS if the tumor is situated in upper-lateral quadrants of
the breast. Combined method was proposed — extended rotational flap
with tissue mobilization from axillary region according to the natural
points of rotation and borders. This method allows reach excellent results
safety and avoid symmetrizing operations.

No conflict of interest.

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197. The prognostic significance of progesterone receptor expression
in patients with ER positive and HER2 negative breast cancer
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Background: Breast cancer is heterogeneous disease and its subtypes
are classified based on gene expression profiling or immunohistochemical
characteristics. Progesterone receptor (PgR) and Ki-67 are considered
important factors to distinguish luminal A subtype and luminal B subtype.
The aim of this study was to examine the prognostic significance of the
proportional scoring of PgR status in invasive breast carcinoma by Alfred
method.

Materials and methods: PgR has been evaluated in 613 patients with
ER positive and HER2 negative stage I-III breast cancer treated from 2005
to 2012. Estrogen receptor (ER), PgR, HER2, and Ki-67 were assessed by
immunohistochemistry (IHC). The threshold for ER positivity was 1%. Tu-
mors were considered HER2 positive if IHC staining was 3+ or FISH posi-
tive. A proportional score was assigned representing the estimated
proportion of positive staining tumor cells (0=none; 1=1/100; 2=1/100
to 1/10; 3=1/10 to 1/3; 4=1/3 to 2/3; 5=2/3). Relapse-free survival
(RFS) curves and overall survival (OS) curves were generated using the
Kaplan-Meier method and survival comparisons were made with the log-
rank test. A multivariate Cox proportional hazards regression model
performed in a stepwise fashion was used to determine the prognostic value.
The level of significance was taken to be 0.05. IBM SPSS Statistics19 soft-
ware package was used for statistical analysis.

Results: The distribution of PgR proportional score was not normal
[0(n=87,14.2%), 1(n=46,7.5%), 2(n=75,12.2%), 3(n=130,21.2%),
4(n=151,24.6%), 5(n=124,20.2%)]. The cutoffs for PgR proportional
score and corresponding p values for RFS and OS were score=1
(p=0.013 and p=0.015). On univariate analysis, the significant predictive
factors for shorter RFS and shorter OS were positive nodal status and high
Ki-67 labeling index. No correlation was found between PgR (cutoff points
1 or 2) and pathological lymph node status. High Ki-67 was significantly
associated with higher histological grade and positive nodal status. Nodal
status, PgR, and Ki67 remained important predictive factors for OS on
multivariate analysis.

Conclusions: Proportional score of PgR provides important clinical in-
formation besides other parameters to help decision making of treatment
for breast cancer.

No conflict of interest.

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198. Skin-sparing goldilocks mastectomy — “intermediate”
reconstruction: Single institution experience
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Background: Achieving of high quality of life are fundamental prin-
ciples of treatment breast cancer patients. That idea led to oncoplastic
breast surgery onset. Foster (2002), Veronesi (2012) and others showed
that skin-sparing mastectomy with or without reconstruction are safe.
However not every patient agree to one-stage reconstruction. Goldilocks
mastectomy can be the way out of such situation. Operation was proposed
by G.Ma and H.Richardson in 2011 as ‘intermediate option’ between
Madden mastectomy and one-stage reconstruction.

Material and methods: The operation consists in subcutaneous mas-
tectomy with nipple-areola complex depletion by Wise access and using
residuary breast skin of the lower segment for filling defect after paren-
chyma’s removal. Deepidermization of lower flap performs, it puts to re-
region of breast bed, being ‘autoimplantant’ and covers by upper flaps,
creating protuberance in mammary region. Surgical indication is possi-
bility for skin-sparing mastectomy for patients with C, D, E breast size in
case of one-stage reconstruction refusal. Blood supply of flaps estimates
by marginal excision during the operation. In the presence of big size
mammary gland reconstruction of rather aesthetic acceptable breast is
possible. Especially in the case of bilateral surgery. The presence of multi-
layer skin flap can be useful for delayed reconstruction with implants or
using lipografting. The important ‘little thing’ is preserving of central sul-
cus between mammary glands. Using of special underwear and external
implant provides dressing with open décolleté zone and this is important
for majority of patients.

Results: There are 13 skin-sparing goldilocks mastectomy performed
from 2012 to 02.2014 in our hospital, which amounts 37,1% of the total num-
ber ablative mastectomy (without one-stage reconstruction). The middle age
was 58 years old. All patients were discussed on multidisciplinary oncolog-
cal conference. Treatment plan was formed according to NCCN guidelines.
Operation plan was discussed with patient in details. One of the patient got 2
lipografting sessions in total dose 264 ml after ending background therapy.
Axillary lymph node dissection were conducted in 7 cases, sentinel lymph
node biopsy - in 4 cases. The average operation time was 153.8 minutes
(105-250). The average weight of specimen was 573 gr (422-740 gr). Seven
cases of complications were observed, where of 5 patients had seroma
in postoperative wounds, 2 patients had marginal skin necrosis with secondary
healing. No evidence of tumor growth in residual margins.

Conclusions: Achieving of high quality of life and increasing of life
expectancy are fundamental principles of Breast Cancer patients treatment.
Goldilocks mastectomy is easy technically and safe operation, allows
improve life quality of breast cancer patients who refuse one-stage recon-
struction. The creation of additional skin flap can be used in the case of
postone reconstruction.

No conflict of interest.

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Background: Breast cancer (BC), a heterogeneous disease comprises different tumour subtypes associated with varied clinical characteristics. Prognostic factors including age, tumour size, histological subtype and grade, lymph node status and the expression of estrogen receptor (ER), progesterone receptor (PR) and human epidermal growth factor receptor 2 (HER2) currently assist routine clinical management. The role of the androgen receptor (AR) and Vitamin D receptor (VDR) in breast carcinomas has drawn great attention in recent years. Breast cancer has long been associated with vitamin D receptor downregulation. This study evaluates the potential correlates of AR and VDR with BC and possible role as predictors response to neo adjuvant chemotherapy.

Methodology: Between June 2011 and Jan 2013, 116 breast cancer patients were enrolled. Tissue sections were immunostained for ER, PR, Her2 Neu, AR and VDR with immunoreactive (IRS) scoring. Patients with fibroadenoma (n=30) served as controls for VDR receptor status. The age of the patients ranged between 32 and 70 years. n=72 patients were subjected to neo adjuvant taxane and/or anthracycline based chemotherapy according to standard treatment guidelines. Clinical response was evaluated using WHO criteria.

Results: 31.5% of cases belonged to young age group (<40 years) with 48.0% of the patients were premenopausal; most common stage at presentation was Stage III (62.9%). 69.8% BC patients showed absent VDR expression. Among the VDR positive group, only 24.6% had high IRS (mean IRS score= 2.44/+/−3.08) in contrast to all fibroadenoma patients who were VDR + with 93.3% having high IRS scores (mean IRS score of = 6.41/+/−1.54) (p=0.001). In particular, AR expression was commonly observed in luminal A 21/27 (77.8%) and B 19/30 (63.3%) cancers, but was less frequently seen in hormonal negative tumors 25/59 (42.4%). Despite being defined by the absence of ER and PR expression and being considered hormonally unresponsive, 16/29 (55.1%) Her2 Neu enriched and 9/30 (30%) of TNBC expressed AR.

In patients offered NAC (n=72), response grading was done with majority of patients showing partial response (PR) (65.3%) and 12/72 (16.7%) patients having complete response (CR). Seven patients with progressive disease (PD) and 6 with stable disease (SD) who were non-responders, were offered different chemotherapy regimens. Complete response after NAC was significantly greater in VDR positive cases (76.92%) and further greater in high IRS group (100%). AR expression was higher in responders (55.3% in PR group and 50.0% in CR group) as compared to non-responders (16.7% in SD group and 28.7% in PD group).

Conclusion: Better response to NAC was seen in AR and/or VDR positive breast carcinomas compared to negative cases indicating a possibly increased chemotherapy response. As both receptors are confirmed as biologically relevant, it is possible that hormonal manipulations targeting them could be useful in treatment but large sample size is needed to deduce the final statement.

No conflict of interest.

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200. A systematic review of minimal invasive ablative techniques in the treatment of breast cancer

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Background: The application of minimally invasive ablative techniques such as radiofrequency ablation (RFA), high intensity focused ultrasound (HIFU) ablation; cryo-ablation, laser-ablation and microwave-ablation in the treatment for breast cancer are an emerging area of expertise. We performed the first systematic review to evaluate the impact of these minimal invasive techniques upon objective outcome measures of breast cancer treatment.

Material and Methods: All studies published up to January 2014 that evaluated the role of ablative techniques in the treatment of breast cancers were identified using Medline/Pubmed, EMBASE and Cochrane library databases. Studies were considered suitable if they were performed on patients with breast cancers, objectively recorded imaging, histopathological outcomes and treatment times of the techniques.

Results: We identified 11 studies (10 cohort and 1 randomized control trial) involving 454 patients, which fulfilled our inclusion criteria. It was demonstrated that in terms of complete necrosis, staining with haematoxylin and eosin (H&E) reported the highest percentage of complete ablation for HIFU (100%) and RFA (94%) and staining with nicotinamide adenine dinucleotide (NADH) reported the highest percentages for RFA, cryo-ablation (both 95%) and laser-ablation (100%). Magnetic resonance imaging (MRI) was successful in demonstrating a decrease in post-treatment enhancement (pathognomonic of coagulative necrosis) and ultrasound imaging was able to accurately demonstrate the absence of residual tumour. Recorded complications included superficial skin burns in 10 patients (6%) and local pain in 24 patients (14%). HIFU and microwave-ablation reported the longest treatment time compared to other modalities.

Conclusion: Minimally invasive ablative techniques are able to successfully induce coagulative necrosis with a minimal side-effect profile and reliable follow-up imaging modalities. These minimally invasive technologies are promising but require assessment in prospectively conducted trials compared to the current surgical standard to validate their efficacy.

No conflict of interest.

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9/53 (17.0%) overestimated tumor size — 5/9 (55.6%) women were, in the end, submitted to mastectomy and final pathology showed 1/5 (20%) false positives; 3) 37/53 (69.8%) with occult disease on the same breast — 20/37 (54.1%) women strategy changed to mastectomy and final pathology revealed 8/20 (40%) false positives.

**Conclusion:** Although in half of patients MRI didn’t show major changes in the size of the tumor, it correlates better than MU with final pathology dimensions; actually, MRI information avoided additional surgery in 4/5 (80%) women. In keeping with recent data, our work also suggests that ILC is rarely synchronously bilateral. We found 40% of false positives in MRI after mastectomy, which re-enforces the need of second look ultrasound and biopsies.

**No conflict of interest.**

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**203. Internal mammary chain lymph nodes metastases in breast cancer — the importance of a precise staging**

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**Background:** Involvement of internal mammary chain (IMC) lymph nodes (LN) is associated with a poor prognosis for patients with breast cancer but its biopsy isn’t performed routinely. The aim of this study was to demonstrate the effect of the biopsy of IMC sentinel LN on the selection of adjuvant treatment for patients with breast cancer who had preoperative lymphoscintigraphy showing drainage to this group and to identify the morbidity due to this procedure.

**Material and Methods:** Inclusion criteria were all patients treated in our institution from 2010 to 2012 with invasive breast cancer with clinically negative LN (cN0) and no metastatic disease that had preoperative lymphoscintigraphy showing drainage to the IMC LN alone or with concomitant drainage to the axillary LN. Medical records were reviewed and the data analysis was performed with SPSS.

**Results:** Of a total of 1340 patients operated in this period, 201 (15%) had a preoperative lymphoscintigraphy showing drainage to the IMC LN, 9 of those (4.5 %) showing an isolated drainage for this group. The median age of the patients was 52.5 (24-87) years old. The majority of the tumors were localized on the upper outer quadrant of the breast (36%) and 137 (68%) were ductal type on histologic analysis. The median size of the tumors was 16 mm and 74 % of them were T1. The biopsy of IMC sentinel LN was performed in 110 patients (55%) and the identification rate was 83.3 %. One single patient got a pneumothorax after the procedure (1%) and it was conservatively managed. The biopsy of IMC sentinel LN was positive in only 6 patients (6%), but with this information, the adjuvant treatment with radiotherapy was adjusted in 17 patients (15,4 %) and 2 patients were treated with adjuvant chemotherapy based only in this criterion.

**Conclusions:** The IMC LN biopsy is a safe procedure, with a low morbidity rate. When a drainage to the IMC LN is demonstrated by the preoperative lymphoscintigraphy, its biopsy must be performed so that the patients can have a precise staging and a tailored treatment.

**No conflict of interest.**

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**204. Breast cancer in women under 40: A 10 year cohort from a large UK teaching hospital**

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**Background:** Breast cancer is uncommon in young women but correlates with a less favourable prognosis. There are few studies examining this group of patients from Western European countries. The aim of this study was to explore clinical and pathological findings, management, and outcome of young breast cancer patients under the age of 40 in a large UK breast unit.

**Material and Methods:** The University Hospitals of Leicester Breast Unit is the single referral centre for Leicestershire county (population approximately 1 million). Prospectively collected data for patients under the age of 40 seen between 2002 and 2012 were extracted from the unit database for subsequent analysis.

**Results:** 248 breast cancer patients under the age of 40 were identified after exclusion of duplicate and incomplete data. Mean age at diagnosis was 35.1 years (range 22 to 39). Most patients (98 %) presented symptomatically with a palpable lump or thickening. Mammograms were more sensitive than ultrasound in the radiological diagnosis of malignancy (84.8 % vs 73.7 %).

Fine needle aspiration cytology had a sensitivity for malignancy of 76.5%.

Primary tumour size was 33 mm (range 3 to 154 mm). 54 patients had T1 disease, 89 T2 and 25 T3 disease or above. Final histology included 201 (81%) ductal carcinomas; 19 (7.7%) DCIS; 8 (3.2%) lobular carcinoma, among others. 113 patients (45.6 %) had grade 3 invasive tumours. Prevalence of triple negative disease was 14.5% whilst 64.5% were Oestrogen receptor positive. 9.3 % (23) expressed HER2 (109 no data). 41.9% (104) had metastatic lymph nodes whilst 34.9% (87) had lymphovascular involvement. The mean Nottingham Prognostic Index was 4.69 (range 2.05 to 8.46).

Primary mastectomy rate was 44.8 % (111). Reasons for mastectomy included large tumour size (44), extensive DCIS (19), multifocal disease (38), central location of the tumour (3) and patient choice (20). 21.9% (30) of patients undergoing breast-conserving surgery required completion mastectomy.

73 % (n = 181) of patients had radiotherapy and 85.9 % (n = 213) chemotherapy of which about a third was given in the neo-adjuvant setting.

At mean follow-up of 72 months, overall survival was 83.9%.

**Conclusions:** Young breast cancer patients in our region present with higher grade tumours, more advanced disease and a lower incidence of lobular carcinomas than would be expected from the general population. This may in part account for the relatively high mastectomy rate, although patient choice is also a factor.

**No conflict of interest.**

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**205. ROLL after neo-adjuvant treatment**

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**Abstract:** Neo-adjuvant chemo & hormone therapy is very effective in reducing the size of the primary breast cancer: this may result into a substantial response, hence the need to localise a non-palpable lesion. A variety of localisation techniques are used to target surgical removal of these subclinical lesions i.e., Wire marker, Skin tattoo, USG Skin marking, 125 I seed localization. An online search showed lack of literature on the use of ROLL in this setting.

**Aim:** Testing feasibility and usefulness of a modified ROLL technique in the management of locally advanced breast cancers treated with primary systemic therapy.

**Materials and methods:** Modified ROLL has been used at our institute since 2002 to target non palpable breast lesions. This series analyses the use ROLL on locally advanced breast cancer patients who received neo-adjuvant chemo/ hormone therapy. The tumour size is measured with mammogram, ultrasound and/or MRI before neo-adjuvant therapy. The response rate is assessed the same imaging. A radio- opaque coil is inserted to mark the tumour bed at the commencement of neo-adjuvant therapy. Patients whose primary tumour has subsequently become non palpable are assessed for suitable image guidance i.e. USG or stereo guid- ance to localise.

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Background: Sentinel Lymph Node Biopsy (SLNB) has been widely adopted to assess regional nodal disease — the strongest predictor of long-term prognosis, rather than full axillary clearance, in clinically node negative patients. It has been found that US/CT or bone scans yield little information preoperatively for this subset of patients. However, there is scarce guidance about further imaging for occult metastatic disease in the context of a positive SLNB. Our study retrospectively assessed the practice at our own DGH, and surveyed regional Breast Consultants regarding their practice.

Materials and Methods: We retrospectively reviewed women diagnosed with operable primary breast cancer at our District General Hospital who underwent SLNB under the care of a single Consultant Team from September 2006 to November 2013. All positive SLNB patients, had any imaging performed reviewed for positive findings of metastatic disease. Further, Consultants perceived a low rate of detection of metastatic disease but highly successful with no failures observed in our series. Observed cancer recurrence (LR & SR) seems to be related to the aggressive tumour biology than to do with ROLL technique.

Results: Of the 199 patients who underwent SLNB under the team, SLN were found in 197 patients (98.9%). 40 had positive SLNBs (20.3%). 70% underwent bone scan, of which none were positive, and 52.5% underwent CT chest/abdominal/pelvis, of which 14.2% were positive. Of 12 Consultants surveyed, none are aware of validated criteria for further imaging in patients with positive SLNBs. All Consultants investigate on a case by case basis themselves, and none admitted to imposing criteria onto junior team members. Liver US, CT, bone scans and PET-CT was used, and combinations thereof. Anecdotally, most investigations were performed within 2 months of the SLNB but not all. Further, Consultants perceived a low rate of detection of metastatic disease.

Conclusion: Practical guidance as to which patients with operable primary breast cancer and positive SLNB should undergo further imaging for distant metastatic disease is scarce. Our study demonstrates that there is a lack of consistency regarding further investigation at our Trust. Further, there appears to be a lack of consensus among Breast Consultants in the region regarding when to employ further imaging, and the imaging medium(s) of choice.

Considering the prevalence of SLNB in axillary staging, we feel there should be further elucidation of criteria for imaging in the context of positive SLNBs, to provide the best diagnostic yield. Especially, in view of the consequences of imaging, both in terms of radiation to the patient and costs to the Trust.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.199
be overemphasized. The aim of this study was to find incidence of breast cancer in our hospital.

**Material and methods:** Patient's details were obtained via computer data collection who attended rapid access breast clinics at our district hospital. All patients under age of 35 years were included. Exclusions were patients presenting with breast asymmetry or requesting breast reduction/augmentation surgery.

**Results:** 609 women attended between April 2010 and June 2013. 9 patients (1.48%) were found to have 10 cancers (one bilateral). Median age of patients was 33 (range of 29-34 years). 8/9 patients among these presented with breast lumps and one with large itchy rash over breast. Two patients were pregnant (second trimester). 2 out of 9 patients were found to have suspicious breast lumps on examination (P4/5), 3 had indeterminate features (P3) and 4 were felt to be benign (P2). 5/9 patients showed suspicious features on USG (Ultrasound) examination but 4 patients had benign/indeterminate features on USG. One patient had inflammatory breast cancer and had complete pathological response with neoadjuvant chemotherapy. All patients had invasive ductal carcinoma. Majority (70%) had grade 3 cancers and 30% had grade 2. Median size of invasive cancer was 14.5 (range 4-32 mm) and two patients had multi-focal breast cancers. Seven were treated with conservative breast surgery and 3 had a mastectomy.

**Conclusion:** Though Incidence of breast cancer under 35 remains low but value of triple assessment including core biopsies of benign fibroadenomatous masses in women over 25 years of age remains a key to avoid missing a diagnosis of breast cancer.

**No conflict of interest.**

http://dx.doi.org/10.1016/j.ejso.2014.08.202

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### 209. Pre-operative axillary staging results in overtreatment in some breast cancer patients

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**Introduction:** Following a diagnosis of breast cancer pre-operative ultrasound staging of the axilla is recommended. Patients found to have metastatic disease on biopsy or FNA can proceed directly to axillary clearance (ALNC) at the time of their breast tumour excision. However, although ultrasound staging is a sensitive test to detect axillary disease, it does not differentiate between low and high volume nodal metastasis. Recent evidence suggests that, in selected patients with low volume axillary disease following SLNB, completion ALNC may be safely omitted, this has been evidenced by recent evidence if these patients had undergone a SLNB following the positive pre-operative staging they may have avoided a completion ALNC.

**Results:** Of patients undergoing ALNC after positive pre-operative staging, 53% had low volume axillary disease (i.e., <2 nodes positive). Recent evidence suggests that, in selected patients with low volume axillary disease following SLNB, completion ALNC may be safely omitted, this has been evidenced by recent evidence if these patients had undergone a SLNB following the positive pre-operative staging they may have avoided a completion ALNC.

**Conclusion:** Though Incidence of breast cancer under 35 remains low but value of triple assessment including core biopsies of benign fibroadenomatous masses in women over 25 years of age remains a key to avoid missing a diagnosis of breast cancer.

**No conflict of interest.**

http://dx.doi.org/10.1016/j.ejso.2014.08.202

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### 210. Phylloid tumours a 20 years casuist analysis


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**Background:** Phylloid tumors (FT) are rare fibroepithelial neoplasms, accounting for 0.3% to 1% of all breast cancers. They are stratified as benign (BFT), borderline (BLFT) and malignant (MFT) by histological analysis. Surgery is the only curative treatment. The rate of local recurrence is variable and depends on multiple factors, with the status of surgical margins described as one of the major predictors. The aims of this study are to characterize the population diagnosed with phylloid tumors, evaluation of treatment results and analysis of determinant variables of local recurrence.

**Material and Methods:** Retrospective single center study of patients with histologic diagnosis of phylloid tumors treated between January 1993 and September 2013. Statistical analysis was performed with SPSS.

**Results:** The study population was 131 patients, all female. The median age at diagnosis was 45 years. The most common form of presentation of these tumors was as nodules occurring in 80% of the cases. The preoperative histological diagnosis was made in 58% of patients and core biopsy revealed higher concordance rate with the final histologic result when compared with cytology. Most phylloid tumors in this series corresponded to benign neoplasms (67.2%). Conservative surgery was performed in 116 patients (88.6%). Ten cases of local recurrence were identified: 5 in BFT, 4 occurring in BLFT and 1 in MFT. The analysis of surgical margins in this subpopulation of patients revealed that in 8 patients the margins were not reported or were < 1 mm, in 1 patient the margins were between 1 - 10 mm and in 1 patient the margins were > 10 mm. The median follow-up was 40 months. The disease-specific survival rate at 5 years was 97% and the rate of disease free survival was 80%.

**Conclusions:** The phylloid tumors are rare neoplasms with variable biological behavior. In our case series the most prevalent histological type was the BFT in 67% of cases. An accurate preoperative diagnosis

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<table>
<thead>
<tr>
<th>Total number of positive nodes</th>
<th>ALNC after positive staging</th>
<th>ALNC after positive SLNB</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>$n$ patients</td>
<td>% patients</td>
</tr>
<tr>
<td>0</td>
<td>8</td>
<td>7</td>
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<tr>
<td>1</td>
<td>32</td>
<td>28</td>
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<tr>
<td>2</td>
<td>13</td>
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<td>3</td>
<td>12</td>
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<tr>
<td>4</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>$\geq$5</td>
<td>39</td>
<td>34</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>115</td>
<td>100</td>
</tr>
</tbody>
</table>

Analysis of the data revealed that patients with smaller breast tumours were more likely to have low volume axillary disease (i.e. $\leq$2 nodes positive) ($p=0.0069$).

**Conclusion:** In this study, 46% of patients undergoing ALNC after positive staging had low volume disease (2 or less positive nodes). In the context of recent evidence if these patients had undergone a SLNB following the positive pre-operative staging they may have avoided a completion ALNC.

This study demonstrates that patients with smaller breast tumours are more likely to have low volume axillary disease and thus may be an important predictive factor to consider alongside pre-operative staging when selecting patients who may be better managed by a SLNB rather than proceeding directly to ALNC.

**No conflict of interest.**

http://dx.doi.org/10.1016/j.ejso.2014.08.203
is essential in order to identify the most aggressive biological subtypes and tailor the surgical planning. In this case series was not possible to establish a statistically significant correlation between local recurrence and surgical margin status.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.204

211. Dismal prognosis in metaplastic breast cancer due to the aggressive tumour biology
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Background: Metaplastic breast cancer has been rarely seen with an incidence lower than 1% with a poor prognosis. In this study, demographic and histopathological characteristics and clinical outcome of patients diagnosed with metaplastic breast cancer were analyzed.

Material and methods: Data of 34 patients diagnosed with metaplastic breast cancer who underwent surgery between 2003-2013 were retrospectively analyzed.

Results: Median age was 50 (27-84). Tumor localisation was upper quadrant in 24 patients, central in 6 patients, inner quadrant in 3 patients, and lower outer quadrant in 1 patient. Three patients of 34 referred from other centers underwent mastectomy due to local recurrence. Of 31 patients who underwent primary surgery at our institution, 16 (52%) had breast conserving surgery and 15 patients (48%) underwent mastectomy. Furthermore, 25 patients (81%) had sentinel lymph node biopsy whereas the other 6 patients underwent axillary lymph node dissection. Thirteen of them had axillary lymph node involvement. Mean tumor size was 48 mm (1-240 mm). All tumors were estrogen and progestosterone receptor negative with an high Ki67 score more than 20% (range, 30%-90%) whereas 2 of them had erbB2 positivity. Of 34 tumors, 20 of them (59%) had lymphovascular invasion. Mean follow-up time was 36 months (10-138). All patients with axillary lymph node involvement and T2 tumors underwent systemic chemotherapy and chest wall irradiation. Of 31 primary patients, 1 patient developed local recurrence following breast conserving therapy, and 1 patient with mastectomy had chest wall recurrence. Furthermore, 3 patients had distant organ metastases (lung, liver, bone), and 4 patients died in the first 3 years. Mean disease free survival time was 29 months (range, 4-182).

Conclusions: Metaplastic breast cancers are generally triple negative tumors with an aggressive tumor biology. Due to the relatively high local and systemic recurrence rates in the first 3 years, patients diagnosed with metaplastic breast cancers require aggressive local and systemic therapies to improve their dismal outcome.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.205

212. Apoptosis, proliferation and survival in breast cancer
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3 Umeå University, Statistics, Umeå, Sweden
4 Umeå University Hospital, Surgical and Perioperative Sciences, Umeå, Sweden

Background: Proliferation has a prognostic value in breast cancer. Previously S phase was used but nowadays most laboratories uses Ki67 as a marker of proliferation. Our hypothesis is that also apoptosis may have a prognostic value. M30, an antibody which detects a neoepitope of cytokeratin 18 exposed after caspase cleavage by apoptosis and this was analyzed in a breast cancer cohort.

Methods: The cohort included 200 breast cancer patients from northern Sweden where S phase were analyzed. Tumor tissue was stained immunohistochemically for Ki67 and M30. Histological grade was reevaluated according to Elston-Ellis. Expression was correlated to survival.

Results: Two distinct groups of breast tumors could be seen, those with a high degree of apoptosis (≥60%) and those with a low apoptosis (<20%). We also analyzed the M30 relative to the S phase, Ki67 and histological grade (p = 0.036). Survival analysis shows no empirical support for the existence of a difference in survival between patients with high and low M30, although the curves show a trend of poorer survival for patients with high apoptosis.

Conclusion: We found a static relationship between high M30 and high histologic grade but no significance on survival in this material. Further analysis needs to be done on a larger material to demonstrate any significance in terms of survival.

No conflict of interest.

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213. Our institutional experience with male breast cancer
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Background: Male breast cancer has been rarely seen with an incidence <1%. Therefore, we analyzed our institutional experience in diagnosis and treatment of male breast cancer.

Materials and Methods: Between 1994 to 2013, 35 patients were diagnosed with male breast cancer. A retrospective chart review was performed to analyze patient demographics and tumor characteristics, and clinical outcome.

Results: Mean age was 66 (range, 37-85). Tumor localisation was central in 18 patients, upper outer quadrant in 12 patients, 3 in upper inner quadrant, and 2 in lower outer quadrant. Nine patients had neoadjuvant chemotherapy. The majority of them had mass whereas one patient had bloody nipple discharge. Of 35 patients, 29 patients (83%) underwent mastectomy whereas 6 patients had breast conservation. Sentinel lymph node biopsy was performed in 26 patients (74%) (blue dye in 24, radiocolloid in 1 patient, blue dye&radiocolloid in 1 patient). Of 35 patients, 22 (63%) axillary lymph node involvement. According to the tumor histology, invasive ductal cancer was identified in 30 patients and ductal carcinoma in situ was determined in 2 patients. Median tumor size was 30 mm (range, 10-88mm). The majority of tumors had estrogen (83%) or progesterone receptor positivity (74%), and 18 of them (51%) had lymphovascular invasion. Only 3 patients had erbB2 positivity. Sixteen patients had chemotherapy, and 28 patients had radiotherapy whereas 25 patients had hormone therapy. Mean follow-up time was 78±23 months (range, 10-204 months). None of the patients developed local or systemic recurrence.

Conclusions: Male breast cancer mostly presents as central tumors with a higher incidence of axillary involvement compared to female breast cancer. However, the prognosis seems to be better in male breast cancer than expected probably owing to a good tumor biology as luminal type. Neoadjuvant and adjuvant chemotherapies should be considered in more advanced stages.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.207
214. Microdochectomy — is surgery necessary for all patients with pathological nipple discharge?
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Background: Nipple discharge has a known association with breast cancer, determining which cases to identify as being at high risk is a complex task for the clinician. The current policy at West Hertfordshire hospital NHS Trust is to offer microdochectomy to all women who present with unilateral single duct nipple discharge, dominant duct discharge, or persistent duct discharge. The aim of this study was to determine if on basis of the pattern of nipple discharge, patients could be subselected for microdochectomies, and to create a base line to allow future subselection of patients for surveillance only

Methods: All patient with single duct unilateral spontaneous nipple discharge, who underwent microdochectomy, were assessed. Demographics, clinical presentation, radiological assessment, cytology, core biopsy. This group of patients was analysed and correlated with their final histological assessment.

Results: 122 patients were analysed in this study. 7 (5.74%) were diagnosed with carcinomas. 4 patients had ductal carcinoma in situ, three patients had ductal carcinoma in situ and invasive ductal carcinoma, of these two patients had blood stained nipple discharge. 47 out of 122 patient presented with history of blood stained discharge. 47 of the 47 showed cellular cytology, and one patient had intermediate grade DCIS confirmed on final histology, whereas in the remaining sixteen patients histological features of papillomas, duct ectasia, and benign breast disease was noted. Of the 122 patient 42 patients had mammary duct ectasia (34%), 52 patients had papillomas (42%) at final histology.

Conclusions: The negative predictive value (2/30), appears in this series appears to be more valuable than, the positive predictive value (1/17) in cellular smears to predict ductal carcinoma or invasive ductal carcinoma. Cytological assessment of nipple discharge is equivocal at its best. Microdochectomy perford for nipple discharge results in a low rate of malignancy on excision and is comparable with other series. No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.208

215. Colour inking of breast wide local excision specimens in theatre: Time economy for the surgeon looking to improve departmental pathology diagnostics
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Introduction: Breast lump inking in wide local excision of malignant breast lesions has been associated with improved margin resection. When margins are positive, re-excision is usually required - accurate re-excision is beneficial for disease clearance. As part of quality improvement the study objective was to assess surgeons’ inking of specimens versus traditional pathology inking for margin assessment and identification. The aim was to improve accuracy of re-excision with satisfactory time economy to both surgeon and pathologist.

Materials and methods: Using consecutive wide local excision of malignant breast lump cases from a standardised Friday list under one consultant we identified 21 patients. The specimens were marked either immediately post-operatively using our current guidance with clips (surgical staples) or colour inked using the pathology colour marking guidance. Those who had traditional clip marking were later inked marked in pathology prior to dissection of specimens. The identification for those for clip and colour marking in theatre was done using a blinded randomised process to reduce bias in specimen resection. All specimens were preserved in Formalin(r) over a weekend period (3nights). A questionnaire was formulated using a Likert-like rating to identify the specimen distortion, and quality of colour marking. The time taken to colour the main specimen was documented to the nearest half minute. Specimens were photographed in 3 planes as a documented comparison for any significant distortion. This was done by both the surgeon and pathologist.

Results: 10 cases were assigned to post-operative inking, 11 cases were assigned to standard clips marking. The mean time for those inked in theatre versus those inked by the pathologist was 5:40 minutes versus 4:38 minutes respectively (T-test P= 0.02). From the cases inked in theatre: 1 was documented at moderately distorted, 3 as mildly distorted and 6 with no distortion. Whilst from those inked in pathology 6 of the clip marked specimens were felt to be mildly distorted and 5 were documented with no distortion. 40% of those specimens inked in theatre required retouch of inking.

Conclusions: As part of a larger quality improvement project for marking of specimens and accuracy of re-excision, we found that marking in theatre is statistically longer however assessment of margin distortion is more easily assessed, although there is little clinical significance in inking time(4-6 minutes). This precipitates our further objective assessment of distortion such as the change in surface area in the inked specimens to obtain accurate difference, and further work to look at re-excision of margins when they are positive can be asessed once routine colour margin marking post-operatively begins and thus reduce some of our current limitations and observer bias.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.209

216. Don’t touch that breast: Outcome of a review of pre-referral diagnostic evaluation of malignant breast lumps in Lagos, Nigeria
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Background: The proper management of breast lumps is hinged on an accurate diagnosis. Triple Assessment by Clinical, Radiological and Pathological Evaluation remains the Gold Standard for diagnosing breast lumps. Surgical intervention without appropriate triple assessment may result in inappropriate treatment.

Materials and Methods: In order to evaluate the proportion of our patients with breast lumps that have inappropriate surgical intervention before triple assessment before referral to the Breast center, we designed a prospective questionnaire for all patients with malignant breast lumps seen at the Lagos University Teaching Hospital over a six month period. Patients who had triple assessment before surgical intervention were said to be appropriately managed and patients who did not have triple assessment before surgical intervention were termed as inappropriately managed.

Results: One hundred and fifteen patients were seen over this six month period. Mean age was 43.8 with a range of 32 — 71 years. All the patients were female. Seventy Seven (67%) were inappropriately managed while 38 were appropriately managed. The most common form of diagnosis was a clinical evaluation followed by excision biopsy in 52 while 25 patients had an inappropriate radiological test done — 8 patients below 40 years had mammograms done. Forty five of the patients with inappropriate management were from private health facilities while the rest were from Government health facilities. Of the 38 patients appropriately managed, 31 were from Government health facilities and only 8 were from private health facilities.

Conclusions: There is a very high proportion of patients with breast lumps who do not have triple assessment before surgical intervention and referral to our center. It is important that physicians are educated on
the need to do a triple assessment in all patients with breast lumps to appropriately guide therapy.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.210

217. Does better orientation of the breast cancer specimen reduce re-excision rate after wide local excision?
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Background: Surgical management of breast cancer may often result in more than one operation to remove the cancer after wide excision. Re-excision of margins after wide excision is offered when the margins are close or involved. The re-excision rates vary between surgeons and units and is a result of a number of factors. Using improved methods to evaluate the excised lesion for completeness allows for reduced rates of re-excision of margins. The intra-operative assessment of completeness of excision of breast tumour is not normally undertaken unless the tumour has been wire localised postoperatively. However in these situations the image obtained is two dimensional and is not able to provide information in the antero-posterior plane.

Aim: To investigate the value of intra-operative use of Klinitray for orientation of the tissue specimen

Patients and Methods: Patients undergoing excision after wire localisation of the breast cancer were selected for this study. Specimen X-ray was performed in these patients. The lesion with wire in situ was placed on the Klinitray and imaged in two planes. We also undertook to evaluate through questionnaires the reactions from pathologist, surgeons and radiologist to assess the relative ease of use and orientation.

Results: Klinitray specimens were viewed by radiologists and surgeons and pathologists. All questionnaire were analysed and it was evident that the reporting had improved.

Conclusion: All specimens on Klinitrays benefit from easier and accurate assessment of tumour cavity margins.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.211

218. Cosmetic and functional results after breast conserving surgery (ClinicalTrials.gov Identifier: NCT01496001)
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2 National Institute of Oncology, Department of Radiological Diagnostics, Budapest, Hungary
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4 National Institute of Oncology, Department of Radiotherapy, Budapest, Hungary
5 National Institute of Oncology, Budapest, Hungary

Introduction: With several decades of experience in breast conserving surgery it can be said that in early stage breast cancer approximately 30-40% of the oncologically successful locoregional surgeries followed by radiotherapy cause a significant decrease in esthetic and functional results, leading to poor quality of life and a challenge in reconstruction.

There is currently no definite tumor-breast volume ration — for each quadrant of the breast — that can help decide between conventional breast conserving surgery or mastectomy followed by reconstruction, thereby, in several cases avoiding adjuvant radiotherapy after breast cancer surgery.

Aims: To determine critical breast-tumor volume ratio in each sub-region of the breast where breast conserving surgery no longer leads to acceptable aesthetic and functional results therefore leading to unsatisfactory quality of life.

Material and Methods: A prospective cohort study started in January 2011 involved 300 female patients under the age of 70, suffering from early stage unilateral breast cancer, where the tumor size was under 3 cm. All patients had undergone breast conserving surgery with axillary sentinel lymph node biopsy followed by adjuvant radiotherapy and had no previous breast surgeries in their medical history. The aesthetical and functional results were assessed using the internationally validated BCTOS questionnaire (Breast Cancer Treatment Outcome Scale). The BCCT.core (Breast Cancer Conservative Treatment-cosmetic results) also internationally validated, was used to objectify the photo-documented cosmetic results. The quality of life was assessed using the European Organisation of Research & Treatment of Cancer-Quality of Life Questionnaire-BR23.

The previously mentioned data were recorded preoperative, 4 weeks after breast conserving surgery and 12 months after radiotherapy. The patients underwent a breast MRI 12 months after surgery in order to determine the breast volume and the oncological status as well as the breast-tumor ratio in knowledge of the resected specimen mass.

Results: To present the study, report early results concerning female breast cancer patients preoperative and postoperative cosmetic results which is the bases of breast conserving oncoplastic surgery.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.212

219. Oncological safety of nipple-areolar complex sparing mastectomy for breast cancer surgery
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Background: Nipple sparing mastectomy is performed without the excision of nipple-areolar complex (NAC) thus improve cosmesis and body image. However the possible recurrence of the cancer due to the preserved NAC has arose debates on performing the surgery. In this study the oncologic safety was examined by investigating the post operative clinical course and cancer recurrence of the patients who underwent nipple sparing mastectomy.

Method: Patients who was diagnosed breast cancer and underwent nipple sparing mastectomy between January 2006 from December 2012 were analyzed retrospectively. The cancer invasion of NAC was examined by image study perform before the operation and frozen section biopsy during the operation.

Result: 42 patients underwent nipple sparing mastectomy and the median age was 48.8. Histologically invasive breast were 38 cases (90.4%) and DCIS were 4 cases (9.6%). There were 2 case of bilateral mastectomy for bilateral breast cancer (4.7%) and 1 case of neoadjuvant chemotherapy (2.4%). Every cases performed intraoperative frozen section and have been proven no invasion of cancer cell except 2 cases which final pathology revealed cancer invasion and performed NAC excision. 15 patients with axillary lymph node metastasis proven by sentinel lymph node test underwent axillary lymph node dissection. Wound complication such as NAC necrosis and post operative focal recurrence and systemic metastasis did not occur during the median follow-up of 37.6 months.

Conclusion: In this study there were no safety problems as a radical surgery in nipple sparing mastectomy performed for improvement of cosmesis. In conclusion nipple sparing mastectomy appears to be a considerable choice for those with safe nipple excision margin to improve the quality of life after surgery.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.213
220. Predictive value of serum HER2 and CA 15-3 in patients with HER2 positive breast cancer and relapse of the disease: Preliminary study
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Background: Cancer antigen (CA) 15-3 is encoded by the MUC1 gene. It is overexpressed in breast cancer (BC) tissue, and released into the bloodstream. The human-epidermal-growth-factor receptor 2 (HER2) is a transmembrane glycoprotein with intracellular tyrosine kinase activity, that can also be measured in the blood. The role of circulating HER2 and CA 15-3 as predictive markers of relapse of the disease and in monitoring therapy in patients with metastatic BCare not well defined. The aim of this study was to analyze whether a correlation exists between preoperative serum CA 15-3 and HER2, and relapse of the disease in patients who underwent surgery for tissue HER2 positive (HER2+BC).

Materials and Methods: Data regarding a series of 12 women (median age 57 years, range 35-62 years) with stage I (pT1, N0-1mi, M0) tissue HER2+ BC (Group 1) who developed locoregional or distant metastases during follow-up were reviewed. Controls were 14 women with age- and stage-matched tissue HER2+ BC (Group 2) who did not develop relapse of the disease. All patients underwent preoperative CA 15-3 and HER2 serum levels measurement, by a two-site sandwich immunoassay using direct chemiluminescent technology, and enzyme-linked immunosorbent assay (ELISA), respectively. A serum CA 15-3 and HER2 concentration of 30 U/mL and 15 ng/mL were defined as the upper limit of normal, respectively. A p-value<0.05 was considered statistically significant.

Results: Overall, the mean preoperative CA 15-3 and HER2 levels were 26±0.18 U/mL, and 18.5±9.3 ng/mL, respectively. CA 15-3 and HER2 were above the cut-off in 7 and 10 patients of Group 1, respectively. The specificity, sensitivity, positive predictive value (PPV), negative predictive value, and negative likelihood ratio weighted by prevalence were (CA15-3 vs.HER2) 0.78 vs 0.77 (p=0.86), 0.70 vs. 0.85 (p=0.011), 0.58 vs. 0.83 (p<0.001), 0.85 vs. 0.78 (p=0.20), and 0.17 vs. 0.27 (p=0.08), respectively. A weak correlation between CA 15-3 and HER2 (R=0.46, p=0.05) was found. There was no significant relationship between age of the patients, CA 15-3 (R=-0.28, p=0.25) or HER2 (R=0.02, p=0.92).

Conclusions: In patients with stage I BC HER2+ BC, baseline serum CA 15-3 and HER2 are independent of age. Both have low sensitivity in detecting primary tumor, but the specificity and PPV of HER2 were significantly higher than that of CA 15-3. Those serum markers do not condition the therapeutic decision-making of patients, but are useful as prognostic factor in patients who will develop locoregional or distant metastases during follow-up.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.215

221. VEGF and nitric oxide metabolites as markers of lymph node metastases in early breast carcinoma
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Introduction: The presence of axillary lymph node metastases is an important prognostic factor in breast cancer and guides the surgeon to the appropriate therapy. Sentinel lymph node biopsy (SLNB) is an emerging method for the staging of the axilla in India. Although SLN biopsy is widely accepted as a minimally invasive method of nodal staging, failure to identify an SLN mandates a level III axillary node dissection and associated morbidity. The objective of this study was to elucidate various clinical, pathological and immunohistochemical factors that independently predict axillary lymph node involvement in early breast cancer in the Indian population. With these factors, we will be better able to identify groups of patients most likely to benefit from SLNB.

Materials and Methods: 228 consecutive patients of both sex, with cytology or biopsy proven carcinoma breast, clinical stage T1/T2 N0 M0 at were subjected to SLNB and intra operative frozen examination. Age of the patient and primary tumor characteristics like size, grade, lymphovascular invasion (LVI), perineural invasion, ER/PR status, Her2-neu status and histological sub-types were evaluated for predicting the SLN metastasis.

Results: Incidence of nodal metastases was correlated with clinicopathological factors and analyzed by univariate and multivariate analyses. The age of the patient ranged from 23 to 87 years and its association with SLN spread was not significant. Primary tumor characteristics like histological subtypes, grade (P = 0.533), ER/PR status (P = 0.839), Her2-neu status (P =0.296) were not significantly associated with SLN metastasis.

Background: Serum concentrations of vascular endothelial factor (VEGF) and nitrate/nitrite are raised in breast cancer patients showing correlation with the clinical stage of the disease. However, the measurement of the unbound fraction of VEGF and its isoform C (VEGF-C) in relation to nitric oxide metabolites (NOx) may give in-depth insight into the role of these compounds in the pathogenesis of breast cancer growth and metastasis. Aim of the study is to investigate correlation between serum levels of free VEGF, VEGF-C and NOx and clinical and pathological features of non-metastatic breast cancer.

Material and Methods: The study groups consisted of 45 female patients with breast cancer from 32 to 77 years old, 55 median. The control group included 14 healthy female volunteers from 34 to 72 years old, 48 median. Tumour staging was based on the 7th edition of the TNM classification according to the UICC. The involvement of lymph nodes and the histological types were determined by the post-operative pathological examination of the surgical specimens. Breast cancer patients were divided into two subgroups based on lymph node involvement and labelled as 'non-metastatic' (n=29) and 'metastatic' (n=16) groups. Preoperative serum samples were collected and free VEGF and VEGF-C were measured using ELISA assays while total NOx with the colorimetric vanadium-based assay.

Results: The serum NOx (p=0.01) and VEGF-C (p=0.01) but not of VEGF (p>0.05) levels were significantly higher in breast cancer group compared to controls. The sub-group analysis revealed that the NOx (p<0.05) and VEGF-C (p<0.01) concentrations were the highest in metastatic patients as compared to controls. There was no significant overall correlation between NOx and VEGF-C and total free VEGF concentrations in entire group of breast cancer patients. In the sub-group analysis, there was significant association between NOx and VEGF-C in the metastatic sub-group (r=0.5; p=0.04), but not in the non-metastatic sub-group (p>0.05).

Conclusion: These findings indicate that VEGF-C and NOx, but not VEGF, are associated with lymph node metastases, especially in the early breast cancer. Further research on larger sample size is needed in order to elucidate the potential of these markers of early lymphatic spread in breast carcinoma.

No conflict of interest.

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223. Primary small cell carcinoma of the breast
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**Background:** Primary SCC of the breast accounts for less than 1% of primary breast cancers. Due to the rarity of this type of tumor and the lack of a standard treatment, we report here a case study of primary SCC of the breast and discuss its clinicopathologic characteristics.

**Methods:** A 58-year-old female patient presented with a painless mass in right breast for 2 months. An ultrasound scan revealed two solid and low heterogeneous echoes in the left breast: one was in the 3 o’clock position, 35 mm away from the nipple. A mass was poorly defined with irregular borders. She underwent modified radical mastectomy with axillary lymph node dissection. Microscopically, the mass (in the 3 o’clock position, 35 mm away from the nipple) was about 2.2 cm × 1.8 cm × 1.6 cm, which was diagnosed histologically small cell carcinoma with glandular differentiation. Immunohistochemically, tumor cells were negative for estrogen receptor (ER), progesterone receptor (PR), and human epidermal growth factor receptor 2 (HER2) and histological examination also demonstrated 1 positive lymph node out of 25 axillary lymph nodes. The patient was scheduled to receive systemic chemotherapy with doxorubicin-cyclophosphamide followed by docetaxel (AC → T) every 3 weeks (60 mg/m2 doxorubicin, 600 mg/m2 cyclophosphamide and 75 mg/m2 docetaxel).

**Results:** The patient is currently free of disease 50 months after operation with adjuvant chemotherapy.

**Conclusions:** In this report, we describe a case of primary small cell carcinoma of the breast.

No conflict of interest.

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224. Failure to engage in breast screening and risk assessment results in more advanced stage at diagnosis
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**Introduction.** Population based screening and family risk assessment for breast cancer while well established, has come under scrutiny recently. The concept of over-diagnosis is topical in recent cancer publications. This study assessed the impact of failure to screen or risk assess patients attending a designated breast cancer unit with a newly diagnosed breast cancer.

**Methods.** A retrospective review was undertaken of 200 consecutive patients with breast cancer between January 2010 - September 2012 at Letterkenny Hospital. Appropriate screening was defined as biennial in those aged 50-66 and 40-49 with moderate / high family history risk (NICE criteria or IBIS criteria). Patient demographics, diagnosis date, stage (TNM) were documented. Patients with previous breast cancer were not included (n=6).

**Results.** 200 consecutive patients, mean age 61 (range 28-99), were studied. 112(56%) did not meet any criteria for screening/ intervention. 88 (44%) met criteria either for screening in 55, and or family history assessment in 33, 57/88 (64.8%) meeting criteria did not have a mammogram or risk assessment. The stage of breast cancer was significantly earlier in those falling within guidelines, with early stage in n=114 (79.7%) and late in n=29 (20.3%), compared to early in 63.2% and late in 36.8% of those failing to be screened appropriately (p=0.01 χ² df1).

**Conclusion.** This study identified the hazards of not been screened with resultant late diagnosis and negative prognostic implications.

No conflict of interest.

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225. Annexin A3 is a breast cancer marker secreted by neoplastic cell lines and is involved in cell migration
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**Background:** This study was designed to identify and functionally characterise potential breast cancer biomarkers in patients prior to intervention.

**Materials and methods:** We used mass spectrometry (MS) to analyse serum samples representing 630 controls, 192 benign breast disease (BBD) and 219 invasive breast cancer (IDC) patients prior to intervention. Using liquid chromatography, free-flow electrophoresis (FFE), and immunoprecipitation isolation and purification techniques followed by the combined use of mass spectrometry (MS) tools with enzyme-linked immunosorbent assay (ELISA) validation we identified potential biomarkers.

The diagnostic value of serum biomarkers were subsequently validated by ELISA in an independent serum set, as well as breast tissue from samples representing the three groups. The functional role of markers were also investigated in breast cell lines.

**Results:** Annexin A3 (ANX A3) was found to be differentially expressed amongst different breast pathologies. The diagnostic value of serum ANX A3 was validated by ELISA in an independent serum set representing the three groups. Here, ANX A3 was significantly upregulated in the benign disease group sera compared with other groups (P< 0.0005). Moreover, ANX A3 distinguished the benign breast disease group with sensitivities and specificities between 80-95%.

Paired breast tissue immunostaining confirmed that ANX A3 was abundantly expressed in benign and to a lesser extent malignant neoplastic epithelium, compared to normal breast tissue. Finally, we illustrated ANX A3 expression in cell culture lysates and conditioned media from neoplastic breast cell lines, and its role in neoplastic breast cell migration in vitro.

**Conclusions:** This study confirms the potential role of ANX A3 as a breast cancer biomarker and biological regulator. The specific functional and diagnostic role of ANX A3 in breast neoplasia warrants further multi-centre clinical evaluation.

No conflict of interest.

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226. Impact of body mass index on outcome in patients with ER positive and HER2 negative breast cancer in Japan
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**Background:** Many studies have shown that body mass index (BMI) is correlated with risk of recurrence in breast cancer in Western countries. The prevalence of obesity is relative low in Japan and there are few studies
about the prognostic importance in Japanese patients with breast cancer. The aim of this study was to examine the relationship between initial BMI and clinical outcome in patients with estrogen receptor (ER) positive and human epidermal growth factor receptor type 2 (HER2) negative invasive breast cancer.

Materials and methods: Six hundred twelve patients with ER positive and HER2 negative stage I-III breast cancer treated from 2005 to 2012 at Fujita Health University were analyzed. ER, progesterone receptor (PgR), HER2, and Ki-67 were assessed by immunohistochemistry (IHC). The threshold for ER positivity was 1%. Tumors were considered HER2 positive if IHC staining was 3+ or FISH positive. BMI was divided into 4 categories as follows: underweight (BMI < 18.5 Kg/m^2), normal weight (BMI 18.5–24.9 Kg/m^2), overweight (BMI 25–29.9 Kg/m^2), obese (BMI ≥ 30 Kg/m^2). Relapse-free survival (RFS) curves and overall survival (OS) curves were generated using the Kaplan-Meier method and survival comparisons were made with the log-rank test. The chi-square test was used to examine differences with categorical variables. The level of significance was taken to be 0.05. IBM SPSS Statistics19 software package was used for statistical analysis.

Results: Of these 612 patients, 10% (n=61) were underweight, 69.9% (n=428) were normal weight, 16.7% (n=102) were overweight, and 3.4% (n=21) were obese. Menopausal status was significantly different between the four BMI categories. No correlation was found between BMI and stage, pathological lymph node status, Ki67 labeling index, PgR status, and histological grade. BMI at diagnosis did not affect the risk of recurrence and death.

Conclusions: In our series the incidence of obesity is lower than that in western countries and prognostic significance for BMI was not observed in terms of relapse-free and overall survival. Our study was a retrospective analysis of a limited patient group. A larger cohort study in Japanese women might provide additional data in terms of outcome.

No conflict of interest.

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227. Spontaneous splenic rupture secondary to lobular breast carcinoma metastases

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Background: We present the rare case of a female patient with treated breast cancer presenting with spontaneous splenic rupture of the spleen and histology showing lobular breast cancer metastasis.

Materials and Methods: The patient presented with anaemia and left sided abdominal pain with no history of trauma. She was known to have breast cancer and treated with radiotherapy and chemotherapy 3 years ago. Abdominal CT scan reported a splenic rupture and the patient underwent laparotomy and splenectomy. Histology of the spleen confirmed metastatic lobular carcinoma.

Results: Breast metastasis to the spleen is a relatively rare event. Splenic rupture as attributed to metastases is rarer still. The incidence of splenic metastases in cancer patients ranges from 2.3-12.9% in post-mortem studies. Based on autopsy studies the prevalence of splenic metastasis from breast carcinoma ranges from 6.9%-16%.

Although splenic secondaries are not an uncommon event, splenic rupture secondary to malignancy is an unusual phenomenon. There have been several studies debating the low frequency of splenic metastasis as despite the rich vasculature of the spleen, haematogenous spread is rare. Several theories have been proposed including the mechanical hypothesis whereby the constant blood flow and splenic contractions prevent metastatic emboli implanting in the spleen.

Additionally the angle of the splenic artery from the coeliac trunk may prevent metastatic emboli entering the blood stream as well as a lack ofafferent lymphatics to the spleen reduces the number of metastatic cells reaching the spleen.

The second hypothesis is the micro-environment of the spleen itself which contain immune-competent cells preventing implantation of metastatic cells and its ability to produce angiostatin, an antiangiogenesis agent, which combats the angiogenesis of malignancy.

Conclusion: This case is unusual in that firstly, we report the rare phenomenon of metastatic breast carcinoma to the spleen and secondly, that the presentation of splenic rupture secondary to lobular breast carcinoma is rarely reported event.

No conflict of interest.

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228. The behavior of HER2 positive DCIS of the breast

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Background: Ductal cancer in situ of the breast (DCIS) is increasing. In the past patients with pure DCIS has not received any adjuvant therapy. Today adjuvant radiotherapy is given to many breast conserved DCIS patients and trials have shown adjuvant endocrine therapy to decrease to risk of recurrence. Trials using adjuvant trastuzumab are ongoing. The purpose is to describe the behavior of HER2 positive DCIS of grade 3 or 2 with necrosis.

Material and methods: Forty-one consecutive patients with grade 3 or 2 with necrosis without invasive component, with micro invasive component (DCIS-MI) or accompanying macro invasive cancer respectively were identified from the patient’s database 2005-2012 of Kalmar County Hospital. Formalin fixed paraaffin embedded tumour specimens were analyzed for HER2 expression with immunohistochemistry according to standard protocol.

Results: Nineteen patients with pure DCIS had 5 invasive local recurrences. Four of these had HER2+++ in their original DCIS specimen. Three developed distant metastases. Of 13 patients with DCIS-MI 5 developed distant metastases. All of these were HER2+++ in the DCIS component.

Of 8 patients with invasive ductal cancer (IDC) accompanied by extensive DCIS 7 had distant recurrences, all of which were HER2+++ in the DCIS component.

Conclusions: HER2 positive DCIS Grade 3 or 2 with necrosis is an aggressive phenotype even without presence of macro invasive breast cancer. Optimal local and systemic treatment need to be developed.

No conflict of interest.

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229. What type of volume displacement of oncoplastic surgery do Korean prefer, small scar or natural contour?

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Background/Objective: Nowadays oncoplastic surgery (OPS) has been popular for breast cancer operation in Korea. Modern goal of surgery in breast cancer has become to make good looking breast as normal as possible. Some types of volume displacement of OPS such as parenchymal rotation have long scar. Many Korean women did not like long scar.

This study was described about the cosmetic outcomes and preference of patient for scar of volume displacement of OPS undertaken in Korean woman with small or medium sized breast.

Methods: We tried to undergo volume displacement of OPS in 102 breast cancer patients with small or medium sized breast between 2011 and 2012. We performed 3 kinds of parenchymal displacement after breast conserving surgery. First, we undertook parenchymal rotation (dermo-glandular rotation, DGR) with long scar in 18 women with breast cancer.
Second, we did parenchymal advancement (dermo-glandular advancement, DGA) with medium scar in 52 women with breast cancer. Third, we did parenchymal displacement with subcutaneous dissection (glandular displacement, GD), which did not need long scar, in 32 women with breast cancer.

Dermo-glandular rotation (DGR) means big movement of breast parenchyma to other quadrant of breast. Dermo-glandular advancement (DGA) means small movement of breast parenchyma to adjacent region of breast. Glandular displacement (GD) means movement of breast parenchyma without skin after subcutaneous dissection of parenchyma.

Results: Excellent to good cosmetic outcome was more than 70% in 3 type of volume displacement of OPS which is DGR, DGA and GD. But patients did not like long scar. GD showed good cosmetic results with short scar as much as DGR and DGA. GD was the method of most patients satisfied. The rate of poor cosmetic result was less than 10% in 3 types of Surgery. The significant factors affecting cosmetic outcome were the percentage of resected specimen of breast. Some patients with medium or long scar showed hypertrophic scar, pain and itching.

Conclusions: The volume displacement OPS could be suitable technique showed satisfactory cosmetic outcomes for most Korean women with small or medium sized breasts. We need to concern about length and location of scar as well as breast contour.

No conflict of interest.

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230. The role of promoter hypermethylation and expression of spleen tyrosine kinase in mammary carcinogenesis

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Background: The spleen tyrosine kinase (SYK) has been considered as an inhibitor of cancer cell growth and a potential tumor suppressor in human carcinomas. Loss of full-length form of SYK (SYKS) and overexpression of a spliced variant form (SYKL) occur frequently in cancers. This study aimed to determine whether the expression of SYK and its variant SYKS and the presence of DNA methylation in promoter of SYK might be associated with the risk and progression of breast carcinoma.

Methods: Five breast cancer cell lines were examined for expression of SYKL and SYKS mRNA and SYK DNA methylation. One hundred and eight breast cancer tissues, 13 benign tumor tissues, and 35 adjacent non-cancerous tissues (ANCT) were extracted for examination of SYKL and SYKS mRNA. Genomic DNA of 83 breast cancer tissues and 13 benign tissues was isolated for examination of SYK DNA methylation. SYKL and SYKS were determined by quantitative reverse transcription-PCR. SYK DNA methylation was assayed by methylation-specific PCR.

Results: Two breast cancer cell lines with metastatic phenotype showed complete loss of SYKL mRNA expression together with SYK DNA methylation. The significant reduction of the SYKL mRNA expression in breast cancers in comparison to benign tumors and ANCT was observed (mean mRNA levels = 0.3446, 0.6294 and 1.0297 in breast cancers, benign tumors and ANCTs, respectively). Complete loss of SYKL was found in 50% of breast cancer tissues but not in benign tumors and ANCT. SYK was methylated in 45% of breast cancer tissues compared with only 15% in benign tumor tissues. Furthermore, a significant correlation between SYK methylation and loss of its expression was observed. There was no significant association between SYKL expression or methylation and clinico-pathological parameters. Two breast carcinoma cell lines showed SYKS expression. The expression of SYKS mRNA was found most frequently in breast cancer tissues (46%) and less in benign tumors (4%) and ANCT (25%). The SYKS expression showed a significant correlation with the increased size of tumor.

Conclusion: These findings suggest that SYK signaling pathway may play a crucial role in breast cancer development. The mechanisms responsible for SYKL inactivation may occur through DNA methylation or the presence of SYKS.

No conflict of interest.

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232. Lymphocytic infiltration and CD3 as a prognostic factor in adenocarcinoma of the colon
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2 Assaf Harofeh Medical Center, Pathology, Tel-Aviv, Israel
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Background: Host-defense mechanisms may have an important role in predicting the outcome of patients with colorectal cancer. Different components of the immune system strongly influences clinical outcome. The multiplicity and complexity of these subgroups and their interactions makes it difficult to use in routine clinical practice. We designed our study to evaluate the possible prognostic significance of the presence of lymphocytic infiltration and subgroups of lymphocytes (CD3 and CD20) in the primary tumors.

Materials and Methods: 195 patients operated for colorectal carcinoma were randomly selected from a larger cohort of 1527 patients with colorectal cancer. The mean duration of follow-up was 63.8 months. Histological slides were blindly re-evaluated for the presence of a LI that was graded as follows:

Score 0 — absence of lymphocytes; score 1 - single lymphocytes in the tumor; score 2 - lymphocytic aggregates only partially involving tumor and score 3 - lymphocytes involving at least 50% of the tumor sections.

Immunohistochemical phenotyping of the lymphocytes was performed only for tumors with score 3 LI and included the antibodies CD3 and CD20. The CD3 and CD20 immunostaining were graded in the same manner as LI.

Results: The distribution of patients with colorectal cancer according to LI was as follows:

Score 0 — 20/195 (10.2%); score 1 — 61/195 (31.3%); score 2 - 78/195 (40%); score 3- 36/195 (18.5%).

There was no correlation between any clinicopathological pattern and LI in all the studied categories. The prevalence of score 3 staining for CD3 was more common than for CD20 (64.7% versus 8.8%, P<0.0001). Prominent lymphocytic infiltration (score 3) was associated with better disease-free survival (p=0.066). Recurrence was diagnosed among 2/25 (9.1%) patients with prominent CD3 staining versus 62/171 (36.2%) of all other patients group (p=0.054) and correspondently had a better disease-free survival (p=0.018).

Conclusion: It seems, that we can segregate a group of patients with colorectal cancer that have an excellent prognosis according to single immunological test unrelated to other known prognostic factors.

No conflict of interest.

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233. Lymph node retrieval using the acetone clearing method
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Introduction: Adenocarcinoma of the colon and rectum is the third most commonly diagnosed cancer and the third leading cause of cancer death in both men and women in the United States.

Lymph node analysis is one of the most important factors for staging and therapeutic decision-making. The College of American Pathologists released a consensus statement in 2000 advising a minimum number of 12 lymph nodes. Traditional methods for lymph node retrieval involve formalin-fixed tissues and manual search which is both time consuming and laborious. Of the available methods, one is that acetone clearing (AC).

Material and methods: We used this method in cases of colorectal cancer since 05/2009. Pericolonic adipose tissue was resected following routine tissue sampling of the specimen and allowed to soak overnight (16 hours) in acetone. Lymph node harvesting was performed the following morning. Comparing of overall number of harvested lymph nodes and calculation of metastatic to overall retrieved ratio were done according to the T stage of primary tumor between two patient groups, each of them contain 136 cases: group A – patients which were operated before introducing a acetone clearing and group B- the cases in whom the above mentioned technique was applied.

Results: Average time necessary for macroscopic lymph node identification using acetone clearing method was 10 minutes compared with approximately 20 minutes for the conventional method. The quality of H&E staining and immunohistochemistry following the acetone clearing process was excellent. Following the acetone clearing method, an average of 24 lymph nodes were retrieved (average size 0.55 cm, range 14-27), as compared to an average of 14 lymph nodes in the archival specimens (average size 1cm, range 2-27). In spite of rising in overall lymph nodes which found in specimen the ratio of metastatic to overall harvested nodes remain unchanged also according to T stage of primary tumor.

Conclusion: The acetone clearing method is easy to perform, does not jeopardize the pathologist safety or the quality of the sections and enables to retrieve a higher number of lymph nodes.

<table>
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<th>Gender</th>
<th>Group A 136 pts</th>
<th>Group B 136 pts</th>
<th>P value</th>
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No conflict of interest.

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234. The impact of total mesorectal excision for rectal cancer on survival
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Background and aims: This study reviewed the results of surgery for rectal cancer (tumour within 12 cm of the anal verge) following the introduction of total mesorectal excision for rectal cancer in our institution.

Methods: Three hundred and sixty four patients who had undergone elective curative surgical resection of rectal cancer within 12 cm of the anal verge were included. The demographic, operative and follow-up data were collected prospectively. Comparisons were made between patients who had different surgical procedures.

Results: The overall operative mortality rate was nil, the morbidity 24%. With a mean follow-up of 64 months (range: 5-184 months), local recurrence occurred in 28 patients. The 3- and 5-year actuarial local recurrence rates were 7% and 9%, respectively for the whole group. Abdominoperineal resection (APR) was necessary in 72/364 (20%) of the patients, with a very low local recurrence rate in this subgroup (3% at 3 years).

On multivariate analysis type of surgery (p = 0.013), and tumour distance from the anal verge (<6 cm (p = 0.001), were associated with local recurrence but only stage was a significant prognosticator of overall survival (p = 0.012).

Conclusions: After the introduction of total mesorectal excision, APR was still necessary in 20% of patients with rectal cancer within 12 cm of the anal verge. Type of surgery and tumour distance from the anal verge influenced local recurrence rates, but only initial tumour stage was associated with long-term survival.

No conflict of interest.

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235. Sarcopenia is associated with an increased inflammatory response to surgery in colorectal cancer
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4Orbis Medical Center, Surgery, Sittard, Netherlands

Background: Sarcopenia in gastrointestinal cancer has been associated with poor clinical outcome after surgery. Differences in inflammatory response to surgery between sarcopenic and non-sarcopenic patients have not been investigated, however skeletal muscle wasting in the context of cachexia is associated with a hyperinflammatory state at baseline. Knowledge on this matter can provide new insight in the detrimental effects of sarcopenia on postoperative recovery, possibly leading to novel therapeutic strategies.

Materials and methods: Eighty-seven consecutive patients undergoing elective resection of a primary colorectal tumor were enrolled at the Maastricht University Medical Center and Orbis Medical Center (Sittard, the Netherlands). Sarcopenia was assessed on routine preoperative CT scans using image analysis by Osirix® by measuring skeletal muscle on L3 level. Differences in pre- and postoperative plasma levels of C-reactive protein (CRP), calprotectin and IL-6 between sarcopenic and non-sarcopenic patients were analyzed. Clinical outcome was assessed by HARM scores.

Results: Fifty-six patients (64%) were defined as sarcopenic, using L3 index cut off values of 52.4 cm²/m² for men and 38.5 cm²/m² for women. Calprotectin levels were higher in sarcopenic patients compared with non-sarcopenic patients at postoperative days 3-5; respectively, 478.0 (145.6) ng/mL, p = 0.01. CRP levels were higher in sarcopenic patients on postoperative day 5: 200.1 (207.1) mg/L compared to 56.9 (50.1) mg/L, p = 0.03. IL-6 levels were not different between groups. Sarcopenic patients had higher HARM scores.

Conclusion: Sarcopenic patients undergoing surgery for colorectal cancer show an increased postoperative inflammatory response. This may be at least part of the explanation for the high incidence of postoperative complications in sarcopenic patients.

No conflict of interest.

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236. Colorectal cancer cells actively secrete exosome-encapsulated microRNAs which are associated with epithelial-mesenchymal transition
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Background: MicroRNAs have been implicated in the control of Epithelial-Mesenchymal Transition (EMT), a key process by which epithelial cells gain invasive properties leading to metastases. Exosomes, which are lipid vesicles secreted by donor cells and taken up by recipient cells, have recently been shown to contain microRNAs. Little is known of the microRNA content of colorectal cancer cell (CCC) secreted exosomes and this represents an unexplored area which may provide insight into intercellular communication in the tumour micro-environment and the stimulation of EMT. The aim of this study was to isolate and characterise the microRNA signature of exosomes secreted by CCCs.

Materials and Methods: HCT116 and HT29 CCCs were cultured in exosome free media and secreted exosomes isolated at 48 hours. Visualisation and characterisation of exosomes was performed with Transmission Electron Microscopy (TEM) and Western Blot. microRNA was extracted from exosomes using the mirVanaTM kit and array based analysis was performed using the mirCURY LNA® microRNA Array (Exiqon, Denmark) which contains capture probes targeting all microRNAs registered in miRBASE 18.0. Targets of interest were validated by RQ-PCR. Transfer of red fluorescent protein-labelled exosomes between cell populations was visualised using confocal microscopy.

Results: 100nm vesicles were visualised consistent with successful isolation of exosomes. Exosome associated protein CD63 was identified following protein extraction and Western Blot. Array analysis revealed CCC secreted-exosomes to contain 350-400 microRNAs from 2083 potential targets. The panel secreted was cell type dependant with biological clustering observed. Among those secreted were microRNAs with well described roles in EMT (miR-200k, miR-141).

Conclusion: CCCs actively secrete a panel of exosome-encapsulated miRNAs which are taken up by recipient cells. microRNAs with well documented roles in EMT are secreted within exosomes and this may have significant implications in the understanding of the development of metastases.

No conflict of interest.

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237. Postoperative complications of the abdomino-sacral amputation of the rectum (ASAR) for low rectal carcinoma: Multicentre experience
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Background: The abdomino-sacral amputation of the rectum (ASAR) performed for the first time in Poland by Professor T. Koszarowski in 1949, is frequently used in patients with low rectal carcinoma. Early and late results of case series treated in this way were published in the Polish Journal of Surgery in 1956, already indicating prolonged perineal/sacral wound healing. Despite the fact that the method was popularized by Dr M. Bebenek in the English language literature in the 2000s, authors from other countries still use synonyms of the operation (cylindrical or extralevator abdomino-perineal excision). This operation combines the advantages of total mesorectal excision and obtaining of the cylindrical specimen’s shape with a broad margin of the tumour surrounding tissues. The use of the abdomino-sacral access (with turning the patient’s body to the prone position) improves the results of the treatment in comparison to the operation with the abdomino-perineal access in the (dorsal recumbent position). The aim of the study is to assess complications after the ASAR for low rectal carcinoma on the basis of multi-centre experience.

Material and Methods: A questionnaire concerning postoperative complications of the ASAR was sent to 6 Polish surgical oncology centres performing such an operation. In the centres which completed the questionnaire 1422 ASARs were performed. Two hundred and seventy patients were excluded from further analysis due to the lack of complete data. The operation was extended by resection of the vagina in 63 (3.5%) patients, ovarectomy in 46 (4%), resection of the prostate gland or urinary bladder and/or ureter in 41 (3.5%); posterior or total extention was performed in 39 (3.4%) patients, metastasectomy (hepatic resections) in 15 (1.3%) patients, resection of the colon in 7 (0.6%) patients. Five-grade Dindo-Clavien classification was applied to assess postoperative complications.

Results: Among 1152 analyzed patients during the postoperative period (up to 90 days after the operation) 8 (0.7%) patients died (V’), 63 (5.5%) patients required reoperation (release of adhesions, partial resection of the small intestine) due to ileus caused by strangulation/adhesions of the small intestine loop into the (empty) pelvis (III’), 40 (3.5%) patients required treatment in the Intensive Care Unit due to circulatory-respiratory failure (IV’). Suppuration of the postoperative wound and prolonged perineal wound healing were found in 242 (21%) patients (II’), but they usually did not require re-hospitalization.

Conclusions: The ASAR is a safe operation and the most frequent late postoperative complication, requiring re-hospitalization, is the small intestine ileus caused by adhesions into the structures of the pelvis. A troublesome complication for patients is prolonged perineal wound healing. Further research on prophylaxis of this type of complications and assessment of late results are necessary.

No conflict of interest.

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239. A multivariate analysis of risk factors associated with permanent ileostomy following sphincter-preserving surgery for rectal cancer

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Background: Loop ileostomies are used to protect an anastomosis, especially in low rectal cancer patients. To date, the research concerning the risk factors associated with permanent ileostomy is not enough. This study evaluated the risk factors influencing permanent ileostomy after sphincter-saving resection for rectal cancer.

Material and methods: Between 2004 and 2011, 679 patients of rectal adenocarcinoma who underwent sphincter-preserving surgery were evaluated retrospectively. Of these patients, 135 had defunctioning loop ileostomies of temporary intent. They were divided into two groups: 112 patients of reversal group and 23 patients of non-reversal group for ileostomy.

Results: A total of 135 patients (19.9%) had diverting ileostomy among 679 rectal cancer patients. Twenty three patients (17.0%) of them could not receive stoma reversal. The main causes of non-reversal for ileostomy were distant metastasis (47.8%), poor general condition (30.4%), local recurrence (8.7%), anastomotic leakage (4.3%), radiation proctitis (4.3%) and patient refusal (4.3%). The independent risk factors for non-reversal for ileostomy were anastomotic leakage or fistulae, stage IV, local recurrence and associated disease.

Conclusions: Postoperative complication such as anastomotic leakage or fistulae, advanced cancer (stage IV), local recurrence and associated disease were identified as risk factors of a permanent stoma. These factors should be considered for drawing up prudential guideline for stoma closure.

Table. Multivariate analysis for risk factors for non-reversal ileostomy

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>HR</th>
<th>95% CI</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Associated disease</td>
<td>3.305</td>
<td>1.031-10.595</td>
<td>0.044</td>
</tr>
<tr>
<td>Anastomotic leakage or fistulae</td>
<td>5.567</td>
<td>1.022-30.331</td>
<td>0.047</td>
</tr>
<tr>
<td>Stage IV</td>
<td>28.036</td>
<td>7.231-108.694</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Local recurrence</td>
<td>20.233</td>
<td>1.504-272.238</td>
<td>0.023</td>
</tr>
</tbody>
</table>

No conflict of interest.

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240. Intraoperative radiotherapy with low energy photons in recurrent colorectal cancer: A single centre retrospective study


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Background: Local recurrence (LR) of colorectal cancer (CRC) is treatment failure contributing to high mortality. Intraoperative radiotherapy (IORT) applied to the tumour bed after removal of LR may improve local control. There are only scarce data on the use of low energy photons IORT for the treatment of LR. The aim of the present study is to determine the feasibility and safety of surgical treatment of recurrent CRC supplemented with orthovoltage IORT and to analyze its long-term results.

Methods: Consecutive 79 patients with LR, who underwent surgery for recurrent CRC, were included in the retrospective analysis of prospectively collected data. The modified Wanebo classification was used to stage LR (T1-4). Surgical resection was performed in 59 patients with recurrent colon (n=11) and rectal (n=48) cancer. Twenty-five (43%) patients received additional orthovoltage IORT (Intracebram PRS 500). Postoperative complications were recorded according to the Clavien-Dindo classification. During the median follow-up of 20 months, 59% patients died.

Results: There were 32 males and 27 females, with a median age of 63 (26-77) years. Median duration of IORT was 18 (6-47) minutes. Median hospitalization time after surgery with IORT was 7 (2-23) days. One (1.7%; 1/59) in-hospital postoperative death was reported. The use of IORT had no effect on the postoperative hospitalization time, morbidity and mortality. Median survival after R0 resection was 32 months, while after R1/2 - 19 months. Multi-organ resections were performed in 37 (63%) patients (44% R0). Serious (grade III and IV) postoperative complications were found in 11 (19%) patients. Of all the variables analyzed, complete resection (R0), LR without distant metastases (M0), and type of the LR other than lateral and posterior, were predictors of improved survival (p=0.018; p=0.035 and p=0.006 respectively). Stage of LR was found to be an independent prognostic factor in the multivariate analysis (p=0.03; Cox regression model). In patients with LR stage 5, a 3-year
overall survival rate of 52% and median survival of 32 months were observed.

**Conclusions:** Combination of surgical resection and orthovolt IORT is a safe and feasible procedure that does not increase the risk of postoperative complications or prolongs the hospital stay. Despite aggressive surgery supported by IORT, the advanced stage of LR may limit long-term results.

**Conflict of interest:** Other substantive relationships: Wojciech Polkowski has received travel and speaker honorarium funds from Zeiss. The authors have no other relevant affiliations or financial involvement with any organization or entity with a financial interest in or financial conflict with the subject matter or materials discussed in the manuscript.

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**241. Initial experience of laparoscopic total pelvic exenteration in a single Japanese institution**

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**Background:** As a result of early diagnosis, introduction of neoadjuvant therapy, and improvement of surgical technique, a current mainstream for pelvic malignancies is avoiding extended surgery and preserving adjacent organs as far as possible. However, total pelvic exenteration (TPE) still remains an essential surgical procedure for some patients with highly advanced or recurrent pelvic malignancies. On the other hand, a magnified excellent view in laparoscopic surgery makes it possible to understand detailed pelvic anatomy and to perform more precise surgery.

**Methods:** Between February 2013 and March 2014, 7 patients (4 males, median age, 64 years) underwent laparoscopic TPE at Nagoya University Hospital. We report the safety and actual surgical technique of this initial experience in a single institution.

**Results:** All patients had advanced or recurrent pelvic malignancies; locally recurrent rectal cancer (n=3), locally advanced rectal cancer (n=2), vaginal cancer (n=1), and soft tissue sarcoma (n=1). Neoadjuvant chemotherapy was applied in 4 patients. Only a patient with vaginal cancer received preoperative chemoradiotherapy and the other 6 patients did not. Combined resection of bony pelvis was performed in 2 patients; distal sacrectomy (n=1) and combined resection of the pubis (n=1). Sacrectomy was performed in the prone position using the padding operating frame to prevent increasing abdominal and vertebral venous pressure. Transaction of the pubis was performed using a thread-wire by orthopedic surgeons. All of the patients underwent urethral tract reconstruction using an ileal conduit from umbilical small incision (median length of 7cm) by urologists. Median operative time was 16hr 43min (12hr 18min-20hr 19min) and median blood loss was 830 (283-5225) ml. R0 resection was achieved in 6 of 7 patients (85.7%). Median postoperative hospital stay was 32 days. There was no in-hospital mortality. According to the complication, the most frequent complication was urinary tract infection in 3 patients and pelvic sepsis occurred in 1 patient.

**Conclusion:** Laparoscopic TPE was safe and acceptable procedure for carefully selected patients with advanced or recurrent pelvic malignancies. Magnified visualization of surgical technique and detailed pelvic anatomy might be a hope of excellent educational materials for young surgeons.

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**242. Modern treatment of rectal cancer closes the gap between common adenocarcinoma and mucinous carcinoma**

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**Background:** Mucinous adenocarcinoma (MC) is a distinct form of rectal cancer comprising 10% of all cases and has been associated with an impaired prognosis compared with non-mucinous adenocarcinoma (AC). It is doubtful whether preoperative radiotherapy with or without chemotherapy is effective in MC patients, but a prospective randomized trial to answer this is not feasible.

**Patients and methods:** Clinical and pathological data from four independent study populations were analyzed and enabled an analysis over different time periods for the most common treatment options. Patients from the randomized multicentre TME trial (N=1530) that compared addition of short-term radiotherapy (5×5 Gy) to TME surgery and patients from a prospectively recorded locally advanced rectal cancer database (N=576) who received preoperative chemoradiotherapy were used. Moreover, a dataset containing 38,035 patients diagnosed with rectal cancer was extracted from the Netherlands Cancer Registry (NCR) and from the Dutch pathology registry (PALGA) 4890 recent rectal cancer patients were selected.

**Results:** Data from the NCR confirmed that 5-year overall survival for MC was significantly worse from 1989-1998, but was no longer different from AC from 1999 onwards. MC patients had a higher rate of positive circumferential resection margin (CRM) than AC in all study populations, but a decrease in positive CRM was observed over time in both subtypes. MC patients who were treated with short-term radiotherapy and had a positive CRM were associated with a dismal prognosis. There was no difference in overall survival between MC and AC patients who received preoperative chemoradiotherapy.

**Conclusions:** In the era of modern rectal cancer treatment survival between MC and AC patients is no longer different. Free CRM is essential for a good outcome in both subtypes and given the higher rate of positive CRM in MC, this should be the main focus during treatment of rectal MC and warrants a more prominent role for preoperative chemoradiotherapy in MC patients.

**No conflict of interest.**

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**243. High expression of acid ceramidase confers radioresistance in rectal cancer**

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**Background:** Neoadjuvant chemoradiotherapy has become a fundamental component of the treatment strategy for locally advanced rectal cancer. The variation in response to this treatment is diverse; around 8% of patients have a pathological complete response whilst approximately
30% will either suffer disease progression or fail to respond to treatment. We aimed to identify differentially expressed proteins which would potentially serve as novel response biomarkers to neoadjuvant chemoradiotherapy in rectal cancer.

**Methods:** Serial tumour samples were obtained at diagnosis (n=8), immediately post-treatment (n=5) and at the time of surgical resection (n=6) from 8 patients with rectal cancer. Samples were subjected to comparative proteomic analysis using isotopic tagging for relative quantification (iTRAQ). Review of tumour regression grade apparent on H&E sections from the resection specimens, as well as radiological re-staging using the RECIST criteria allowed for stratification of patients into ‘responders’ and ‘non-responders’.

**Results:** A total of 3359 unique proteins were identified, of which all were present in at least half of the samples. Four proteins were significantly differentially expressed (p<0.05 and fold-change >2) between diagnostic and post-treatment samples and 14 between post-treatment and resection samples. Eight proteins were significantly differentially expressed between ‘responders’ and ‘non-responders’. One of these proteins, acid ceramidase, has previously been implicated in radioresistance in prostate cancer.

**Conclusion:** There is demonstrable change in the phenotype of the tumour with chemoradiotherapy, but a more apparent change is observed in the subsequent period of down-staging. Pathway and network analysis of these proteins may improve our understanding of this phenomenon. Eight potential response biomarkers have been identified which are currently being validated by immunohistochemistry, complemented by in vitro studies to knock-down acid ceramidase to assess its role in radioresistance in rectal cancer.

No conflict of interest.

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244. Pelvic exenteration and composite sacral resection in the surgical treatment of locally recurrent rectal cancer
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**Background:** The incidence of rectal cancer recurrence after surgery is 5-45%. Extended Pelvic resection such as pelvic exenteration and abdominosacral composite resection which entails En-bloc resection of the tumor and adjacent involved organs provide the only true possible curative option for patients with locally recurrent rectal cancer. The Aim of this study is to evaluate the surgical and oncological outcome of such treatment.

**Patients & Methods:** Between 2006 and 2012 a consecutive series of 40 patients with locally recurrent rectal cancer underwent abdominosacral resection (ASR) in 18 patients, total pelvic exenteration with sacral resection in 10 patients and pelvic exenteration in 12 patients. Patients with sacral resection were 28, with the level of sacral division at S 2-3 interface in 10 patients, at S 3-4 in 15 patients and S 4-5 in 3 patients.

**Results:** Forty patients, male to female ratio 1.7:1, mean age 45 years (range22-65Y) underwent extended pelvic resection in the form of pelvic exenteration and Abdominosacral resection. Blood loss range was (0.4-6L). Median hospital stay was 21(range 7-52) days. The Mortality, Readmission and Mortality rates were 55%, 15%, and 5% respectively. The reported surgical complications were as such wound gap in 10 patients, neurogenic bladder in 9 patients, and enteric fistula in 9 patients. Mortality occurred in 2 patients due to enteric fistula and abdominal sepsis. A R0 and R1 sacral resection were achieved in 63% and 37% respectively. Thirty five patients underwent curative resection and showed significantly improved survival with 5-year survival rate of 26.3% compared to 5 patients with palliative resection in a survival rate of 0%.

**Conclusion:** Extended pelvic resection as pelvic exenteration and sacral resection for locally recurrent rectal cancer are effective procedures with tolerable mortality rate and acceptable outcome. The associated morbidity remains high and deserves vigilant follow up.

No conflict of interest.

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245. Local excision after complete clinical response or minimal residual tumour following neoadjuvant therapy for rectal cancer
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**Background:** Multimodal treatment of rectal cancer, by combination of radiation therapy, chemotherapy and radical surgery including total mesorectal excision, has become the standard approach in patients with locally advanced rectal cancer. The use of neoadjuvant therapy results in additional benefits such as significant tumor downsizing and downstaging and a better chance of sphincter preservation in selected case. Complete rectal wall tumor regression or minimal residual lesion may be associated with the absence of viable cancer cells in the mesorectum, suggesting the possibility of a less invasive surgical treatment as an alternative to radical surgery. We report the outcome of local excision in patients with a complete or almost complete clinical response after neoadjuvant therapy.

**Methods:** Between may 2010 and February 2014 sixteen patients with locally advanced rectal cancer, treated with neoadjuvant therapy and showing a clinical complete or almost complete response, underwent a local excision procedure. The group included 11 men and 5 women with a mean age of 64. The mean tumor distance from the anal verge was 4 cm. Three patients underwent transanal excision, 1 was treated with transanal endoscopic microsurgery (TEM) and 12 underwent a transanal minimally invasive surgery (TAMIS) by a single port.

**Results:** All patients were discharged on POD 1/2. No surgical complication occurred. Three out of sixteen patients, due to poor response (downstaging (pT) and tumor regression grade (TRG)), underwent subsequent early salvage surgery. No local or distant recurrences occurred in these patients and in the remaining 13 patients. The up to date median follow-up is 30 months.

**Conclusions:** Our data show that local excision, in selected patients, has oncological results similar to total mesorectal excision (TME). Although radical rectal resection is the treatment of choice, local excision, in case of complete or almost complete clinical response to neoadjuvant treatments could be an effective and safe option. The true efficacy of this approach will ultimately be assessed by long-term oncological results.

No conflict of interest.

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246. Electrochemotherapy for rectal cancer after neoadjuvant radiotherapy: A case report
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**Purpose:** Electrochemotherapy (ECT) combines the use of electroporation, achieving a transient increase of cell membrane permeability, with
chemo-therapeutic drugs delivery. Once drugs pass through the cytoplasmic membrane, cell-cycle arrest, apoptosis or myiotic cell death are the most frequent effects. ECT is proposed, with a palliative intent, for skin and subcutaneous tumours. We investigated ECT for the treatment of a small residual rectal cancer of the anorectal junction, after neoadjuvant radiotherapy, in a patient with severe comorbidities refusing both major rectal surgery and even local excision.

Materials and Methods: A 69 years old man, with chronic cardiovascular and pulmonary diseases, presented with an adenocarcinoma, located on the anorectal junction, and staged as T3N+ at EUS and MRI. Patient received short course radiotherapy (25Gy) as neoadjuvant treatment and was considered to adenominoperineal resection. Restaging 10 weeks later showed a significant tumour shrinkage. Patient refused a major resection and even local excision. ECT plus biopsy of the residual small lesion was then proposed. The procedure was performed 12 weeks after the end of radiotherapy. Preliminarily a rectal tumor biopsy was achieved. Subsequently, about 8 minutes after intravenous bleomycin at the doses of 15 mg/m2 was given, electroporation was performed by administration of pulsed high-intensity electric fields, in 20 minutes. Patient was discharged on POD 1. No early side effect was observed. Pathology showed a partial tumor regression (TRG3) confined to the mucosal layer.

Results: Patient underwent a careful follow up. One month after the procedure, he suffered from major fecal incontinence and proctoscopy showed a large rectal ulcer in the field of ECT.

PET scan showed an increase of SUV. Patient refused abdominoperineal excision at all. Three months later, digital examination and proctoscopy showed a complete rectal mucosal healing, with a minimal residual scar and PET scan showed a minimal SUV. At the last follow up, 10 months after ECT, these results were confirmed. Fecal incontinence resolved completely.

Conclusions: ECT has been proved effective in the treatment of cutaneous and subcutaneous tumours: its role in the palliative treatment of small low rectal tumors after neoadjuvant therapy is promising.

No conflict of interest.

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247. Pelvic resection: Indications, technical considerations and outcomes of a single center series

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Introduction: Pelvectomy is a very complex surgical treatment for primary locally advanced pelvic tumor, recurrent pelvic cancer and pelvic peritoneal carcinosis. Total pelvectomy involves ‘en bloc’ resection of rectum, bladder, and internal genital organs (prostate/seminal vesicles or uterus, ovaries and/or vagina): posterior pelvectomy includes ‘en bloc resection’ of the organs in peritoneal pelvis.

AN R0 resection is the most important prognostic factor in surgery of pelvic tumors. This justifies the use of this extensive surgical technique only in patients in whom this goal can be achieved.

Patients and methods: From 2009 to 2014, pelvectomy was performed in 46 patients: 13 total and 33 posterior pelvectomies. Total pelvectomy was performed in 6 patients with recurrent pelvic colorectal cancer, in 1 patient for ovarian recurrent cancer, in 6 patients for a T4 locally advanced rectal cancer, in 5 patients peritoneal carcinosis was present. In 3 of these patients hyperthermic intraperitoneal chemotherapy (HIPEC) was performed.

The 33 posterior pelvectomies were performed in 19 patients for locally advanced rectal cancer and in 14 recurrent rectal cancer; in 11 cases peritoneal carcinosis was also present. Peritoneal dissection, as in pelvic perinectomy, was started at the transverse umbilical line, ‘higher’ than in conventional technique. Eleven patients received HIPEC.

Results: There were 15 complications of grade III-IV sec. Clavien. No postoperative death occurred. The median postoperative hospital stay was 18 days (range 7-24). Cancer recurred (local or distant) in 39% of the cases. In total pelvectomy, the ‘extended anterior’ extraperitoneal approach avoids tumor manipulation and allows to identify the correct surgical plane. HIPEC in association with pelvectomy, treats micrometastases and possible surgical insensations.

Conclusions: Our results show the feasibility and the oncological safety of pelvectomy in patients with advanced pelvic cancer, with an acceptable morbidity. Patients with no distant metastases have to be selected. Careful patient selection based on known risk factors also identifies patients most likely to benefit from resection and spares unnecessary surgery in case of palliation. Furthermore, our initial results show a promising role of HIPEC with Oxaliplatin in improving long term survival.

No conflict of interest.

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248. Short nutritional assessment questionnaire can be used to identify patients with an increased risk of developing severe complications after colorectal surgery

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Background: Malnutrition leads to poorer post-operative outcomes in patients undergoing colorectal surgery. Aim of this study is to determine if the Short Nutritional Assessment Questionnaire (SNAQ) score can be used to identify patients with an increased risk of severe post-operative complications after surgery for colorectal carcinoma (CRC).

Methods: From 2008 till 2011 a total 478 patients underwent elective surgery for CRC in our hospital. Patients were divided in two groups based on the SNAQ score: a SNAQ score of 0-1 indicating no malnourishment versus a SNAQ score of 2 or higher indicating mild to severe malnutrition. Primary outcome measures were major complications defined as anastomotic leakage; intra abdominal abscesses; bleeding; burst abdomen and pneumonia and mortality within 30 days of surgery.

Results: Almost 30% of the patients had a SNAQ score indicating malnutrition. A total of 69 patients (14.4%) developed a major post-operative complication. A significantly higher complication rate (20.1% versus 10.5%, P 0.004) and death within 30 days (4.9% versus 1.8%, P 0.05) occurred in patients with a SNAQ score of 2 or higher.

Univariate logistic regression showed that a SNAQ score of 2 or higher correlates with a 2.14 (95-CI 1.27 -3.60) times increased risk of developing severe complications (P 0.004).

Multivariate analysis showed that a SNAQ score of 2 or higher (OR 1.87 95-CI 1.04 -3.37, P 0.037) is strongly correlated to the development of severe complications.

Conclusion: Patients with malnourishment defined by SNAQ score undergoing surgical resection of CRC are at a significantly increased risk of severe postoperative complications and the 30 day mortality is more than doubled compared to well-nourished patients.

A high SNAQ score is strongly related to the development of these adverse outcomes. Therefore a SNAQ score indicating malnutrition can be used to select patients with an increased risk of complications.

Pre-operative nutritional intervention in selected patients can possibly lead to a reduced risk of developing major complications after surgery for colorectal carcinoma.

No conflict of interest.

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249. Bladder sparing technique in partial pelvic exenterations in locally advanced rectal cancer with recto-vaginal and recto-vesical fistulas: The possibility of primary anastomoses and risk factors of their insolvency

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Background: Pelvic exenteration remains a gold standard for patients with locally advanced rectal cancer complicated with recto-vaginal or recto-vesical fistulas. Bladder preservation and primary colo-anal anastomoses with complete tumor resection is often possible procedure. The reasons of adverse outcomes are the insolvency of urinary or coloanal anastomoses. We set out to determine if bladder sparing operations or primary anastomotic technique can decrease the postoperative morbidity and 5-year survival rate and to identify the main risk factors of anastomotic leakage.

Material and methods: Between 2003 and 2013, 52 partial pelvic exenterations was performed for the primary (36) and recurrent (26) rectal cancer complicated by the recto-vaginal (31) and recto-vesical (21) fistulas. An evaluation of prognostic factors for anastomotic leakage, mortality rate and overall survival was made.

Results: Combined operations were performed at 52 patients accounting for 7.4% of the total number (703) operations for rectal cancer. A total of 27 patients were treated by posterior exenteration (anterior rectal resection and hysterectomy and vaginectomy en bloc), 19 patients were treated by combined posterior exenteration (rectal resection with hysterectomy and resection of bladder/left ureter) and 6 patients were treated by the classic total pelvic exenteration (abdominoperineal rectum resection with prostate and vesiculectomy and resection of prostatic uretra and lower third of both ureters).

Urinary diversion was achieved by construction of a Boary-flap (8), ileal conduit (6), ileal bladder augmentation (3), transverse colon conduit (3) and double-barreled wet colostomy (2). Primary colo-anal anastomoses were performed in 35 from 46 sphincter spared patients (76%).

The histological study identified the presence of the direct tumor invasion in the adjacent organs in the 48 patients (92.4%), inflammatory penetration was identified in 4 patients (7.6%). Microscopically complete resections (R0) were achieved in 94%. Total of 74 anastomoses in 46 patients were performed (39 ureteral and 35 intestinal). Signs of leakage were found in 9 patients (leakage rate made up 17.3%). In the group of anastomotic leakage in comparison to non leaked anastomoses (9/39) were found an oppression of a cellular link of immunity, augmentation of cytotoxicity of blood serum, 10-fold increase urinary excretion of amino acid oxyproline as a markers of the disintegration of collagen type 1. The average follow up from surgery was 42 months (range 8-96). The 5-year overall survival rate made up 48%. Anastomotic leakage, and an incomplete resection negatively influenced the 5-year overall survival.

Conclusions: New methods of combined operations compared with total pelvic exenterations allowed to improve early and late outcomes with satisfactory medical and social adaptation of patients after resections of the adjacent organs.

No conflict of interest.

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250. Improved overall survival with additional surgical resection after polypectomy for T1 colorectal cancer


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Background: With the introduction of screening programs for colorectal cancer, early stage cancers are expected to be more frequently diagnosed. Controversy exists on the management of patients with pathologically confirmed T1 colorectal cancer (pT1 CRC) after initial polypectomy. We aimed to identify factors associated with additional surgical resection in a large cohort of patients and to compare overall survival between patients undergoing additional surgery versus polypectomy only.

Material & methods: All pT1 CRC patients who underwent polypectomy and were diagnosed in the area of the Eindhoven Cancer Registry between 1995-2011 were included. Multivariable logistic regression was used to assess patient and tumour characteristics associated with additional surgical resection. Crude 5-year overall survival was based on Kaplan-Meier curves and Cox regression analysis was used to discriminate the independent effect of additional surgical resection on the risk of death after adjusting for relevant patient and tumour characteristics.

Results: In total, 827 patients with pT1 CRC who underwent polypectomy were included, of whom 260 (31%) underwent additional surgical resection. As compared to patients undergoing polypectomy only, patients in whom additional surgical resection was performed were younger (mean age 65.1 versus 68.5, p<0.0001), more often had no comorbidity (34% versus 25%, p=0.008) and more often had a tumour located in the colon (71% versus 63%, p=0.017). In multivariable analysis, elderly and patients with a tumour located in the rectosigmoid or rectum were less likely to undergo additional surgical resection (OR >80 years versus 60-69 years 0.22: No conflict of interest.

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251. Is laparoscopy-assisted colectomy superior to open colectomy? Comparison of the long term postoperative course and prognosis


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Background: We introduced laparoscopy-assisted colectomy (LAC) and contributed to improve the postoperative course. In this study, we compared the long term postoperative course and prognosis between LAC and open colectomy (OC) in sigmoid and rectosigmoid cancer.

Material and methods: Analysis subjects were 114 cases that underwent sigmoidectomy or anterior resection of the rectum with two or three-field lymphadenectomy from January 2003 until December 2012. They were divided into two groups: patients performed OC (the Ogroup, n=64): patients performed LAC (the L group, n=50). Our retrospective analysis was focused on the long term postoperative course and prognosis.

Results: LAC was superior to OC in disease free survival (DFS) (P=0.0330 by Wilcoxon test, P=0.0338 by log-rank test) and overall survival (OS) (P=0.0413 by Wilcoxon test, P=0.0727 by log-rank test). Under stage II, cancer recurrence occurred around one year after the surgery in the O group, but there was no cancer recurrence in the L group. Moreover over stage III, the L group was superior to the O group in OS (P=0.0392 by Wilcoxon test, P=0.0856 by log-rank test). The ratio of occurrence of small bowel obstruction and incisional hernia and use of laxative or antilulcerative one year after the surgery. Furthermore, LAC delay the recurrence of cancer compared with OC in the same surgical procedure. These results strongly suggest that LAC is superior to OC in the long term postoperative course and prognosis.

No conflict of interest.
253. Hypofractionated chemoradiotherapy with local hyperthermia and metronidazole for fixed or tethered T4 rectal cancer
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Background: Preclinical studies support additive effect of hypofractionated radiotherapy, local hyperthermia and metronidazole. The aim of this study was to prospectively evaluate the safety and efficacy of neoadjuvant chemoradiotherapy with local hyperthermia and metronidazole for fixed T4 rectal cancer.

Methods: Patients received radiation therapy 40 Gy in 10 fractions thrice a week. Chemotherapy consisted of Capecitabine 650 mg/m² bid per os on days 1-22, oxaliplatin 50 mg/m² intravenously on days 3, 10, 17. Local hyperthermia 41-45°C, 60 minutes was performed on days 8, 10, 15, 17. Metronidazole 10 g/m² per rectum was used on days 8, 15, 17. Local hyperthermia.

Results: Between Sept.2007 and Jan.2011, a total of 116 consecutive patients were enrolled (median age 57 years; 72 male, 44 female; median tumor diameter 8 cm). R0 resection rate was 90.5%. 5(4.3%) patients remained inoperable, 6(5.2%) had R1 resection. 26(22.4%) patients experienced G3-G5 toxicity (23 Grade 3 and 4 and 5 Grade 4). There was no postoperative mortality. 48(41.4%) patients had near-complete and 10(8.6%) patients - complete response. Median follow-up was 21.9 months. 2-year OS was 82.6%, 2-year DFS was 70.9%. 30(25.9%) patients had disease progression. 13(11.2%) patients had local recurrences, 22(19%) patients developed metastatic disease.

Conclusion: High R0 resection rate in fixed or tethered rectal cancer in our study warrants further investigation of the proposed treatment scheme in a randomized setting.

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254. A novel chemoradiotherapy regimen for squamous-cell anal cancer
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The aim of this study was to investigate safety and efficacy of anal cancer chemoradiotherapy with cisplatin, bleomycin and local hyperthermia.

Methods: This retrospective trial included 157 consecutive patients, who underwent chemoradiotherapy for squamous-cell anal cancer during 1998-2011. All patients received 36-48 Gy radiotherapy in 2 Gy fractions followed by a boost (after 2 week gap) till a total dose of 64-70 Gy was achieved. Chemotherapy included intravenous cisplatin 20 mg/m² days 1,3 weeks 1-4, intramuscular bleomycin days 2,4, weeks 1-4. 5 sessions of local 41-45°C hyperthermia were carried out during the radiotherapy course.

Results: Complete clinical response was achieved in 126 (80.3%) patients, 31 (19.7%) patients underwent abdominoperineal resection. Median followup was 30 months. 24 (16.9%) patients died from disease progression, including 10 (7.0%) patients with local recurrence. 5-year survival rate was 73.7 %.

Conclusion: Anal cancer chemoradiotherapy with cisplatin, bleomycin and local hyperthermia seems a feasible alternative to standard treatment, the efficacy of this regimen needs to be validated in prospective trials.

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256. Sensitivity and specificity of CEA in colorectal cancer follow-up C. Verberne¹, T. Wiggers¹, G.H. De Bock², L. Grossmann³
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Background: Carcino-Embryonic Antigen (CEA) is a tumor marker that functions as an early warning for recurrent disease (RD) in the follow-up of colorectal cancer (CRC) patients. The exact way to use CEA in terms of measurement frequency and threshold levels is still to be defined. A CEA-rise per time unit is known to be more specific than applying an absolute CEA elevation, such as the commonly used threshold of 5.0 ng/mL. Aim of this study is to find the sensitivity and specificity of CEA-rise for detection of RD during follow-up from the patients included in the randomized CEA Watch follow-up trial (Netherlands Trial Register 2182).

Materials and Methods: Patients with AJCC stage I-III in eleven Dutch hospitals were included after curative resection of colorectal cancer and followed between October 2010 and October 2012. The intervention follow-up schedule consisted of routine 8-weekly CEA measurements and yearly routine imaging. The pre-defined threshold value was a 20% rise after 8 weeks followed by a confirmative CEA-rise after 4 weeks. When immediate imaging after a first, but suspected rise was done this was accepted as crossing the threshold value as well. The sensitivity and specificity of this schedule were calculated from all patients that were included in the intervention protocol and had at least 2 consecutive CEA measurements (n=1,981).

Results: RD was detected in 126 patients (6.4%). Median follow-up time was 34 months (range 2-71 months). The pre-defined consecutive rise was observed in 68 patients and a single suspected rise in an additional five patients. This schedule has a sensitivity of 58% and a specificity of 92%. Of these patients with RD, 42% could be treated with curative intent.

Conclusions: A strict application of CEA measurements focusing on CEA-rise per time unit rather than absolute CEA value has a high detection rate for recurrent disease. The proposed schedule of 20% rise / 8 weeks confirmed by further rise in 4 weeks has an acceptable sensitivity and high specificity and is suitable for use as a first-line screening in follow-up.

No conflict of interest.

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257. Screening modality for detection of synchronous colorectal liver metastases: Ultrasonography or computed tomography? W. Kooijman¹, L.B.W. Weerink², C.M. Gant³, I.F. Faneyte², E.A. Kouwenhoven²
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Background: In primary colorectal cancer (CRC), 10-20% patients present with synchronous liver metastases. There has been a trend in the primary detection modality for liver metastases from abdominal ultrasound (US) towards abdominal computed tomography (CT). However, it is not yet clarified whether CT results in an increased detection of synchronous liver metastases, and consequently in a decreased detection of metachronous liver metastases.

The aim of our study is to evaluate detection rates of synchronous and metachronous liver metastases with CT and US.

Materials & Methods: We performed a retrospective cohort study, in which we included patients that underwent elective colorectal surgery with curative intent for CRC in 2008 and 2011 in our hospital. Patients were divided into two groups, based on the primary detection device for liver metastasis. US was routinely performed in 2008; CT was the standard modality in 2011. Follow-up data were available of all patients for a period of at least two years.

Results: A total of 550 patients were included in our study, 290 patients underwent primary screening for liver metastases with US; 260 patients with CT. Both groups were comparable for age, sex, tumour characteristics, number of synchronous and metachronous metastases and postoperative chemotherapy.

No significant difference was found in detection rate of synchronous liver metastases between primary screening with US and CT (10.7% and 6.6%) (p = 0.11). With normal findings on CT or US at onset, patients presenting with metachronous liver metastasis were similar: 8.1% in CT-group vs 9.7% in US-group (p=0.52). Furthermore, the time interval to detect metachronous metastasis was comparable for both screening devices, 13.5 months for US (IQR= 4.6-18.6) and 9.5 months for CT (IQR=5.1-13.5) (p=0.17) during a minimum of 2 years of follow-up.

Conclusion: US is a sufficient detection modality for synchronous metastases. It performed as well as CT in detecting synchronous liver metastases in patients with CRC. Primary screening by US did not result in a higher amount of detected metachronous liver metastases during a 2 year follow-up. Also there was no significant difference in time to detect metachronous liver metastases between both modalities.

Therefore, due to lower costs and absence of radiation exposure, US should be preferred as the primary detection modality for synchronous liver metastases in patients with CRC.

No conflict of interest.

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258. Intersphincteric resection in combined treatment of “ultra-low” rectal carcinoma Y.A. Barsukov¹, I.S. Tataev¹, S.I. Tkachev², A.G. Perevoshikov³, D.V. Kuzminchev¹, Z.Z. Mamedli¹, V.A. Alley¹
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Background: Intersphincteric resection is the very last option for sphincter preservation of tumors of the lower third of rectum. Which otherwise would not be resectable with preservation of the sphincter by an abdominal approach alone. Long-term outcomes after radical abdomino-perineal excision (APE) remains unsatisfactory (locoregional recurrence rate ranges from 38.5 - 42.2%, metastases - 7-10%, overall three-year and five-year survival rate - 42% and 20 %, accordingly). In order to improve long-term results we tried to modify program of preoperative chemotherapy with radiosensitisers.

Materials and methods: The method includes pre-operative radiotherapy 40 Gy in 10 fractions, oral intake of capecitabine 1700 mg/m2 daily and oxaliplatin 50 mg/m2 weekly, local hyperthermia #4 and two endorectal introductions of polymeric composition with metronidazole 10 g/r m2. 24 patients were treated by this program.

Results: Analyzed the safety and efficacy of the developed program, according to the degree of toxicity, tumor response, type of performed operations, the frequency of local recurrence and metastasis. Grade 3 toxicity occurred in 21.7% of patients and there were mostly gastrointestinal. On histological findings tumor regression grade (Dworak classification) III and IV was revealed in 16 (66,7%) and 5 (20,8%) accordingly. APE was performed in 16.7% of patients. Intersphincteric resection was performed in 83.3% of patients. There was no postoperative death after intersphincteric resections. Local recurrence and distant metastases hasn’t been registered yet.

Conclusion: Developed combined program for patients with «ultra-low» rectal cancer is a high-efficient method of treatment.

No conflict of interest.

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259. The impact of perioperative hemotransfusions on short-term outcomes after surgical treatment of colon cancer

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Background: Perioperative hemotransfusions (PHT) and concurrent anaemia in colon cancer (CC) patients are still a matter of debate regarding short-term treatment results. The aim of this study is to access the impact of anaemia and PHT on short-term outcomes after surgery for CC.

Patients and methods: Patients with CC, with mild and severe anaemia undergoing curative surgery were included. Study group (SG) were treated within an enhanced recovery program, determining no PHT. Control group (CG) were administered with red blood cells (RBCs) transfusion. Degree of anaemia, hemotransfusion status and their impact on postoperative outcomes were assessed.

Results: A total of 280 patients were included; 159 — with mild or severe anaemia, of them 73 SG patients had no PHT and 86 CG patients required RBCs transfusions. No significant difference between age, gender, body mass index, tumor site, stage and extent of surgery were observed. In SG 49 (67%) of patients had mild and 24 (33%) — severe anaemia. In CG 52 (61%) and 34 (39%) (p = 0.236 and 0.172). Fifty (59%) CG patients received RBCs transfusion (p = 0.01). Postoperative morbidity was higher in CG — 17 (21%) and 8 (10%) (p = 0.05). Postoperative mortality was higher in CG — 4.7% and 0 (p = 0.05). Overall risk (OR) of postoperative complications in patients with severe anaemia was insignificant in both groups — OR = 0.43 (95% CI = 1.125 — 2.9) with p = 0.812 for SG and OR = 0.96 (95% CI = 1.66 — 2.86) with p = 0.113 for CG. PHT was a significant factor of poor postoperative outcome. Among transfused patients 37 (43%) developed complications (p = 0.05). OR and 95% CI were 1.42 (1.03 — 2.01).

Conclusions: Concurrent anaemia in CC patients presented as an invalid risk factor for developing poor short-term results after surgery. PHT significantly increase rates of postoperative morbidity and mortality, influencing the OR.

No conflict of interest.

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260. Multivisceral resections as a treatment option for locally advanced colon cancer with hepatopancreato-biliary involvement

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Background: En-bloc multivisceral resection (MVR) is a commonly considered ‘golden standard’ treatment option for locally advanced colonic cancer. Invasion into hepatopancreatico-biliary zone (HPBZ) organs remains to be an underevaluated form of this morbidity, leaving plenty of surgical strategy questions unsolved. The aim of this study was to assess short- and long-term outcomes of locally advanced colonic cancer with HPBZ structures involvement treatment.

Methods: A total of 625 patients were studied. Among them MVR were performed in 237 cases (34%), 39 (16.5%) — because of HPBZ structures involvement. Additionally an analyze of 32 locally advanced colonic cancer with HPBZ structures invasion patients, who underwent standard palliative (R1 or R2) colonic resections.

Results: Class III — IV Clavien-Dindo complications and postoperative mortality in groups of all MVR, MVR with HPBZ structures invasion and in a group of patients with palliative resections appeared to be 19% and 3.3%, 39% and 0%, 6.25% and 3% respectively. The main types of complications were septic and purulent ones, among patients after MVR with HPBZ structures invasion — external pancreatic fistula. Overall 5-year survival in a group of all MVR patients was 60.7 ± 3.9%, median survival — 23 months, in a group of MVR with HPBZ structures invasion — 49 ± 3%, median survival — 19.6 months. In a subgroup of patients, who underwent palliative colonic resections with cases of inflammatory infiltration overall 5-year survival rate was 32 ± 6%, median survival — 22.7 months, but in cases of tumor invasion — 6 ± 4% with median survival 4.2 months.

Conclusions: Performing of MVR in patients with locally advanced colonic cancer with HPBZ structures invasion should be considered as justified and favorable treatment options. However, the rate of overall surgical complications appears to be significantly higher, this treatment option has the capability to strongly improve long-term treatment outcomes.

No conflict of interest.

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261. Long-term outcomes after combined treatment of locally advanced rectal cancer, complicated by fistula formation

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Background: Locally advanced rectal (LARC) cancer with invasion to adjacent organs is usually detected in 5 — 22% of patients. Rectovesical, recto-vaginal and external fistulas are present in 7-9% of these patients. Neoadjuvant radiation therapy (NRT) might cause a great benefit for tumor downstaging, downsizing and disease-free survival, but vast majority of cases presence of a fistula remains a contraindication for such procedure. The role of NRT in cases of LARC with fistula formation isn’t developed, leaving many actual questions unsolved.

Materials and methods: Thirty two patients, who underwent curative treatment for ypT N M LARC, complicated by formation of malignant external, rectovaginal or rectovesical fistulas from 2000 until 2012 were included. All patients underwent NRT of total 30 — 60Gy prior to curative surgery. Response to NRT, overall and recurrence-free 5-year survival rates and local recurrence rates were assessed.

Results: Lower rectum was the most frequent primary tumor site — 18 (56%). Recto-vaginal fistulas were present in 25 patients (78%), rectovesical — 4 (12.5%), external — 3 (9.5%). Abdomino-perineal excision was performed in 63% of patients. A total radiation dose of 30Gy was administered to 13 patients (40 %), 19 (60 %) received a total dose of 50 — 60Gy. No specific complications, related to proceeding of radiation therapy were observed. Complete response to NRT with fistula healing was observed in 2 cases (6.25%), partial response — 9 (27%), stabilization — 21 (66.7%). No cases of tumor progression after NRT were observed. During the study period 2 (6%) cases of local recurrence were observed. Overall 5-year survival was 45 ± 12.3%. Overall 5-year recurrence-free survival rate was 34 ± 11.4%.

Conclusions: NRT is eligible and justified for patients with LARC, complicated by fistula formation. No cases of specific radiation therapy-related complications were observed. Providing tumor downstaging and downsizing carries a benefit of increasing a rate of resectability and decreasing local recurrence rate. NRT should be applied as a treatment option for patients with LARC, complicated by fistula formation.

No conflict of interest.

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262. Multivisceral resections as a treatment option for locally advanced colorectal cancer with bladder involvement

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Background: Locally advanced colorectal cancer (LACC) with adjacent organs invasion contributes to 5 — 34% of all primary tumors for such site. Under these circumstances urinary bladder is one of the most vulnerable organs — it’s invasion is observed in 31 — 73% of LACC. In a majority of cases LACC tends to invade in multiple adjacent structures
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Overall 5-year disease-free survival was 32.4%, patients with NETs was 41.7%.

11 (20%) developed tumor progression, 6 (11%) disease was in 12 patients (22%).

Materials and methods: Three hundred and three patients, who underwent curative surgery for LACC since 2008 until 2013 were included. Study group (SG) (85 patients) – radical MVR with full-thickness bladder resection for grade IIB – IIIC (pT4bN0-1M0) LACC. Control group (CG) – 218 patients with grade IIB – IIIC (pT4bN0-1M0) colorectal cancer, who underwent standard surgery for sigmoid and rectal cancer. Class III – V Clavien-Dindo complications, tumor invasion rate, overall and disease-free 5-year survival were assessed.

Results: MVR with full-thickness bladder resection were performed in 17 patients with rectal and in 54 – with sigmoid cancer, among them: rectrovecostomoy took part in 14 cases. Postoperative class III – IV Clavien-Dindo complications were observed in 12 cases (14%). Most frequent of these was vesical fistulas (external and colovaginal) – 5 (6%) and anastomotic leakage – 4 (5%). Reoperation was considered as a treatment option in 6 cases (7%). There were no cases of postoperative mortality in both groups. Among CG patients anastomotic leakage was observed in 15 cases (7%), leading to diffuse peritonitis in 9 (4%) cases. There was no significant difference between rates of anastomotic leakage in both groups (p>0.05). In SG patients rate of tumor invasion was 53%, overall and disease-free 5-year survival was 62±12.7% and 39±8.5%. In CG patients overall and disease-free 5-year survival was 72.3±9.5% and 46.8±10% respectively (p<0.05).

Conclusions: En-bloc MVR in cases of LACC with urinary bladder involvement represents an optimal treatment strategy, resulting in satisfying short- and long-term outcomes with no significant difference in complications, overall and disease-free survival rates.

No conflict of interest.

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264. Neoadjuvant chemoradiotherapy for distal T2-3N+/M0 rectal cancer
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Background: The two broad approaches to neoadjuvant therapy for distal rectal cancer - short-course and long-course radiation. The outcomes of these approaches reported in nonrandomized trials are not comparable because patients selected for treatment with short-course radiotherapy included those with T1–3 disease. The aim of this study was to compare survival, local control, postoperative complications and anal sphincter preservation in the two treatment groups: short-course (sRT) versus long-course radiotherapy (lRT) as a neoadjuvant modality for the management of lower rectal cancer.

Materials and Methods: The study randomized 172 patients with T2-3N+/M0 distal rectal cancer. Patients receive either neoadjuvant short-course radiotherapy (5 x 5 Gy) and surgery within 1-2 days (Group 1) or long-course radiotherapy (30 Gy in 15 fractions of 2 Gy) and surgery 4 weeks later (Group 2). The median follow-up of living patients was 48 (range 38–64) months.

Results: Complete response - 8.8%, partial response - 42.3% in Group 1 and 90.2% in the Groupe 2 (P = 0.01). Disease-free survival was 62.7% versus 86.4 per cent (P = 0.001), crude incidence of local recurrence was 8.8% versus 6.9% (P = 0.170) respectively. Anal sphincter preservation in Group 2 was 91.1%, compared with 55.4% in the 1st group. Number of sphincter saving surgery for patients in Group 2 with initially planned abdomino-perineal resection of the rectum increased by 2.7 times (p <0.005). Postoperative complications such as anastomotic leak comparable in both groups (8.8 and 7.5%).

Conclusion: Combined treatment of patients with distal rectal cancer (T2-3N+/M0) using neoadjuvant long-course radiotherapy of 30 Gy is safe and effective.

No conflict of interest.

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265. Condition of the anal sphincter after neoadjuvant radiotherapy in patients with rectal cancer
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Background: Vast majority of evidence suggest negative impact of radiation therapy on anal sphincter function. Morphologic changes, which lead to anal incontinence after applying different programs of neoadjuvant radiation therapy (NRT), remain unrevealed. The aim of this study was to assess histologic changes in the anal sphincter, occurring after applying different regimens of NRT in combined treatment of rectal malignancies.

Materials and Methods: Histologic changes in anal sphincter tissues were analyzed in 49 patients with T2-4N0-2M0-1 low rectal cancer after NRT and abdomino-perineal resection. Twelve patients had and disease-free 5-year survival for patients with local disease was 72±11.4% and 53±7.8% and for patients with advanced disease - 28±6.7% and 19±12.7%.

Conclusions: Colorectal GEP-NETs represent a rare group of malignant tumors, demonstrating major distinguishing from adenocarcinoma clinically and biologically. Radical surgery results as a perspective treatment option.

No conflict of interest.

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been given a course of NRT with total dose of 20Gy by gross fractions, 14 patients — 30Gy by divided fractions, 30 patients — 50-60Gy by divided fractions. A control group consisted of 10 patients, who didn’t undergo NRT.

**Results:** Grade I fibrosis was observed predominantly in groups of 20Gy and 30Gy — 75,1% and 64,3% respectively. Among groups of 50Gy and 60Gy grade II — III fibrosis was observed in 46,2% and 30,7% respectively. A tendency towards decreasing the number of nervous elements when increasing the dose of NRT was observed, but the difference appeared to be insignificant (p=0,28).

**Conclusion:** Due to an alteration, caused by radiation therapy, degenerative and inflammatory changes occur in the anal sphincter tissue, which leads to substitution of muscular elements by fibrous tissue and turns out to be a morphological substance for further functional changes. **No conflict of interest.**

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266. Careful dissection of the distal ureter in radical pelvic surgery is highly important: A reappraisal for the vesical plexus

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**Background:** After the introduction of the total mesorectal excision (TME) the pelvic autonomic network has been widely studied. Optimal pelvic function is warranted by combined action of the sympathetic and parasympathetic nerves. In the female hemi pelvis, nerves (VUL). This plexus expressed TH and VIP, implying the presence of sympathetic and parasympathetic nerves. In the female hemi pelvis, nerves branched of the IHP and bended over the distal ureter form a small plexus near the ureteral orifice.

**Results:** In all analyzed female fetuses nerves branching from the upper part of the IHP ran medially to the ureter to the bladder and formed a plexus anterolaterally to the distal ureter in the vesico-uterine ligament (VUL). This plexus expressed TH and VIP, implying the presence of sympathetic and parasympathetic nerves. In the female hemi pelvis, nerves branched of the superior part of the IHP and formed a plexus anterolaterally to the distal ureter in the VUL. In the male hemi pelvises, an evident nerve bundle branched of the IHP and bended over the distal ureter forming a small plexus near the ureteral orifice.

**Conclusion:** The distal ureter is not a nerve-less safe surgical zone. Dissection of the distal ureter is discouraged if there is no oncological need to do so. Surgical preservation of the vesical plexus might play a role in maintaining sufficient post-operative bladder function. **No conflict of interest.**

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267. Clinical trial on the incidence of wound infection and patient satisfaction after stoma closure: Comparison of two skin closure technique


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3 Chungnam National University, Department of Surgery, Daejeon, Korea  
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**Background:** Surgical site infection (SSI) is one of the most common complications that can occur after stoma closure. There are reports on difference in the incidence of wound infection depending on the skin closure techniques, but there is no consensus on the ideal closure technique of the stoma wound. The aim of this study was to compare the incidence of SSI and patient satisfaction after circumferential purse-string approximation (CPA) versus primary linear closure (PC) of stoma wound.

**Materials and Methods:** This study is designed in prospective non-randomized trial. Forty-eight patients undergoing stoma closure from February 2010 to October 2013 in Dankook University hospital were reviewed. We compared the incidence of SSI and patient satisfaction of stoma closure using a questionnaire. We divided the patients in to two groups according to the stoma closing technique: Purse-string approximation group (n = 34) versus Primary linear closure (n = 14).

**Results:** Mean age of patients was 58 (29~78 yr) and 16 patients (33%) were female. There was no statistical difference between PSA and PC group in initial diagnosis, type of stoma, time from stoma creation to closure, operative time, and hospital day. SSI occurred in three (6.3%) of all patients and it was more frequent in PC than in PSA(0/34, 0% vs 3/14, 21.4%; p=0.021). Time to complete healing after stoma closure was 32 days (14~61 days). In the questionnaire for wound healing, patients were more satisfied with wound scar in purse-string approximation group (p=0.044)

**Conclusions:** After stoma closure surgery, purse-string approximation was associated with a significantly lower incidence of wound infection and greater satisfaction of patients compared to primary closure. **No conflict of interest.**

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268. Local excision after neoadjuvant chemoradiotherapy for distal rectal cancer: Comparison with patients with early residual cancers underwent surgical resection

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**Background:** Neoadjuvant chemoradiotherapy (CRT) has been standard treatment modality for locally advanced rectal cancer. However, surgical resection of the irradiated rectum may be associated with possibility of permanent stoma, significant morbidity, and mortality. Therefore, an alternative approach, local excision following CRT, would be considered in patients with expectation of high morbidity and mortality. The aim of
269. Expression and clinical significance of the securin in colorectal carcinomas

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Background: Securin is a regulatory protein, which plays a central role in chromosome stability and control of the metaphase-anaphase transition and anaphase onset. Securin blocks Separase/ESPL1 function, preventing the proteolysis of the subsequent dissociation of the chromosome. Securin is expressed at low level in most tissues, but securin is overexpressed in many epithelial neoplasms. The aim of our study was to evaluate how securin affects tumorigenesis and prognosis in colorectal carcinomas.

Materials and Methods: To clarify the roles of securin in colorectal tumorigenesis, its expression was examined by immunohistochemistry on a tissue microarray with its comparison with clinicopathological parameters and survivals of the colorectal carcinomas.

Results: Securin was detected in 285 (76.4%) of 373 colorectal carcinomas. Overexpression of securin was correlated with gender (p = 0.036), pathologic T stage (p = 0.007) and AJCC stage (p = 0.001), but this was not correlated with lymphatic metastasis and vascular invasion of colorectal carcinomas. Overexpression of securin was not correlated with 5 year survival of the colorectal cancer patients by Kaplan-Miere survival model.

Conclusions: Expression of securin is correlated with T stage and AJCC stage in colorectal cancer. Our study showed a role for securin in colorectal cancer tumorigenesis. These findings showed that securin has a function of tumorgenesis with colorectal cancer invasion.

No conflict of interest.

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270. AEG-1 is associated with invasion and poor prognosis in colorectal cancer

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Background: Astrocyte elevated gene-1 (AEG-1) was originally known as a human immunodeficiency virus (HIV)-1-inducible gene in primary human fetal astrocytes. AEG-1 is a transmembrane protein and an important genetic determinant involved in the regulation of multiple events in carcinogenesis. AEG-1 is overexpressed in a number of types of cancer including liver, breast, prostate, esophageal cancer, melanoma and malignant glioma in comparison to their normal counterparts. In this study, we studied to examine the expression of AEG-1 in different colorectal cancer fresh tissues by RT-PCR and western blotting and to explore the expression of AEG-1 in colorectal cancer tissue using immunohistochemistry. We also analyzed to elucidate its association with clinicopathological characteristics and survival status of the colorectal cancer patients.

Materials and Methods: The mRNA and protein levels of AEG-1 were determined with RT-PCR and western blotting using 88 pairs of tumor and matched adjacent non-tumor tissue from CRC patients. AEG-1 expression in tumor was investigated by immunohistochemistry on tissue microarrays of 317 cases of colorectal cancer and the association of AEG-1 expression was examined with clinicopathological features.

Results: The AEG-1 mRNA levels were overexpressed in 65 (72.8%) tumor tissue samples compared with the matched adjacent non-tumor tissue samples (P = 0.001). Similar with the RT-PCR results, an upregulation in AEG-1 proteins was observed in 67 (76.1%) of the CRC tissues compared with the matched adjacent non-tumor tissues (P = 0.001). AEG-1 was positive in 176 out of 319 cases (55.2%) of colorectal cancers, without statistical significance. AEG-1 expression was associated with vascular (p = 0.00), lymphatic invasion (p = 0.00) and clinical stages (p = 0.00). Moreover, Cox regression analysis revealed that lymphatic invasion was associated with patient’s mortality (HR: 3.038, 95% CI: 1.423–6.485, p = 0.004) and patient’s survivals was related to clinical stage (0.002). These results suggest that AEG-1 expression plays several important roles in cancer invasion and may also be a good prognostic marker for colorectal cancer.

Conclusions: Our data confirmed that AEG-1 was expressed in colorectal cancers and the expression was correlated with worse prognosis of colorectal patients.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.262

271. Potential prognostic markers and the possibility of combined treatment in patients with metastatic colorectal cancer

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Background: Patients with metastatic CRC are a heterogeneous cohort. Search for potential prognostic markers based on an evaluation of clinical and morphological parameters and the choice of optimal treatment model have remained actual.
Purpose: to investigate clinical and morphological parameters of patients with CRC with liver metastases to find potential prognostic markers of the disease and evaluate the possibility of complete cytoreduction in such patients after preoperative chemotherapy.

Material and methods: 93 patients with CRC liver metastases underwent treatment from January 2012 to March 2014 in Department of abdominal surgery of N.N.Petrov Research Institute of Oncology.

Results: 70 patients (75.3%) had liver metastases synchronously with a primary tumor of the colon, in 23 patients (24.7%) there were identified metachronous metastases. In the group with metachronous lesions of the liver the number of men was significantly lower compared with the group with synchronous metastasis (43.5% and 64.3%, p<0.05). Among patients with colon cancer (50 persons) there were significantly more common synchronous than metachronous liver mets (82.0% and 18.0%, respectively), whereas in patients with rectal cancer (43 patients) the same ratio was significantly lower (67.4% and 32.6%, respectively) (p=0.056).

<table>
<thead>
<tr>
<th>Number of liver mets</th>
<th>Metachronous disease (n=23)</th>
<th>Synchronous disease (n=70)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single</td>
<td>5 (21.7%)</td>
<td>11 (15.7%)</td>
</tr>
<tr>
<td>2-3</td>
<td>12 (52.2%)</td>
<td>22 (31.4%)</td>
</tr>
<tr>
<td>Multiple</td>
<td>6 (26.1%)</td>
<td>37 (52.9%)</td>
</tr>
</tbody>
</table>

Preoperative chemotherapy (3-7 cycles of FOLFOX/FOLFIRI) performed in 8 patients in the group with metachronous disease, objective response was obtained in three patients (31.3%). 16 of these patients (69.6%) underwent surgery (10 atypical liver resections and 6 hemihepatectomy). In patients with synchronous mets preoperative chemotherapy performed in 17 patients, 9 of them (52.9%) achieved an objective response. R0 cytoreduction after neoadjuvant chemotherapy managed to fulfil in 7 of the 15 operated patients after preoperative chemotherapy (46.7%) (4 patients underwent hemihepatectomy, 3 patients - atypical liver resection), 4 patients were not operated due to progression. 53 patients (57.0%) with synchronous liver mets underwent surgical treatment at a first stage due to complicated tumor. Optimal cytoreduction in this group managed to fulfil only in 13 patients (24.5%): 2 (3.8%) hemihepatectomy,11 (20.7%) atypical resection and 5 (9.4%) RFA synchronously with resection of colon.

Conclusions: 1. There was shown a trend of more frequent detection of synchronous metastases in patients with colon cancer compared with rectal.
2. In patients with synchronous liver mets multiple lesions were significantly more common with metachronous group (52.9% and 26.1%, respectively, p<0.05).
3. Neoadjuvant chemotherapy in patients with synchronous liver metastases allows to perform optimal cytoreductive surgery in 46.7% (compared with 24.5% in cases without prior chemotherapy).

No conflict of interest.

273. Single port transanal minimally invasive surgery for rectal tumours under spinal anesthesia

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Introduction: Transanal minimally invasive surgery (TAMIS) for rectal tumors has been introduced as an alternative approach to transanal endoscopic microsurgery (TEM). TEM has some limitations such as the need for special equipment, expensive cost, and steep learning curve. In this study, we address the technical feasibility of TAMIS under spinal anesthesia and its short-term postoperative outcomes.

Methods: From July 2011 to March 2014, 45 consecutive patients with middle or upper third rectal masses underwent TAMIS. Tumors were located 6 to 15 cm from the anal verge. After spinal anesthesia, a single-incision laparoscopic surgery (SILS) port was inserted into the anal canal. With this access, conventional laparoscopic instruments including a grasper and monopolar electrocautery and suction device were used to perform the transanal excision. A hook-type monopolar electrocautery or harmonic scalpel was used for dissection. The defect of the rectum was closed by interrupted sutures. To evaluate anal sphincter injury, an endoanal ultrasound and fecal incontinence severity index survey were performed at 3-6 months after the operation.

Results: Of the 45 patients, 18 had adenocarcinomas, 14 had neuroendocrine tumors, 8 had tubular adenomas with high-grade dysplasia, 3 had tubular adenomas, 1 had a tubulovillous adenoma and 1 had a gastrointestinal stromal tumor. The median distance from the tumor mass to the anal verge was 8.5 cm (range, 6–15 cm). The median operative time was 41.0 minutes (range, 20–95 min). All patients received TAMIS without conversion to laparoscopic resection. There were no intraoperative complications or postoperative morbidity. The median postoperative hospital stay was 3.1 days (range, 2–7 days). No sphincter injury was detected by endoanal ultrasonography.

Conclusions: TAMIS under spinal anesthesia is a safe and feasible technique for resection of middle and upper rectal masses. Spinal anesthesia is adequate for this procedure.

No conflict of interest.
274. The postcode lottery: Effects on colorectal cancer stage and long term survival

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Introduction: Colorectal cancer outcomes vary in the U.K between centres, with patients from deprived backgrounds presenting at an advanced stage, having poor long term survival. Our aim was to analyse the outcome of patients undergoing curative colorectal (CRC) resections based on their socioeconomic status (SES).

Methods: Data from a prospectively constructed database between years 2006-2010 was analysed. Primary endpoints were 30-day mortality and presentation stage with secondary endpoints being long term survival. Socioeconomic status was determined from postcode using UK geodemographic database providers.

Results: A total of 662 patients undergoing cure CRC resections were identified. Colonic resections accounted for 57.5% (n=380) compared to 42.5% (n=282) of rectal resections. Duke’s stage cancers comprised of 47.1% of patients (n=312). Thirty-day mortality was 3.8% with an overall median survival of 75 months for all patients. On the basis of SES, patients were divided into 3 groups: high (10.2%), middle (32.8%) and low (57%). No significant survival benefit was seen between patients from different SES (p=0.78, Mantel-Cox). When stage at presentation was compared, patients from a high SES (23.1%) were more likely to present at an earlier stage compared to those from low SES (14.4%) (p=0.03 Chi-square Test). Overall 30-day mortality was 4.1% (n=27/662), being significantly lower in patients from a higher SES compared to those from a lower SES (n=2/27 vs. n=17/27).

Conclusions: Patients from a low SES tend to present at a more advanced disease stage, having a significantly higher 30-day mortality compared to patients from a high SES. In our study, the overall survival was not affected by socioeconomic status contrary to what is stated in the literature.

No conflict of interest.

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275. Clinical significance of the expression of human apurinic endonuclease/redox factor 1 (APE/Ref-1) protein in stage III colon cancer

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Background: Adjuvant chemotherapy for stage III colon cancer has been standard treatment for last 2 decades. FOLFOX chemotherapy consisted of 5-fluorouracil, leucovorin, and oxaliplatin. In this regimen, oxaliplatin is known as platinum chemotherapeutic agent. Human apurinic/apyrimidinic endonuclease (APE/Ref-1) has been shown to be a DNA repair function and associated with resistance to platinum chemotherapy. The aim of this study was to investigate the prognostic significance of APE/Ref-1 expression in patients with stage III colon cancer who treated with FOLFOX adjuvant chemotherapy.

Material and methods: APE/Ref-1 expression was analyzed by immunohistochemistry in surgical specimens obtained from 33 patients with stage III colon cancer. Immunohistochemical stain was performed in the both tumor and normal colon tissue. Patients received adjuvant chemotherapy of FOLFOX regimen following curative surgery. Various clinicopathologic characteristics, including APE/Ref-1 expression, were analyzed and factors affecting the oncologic outcomes were evaluated.

Results: Nuclear expression of APE/Ref-1 was noted in all tumor tissue and cytoplasm expression of APE/Ref-1 was not shown in all normal colon tissue. However, expression of APE/Ref-1 protein was not significantly associated with clinicopathologic parameters. In univariate analyses affecting 5-year disease-free survival, poorly differentiated histology (P = 0.005) and cytoplastic expression of APE/Ref-1 protein in tumor tissue (P = 0.016) were revealed independent risk factors.

Conclusions: Nuclear expression of APE/Ref-1 was shown in all tumor tissue from patients with stage III colon cancer. Nuclear expression of APE/Ref-1 in tumor tissue was not a significant prognostic factor. However, cytoplastic expression of tumor tissue was associated with disease-free survival. These results indicate that cytoplastic expression of APE/Ref-1 represents an adverse prognostic factor for stage III colon cancer who received adjuvant FOLFOX chemotherapy.

No conflict of interest.

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276. Clinical significance of 5-fluorouracil chemosensitivity test in colorectal cancer patients

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Background: Response to the chemotherapy after curative resection of colorectal cancer shows wide variety. There have been several studies in various cancers about the relationship between post-operative prognosis and chemosensitivity. The purpose of this study is to evaluate whether chemosensitivity by histoculture drug response assay (HDRA) is related with prognosis of colorectal cancer patients who underwent adjuvant 5-fluorouracil/leucovorin chemotherapy.

Material and methods: Among 784 consecutively operated patients with colorectal cancer between December 2005 and December 2012, 431 patients underwent 5-FU chemosensitivity test assay except non-test and assay failure by contamination. 89 patients with 5-FU/leucovorin adjuvant chemotherapy after curative resection for colorectal cancer were enrolled in this study. 5-FU/leucovorin chemotherapy was applied to the patients with T3 or T4 colorectal cancer without nodal involvement and node-positive rectal cancer. The regimen used in this study was intravenous continuous infusion of 5-FU, 425 mg/m², plus leucovorin, 20 mg, daily for 5 days every 4 weeks during 6 cycles after curative resection. Chemosensitivity tests were performed using 5-FU and tumor growth inhibition rate (IR) was calculated by MTT (3-(4,5-dimethylthiazol-2-yl)2,5-diphenyl-2H tetrazolium bromide) assay.

Results: 51 patients (57.3%) were sensitive with 5-FU by chemosensitive test. No significant differences between 5-FU sensitive and 5-FU chemoresistant group were observed for gender, BMI, tumor size, tumor location, pre-operative CEA, T stage, N stage, tumor emboli, and number of retrieved lymph nodes. With a median follow-up of 64 months, there was statistically significant difference between chemosensitive group and chemoresistant group in terms of 5-year disease free survival rate (chemosensitive group : 88.7%, chemoresistant group : 68.9%, p=0.025). But there was no significant difference of 5-year overall survival between two groups (chemosensitive group : 95.9%, chemoresistant group : 85.1%, p=0.233)

Conclusions: Positive 5-FU sensitivity test with HDLA in-vitro assay was associated with better disease-free survival. Chemosensitivity may be significant prognostic factor for the colorectal cancer patients undergoing adjuvant 5-FU/leucovorin chemotherapy.

No conflict of interest.

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277. Histology parameters and their variation with preoperative radiotherapy in rectal cancers

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Background: As rectal tumors answer in different grades to radiotherapy, we aim at evaluating — from the moment of the biopsy — the capacity of the tumor to respond or not to this treatment option.

Material and methods: We examined histological parameters from tissue samples using paraffin blocks from 52 patients. We looked into: cell type distribution, distribution of the desmoplastic reaction, distribution of atypias and distribution of the colloid type. The examinations were done comparatively, both: before radiotherapy (tissues from diagnostic biopsy), as after radiotherapy (tissues from abdomen-perineal resection).

Results: The following morphological factors studied in our batch did not present with statistical significance so we could neither demonstrate nor quantify the influence of radiotherapy on them: the desmoplastic reaction and atypia. On the other hand, the colloid type suffered a marked change with radiotherapy becoming in the majority of the cases from 0-1, and the same transformation occurred with the cell type which completely transformed itself before radiotherapy 45 were cylindrical and 7 were cubic types, and after radiotherapy, 8 were cylindrical and 44 cubic.

Conclusions: The increase of the colloid type from 0 to 1 would lead us towards the assumption that radiotherapy either induced or aggravated the expression of the colloid type. The transformation from cylindrical to cubic would have as an explanation that the oncocytic change in this particular clinical context occurs as a reflection of cytotoxic damage or cellular hypoxia induced by chemo-radiation resulting in degeneration of the cell and of its phenotype.

No conflict of interest.

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278. Immunoological outcome in patients after resection of colorectal cancer

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Introduction & Objectives: Colorectal cancer (CRC) is one of the most common cancers in the world. A colectomy is the preferred treatment to remove the primary tumour where possible. The human oncofetal protein (5T4) is a possible anti-tumour target that is upregulated on colorectal cancer cells, but has limited expression on normal tissue. Pre-operative anti-tumour 5T4-specific T-cell responses in patients with advanced CRC have been found to be poor. This study aims to examine whether surgical resection of tumours enhances anti-tumour 5T4-specific T-cell responses in such patients.

Design/Participants: Blood was obtained from individuals (n = 6) who had previously undergone a colectomy to remove CRC (Dukes A, n = 1; Dukes B, n = 1 & Dukes C, n = 4).

Methods: Peripheral Blood Mononuclear Cells (PBMCs) were isolated from freshly collected blood, and were cultured for 12 days with peptide pools encompassing the whole 5T4 protein. The number of 5T4-specific T-cells was enumerated by the detection of IFN-γ production during ELISPOT assay.

Results: Individual post-operative 5T4-specific T-cell responses were observable in 5/5 patients who had more advanced cancer (Dukes B or Dukes C). One patient did not show any positive T-cell responses. The post-operative Total 5T4 Response Magnitude and 5T4 Magnitude per Epitope (5T4 magnitude/epitope) showed evidence of an increase in patients who had advanced CRC when compared to pre-operative levels.

Conclusions: The increase in post-operative 5T4-specific T-cell responses is consistent with the theory that regulatory T-cells (Treg) play a major role in dampening anti-tumour 5T4-specific T-cell responses in patients with advanced stage CRC. Surgical resection of the tumour can alleviate this effect.

No conflict of interest.

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279. Treatment outcomes following extended resections due to advanced rectal cancer

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Introduction: A locally advanced rectal carcinoma still remains a big diagnostic and therapeutic challenge. Combined treatment plays a pivotal role in this respect, however it has been continuously decisive to institute a surgical procedure in such a case, which frequently requires an interdisciplinary operational team. The aim of our study was to make a retrospective analysis of treatment outcomes in terms of advanced rectal carcinomas.

Material: During the years 2001-2012, 958 patients with rectal carcinoma were radically operated on at the Department of Surgical Oncology Collegium Medicum Nicolaus Copernicus University, Oncology Centre in Bydgoszcz. Most patients were irradiated perioperatively. The radical procedure, extended by the resection of reproducti organ, urinary bladder or prostate, was carried out in 62 patients (6.4%). In 11 patients (1.1%) the resection was accompanied by cystoprostatectomy conducted by an interdisciplinary operational team.

Results: Total 5-year survival rates were 18% in patients subjected to rectal resection and cystoprostatectomy (2 patients), and 68% for the whole operated group, respectively. The most frequent type of recurrence was the disease dissemination. From among the group of patients, in whom the resection was extended to reproductive organ, urinary bladder or prostate gland, total 5-year survival rate was confirmed in 62% of the individuals.

Conclusions: The extension of rectal resection surgery gives patients an opportunity to be healed. However, an extensive resective procedures regard only a small fraction of patients. An insightful eligibility of patients and the presence of an interdisciplinary team composed of medical professionals at health centres are essential factors in order to attain good results.

No conflict of interest.

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280. Adjuvant chemotherapy in stage II colon cancer

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Background: The role of adjuvant chemotherapy (CT) for stage II colon cancer is not well established. International guidelines do not present a
clear recommendation. Adjuvant CT, clinical observation and inclusion in a clinical trial are accepted treatment options, even for high risk patients. High risk patients are defined as those with at least one poor prognostic feature (PPF), including T4 tumours, poor histological grade, lymphovascular or perineural invasion, bowel obstruction or perforation, indeterminate or positive margins or <12 sampled lymph nodes. The benefit of adjuvant CT in high risk patients is still unclear and the individual impact of each PPF remains unknown.

Aim: To assess the impact of adjuvant CT in the overall survival (OS), disease free survival (DFS) and disease specific mortality (DSM) in patients with high risk vs low risk stage II colon cancer. Evaluate the individual impact of poor prognostic features in the outcomes.

Methods: Single-center, longitudinal cohorts study with retrospective data collection. Analysis of OS, DFS and DSM in high risk vs low risk patients with stage II colon cancer. Subgroup analysis of OS, DFS and DSM of those treated with adjuvant CT vs not treated with adjuvant CT at our institution from 2002 to 2008. Parametric statistics were used. Survival analysis was performed using Kaplan-Meyer curves. Significance was considered for an α=0.05. IBM SPSS Statistics software was used.

Results: 198 patients with stage II colon cancer were treated, 134 (67.7%) patients were considered high risk and 64 (32.3%) low risk. Gender and mean age (70.6±12.1 years) were similar in both groups. Overall follow-up was 63.0±35.7 months. 23.8% of high risk patients were treated with adjuvant CT. OS (high risk: 105.6±5.1 months vs low risk: 115.2±3.6 months, p<0.001) and DFS (high risk: 81.5±5.2 months vs low risk: 106.6±4.6 months, p<0.001) were lower in the high risk group. Both OS (92.5±7.3 vs 118.8±7.3 months, p<0.02) and DFS (65±5.9 vs 116±7.5 months, p<0.001) were even lower in the high risk subgroup not treated with adjuvant CT compared to high risk patients treated with adjuvant CT. DSM (65/130 vs 12/64; p<0.001) was superior in high risk patients compared to low risk. DSM was not different in the high risk subgroup not treated adjuvant CT compared to the subgroup treated with adjuvant CT (33/130 vs 6/64; p=0.024). Less than 12 sampled lymph nodes, bowel obstruction or perforation and lymphovascular or perineural invasion were the most frequent poor prognostic features. More than one poor prognostic feature was associated with worse outcome.

Discussion: In our experience adjuvant CT was associated with higher OS and DFS in high risk patients, suggesting that, adjuvant CT should be recommended for all high risk patients with stage II colon cancer. No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.272

<table>
<thead>
<tr>
<th>n</th>
<th>%</th>
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<tbody>
<tr>
<td>total</td>
<td>142</td>
</tr>
<tr>
<td>male</td>
<td>45</td>
</tr>
<tr>
<td>female</td>
<td>97</td>
</tr>
</tbody>
</table>

- No surgery
  - no surgery | 100 |
  - refused treatment | 8 |
  - unfit | 56 |
  - advanced disease | 25 |
  - other | 11 |
- Surgery non-resection
  - total | 12 |
  - stent only | 4 |
  - stoma only | 3 |
  - laparotomy only | 1 |
  - LE | 4 |
- Surgery resection
  - total | 30 |
  - R Hemi | 20 |
  - Ext R Hemi | 1 |
  - Sigmoid colectomy | 1 |
  - AR | 4 |
  - APER | 2 |
  - Hartmann’s open | 2 |
  - laparoscopic | 16 |
  - ASA 3 or 4 | 16 |
  - male | 14 |
  - median age | 91 (90 - 96) |
  - 30 day reoperation | 1 |
  - LOS median | 10 (1 - 63) |
  - 30 day mortality | 7 |
  - elective | 17 |
  - emergency | 13 |
  - local recurrence | 1 |
  - distal recurrence | 2 |

Conclusions: In the very elderly it is possible to offer all treatment modalities. Patients must be informed of the potential risks and benefits of each to allow them to be fully involved in the decision making process. A higher mortality in those undergoing surgery may reflect increased comorbidity in this population. Management protocols to minimise complications, pre-operative optimisation, meticulous surgical technique and post-op care in a high dependency unit results in acceptable outcomes. No conflict of interest.

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281. Colorectal cancer - are we being ageist? A case series of outcomes in patients over 90 years old
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Background: Incidence of colorectal cancer increases with age. The proportion of people living beyond 65 years is also increasing. Elderly populations have limited physiological reserve, significant medical co-morbidities and reduced tolerance to treatment. Results from trials offer limited evidence in relation to the very elderly (≥90 years of age), yet this population represents a growing proportion of patients diagnosed.

Material and Methods: Prospectively collected data identified 142 colorectal cancer patients above the age of 90 years from 2003 to 2014. Management strategies and outcomes were analysed with the results presented below.

Results: A subgroup analysis was performed for the three categories of patients not for surgery, non-resective surgery and elective and emergency surgical resections.

282. For severely obese patients (BMI >35) with colorectal cancer a standardized laparoscopic approach is safe and achieves improved short-term outcomes compared to conventional open surgery
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Background: For colorectal cancer laparoscopy is widely practiced and is accepted as a standard treatment option. Incidence of obesity is increasing and laparoscopic surgery is technically more challenging in this population. Patients with a body mass index (BMI) >35 represent a high risk group with increased risk of intra-operative and post-operative complications. Using a standardised surgical approach we investigated if comparable outcomes can be achieved to open surgery.

Material and Methods: Prospectively collected database of 89 severely obese patients (BMI>35) undergoing colorectal resections, laparoscopic 66 and open 23, from January 2007 to March 2014 was analysed.
Results: The age and gender distribution was similar in both groups. There were no deaths in either group. Readmission within 30 days was higher for laparoscopy (13.6% vs 8.7%) though the 30 day reoperation rate was lower (3% vs 30%) than for open surgery. Median length of stay for laparoscopy was 6 days vs 12 days for open surgery. A high median lymph node yield was apparent following laparoscopy compared to open resection (18 vs 14).

Conclusions: A standardized laparoscopic approach achieves excellent oncological outcomes comparable to conventional open surgery in severely obese patients. Mortality is equivalent with shorter hospital stay and reduced re-operation rates for patients undergoing laparoscopy.

No conflict of interest.

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283. The treatment of locally recurrent rectal cancer in elderly patients
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Background: Recurrent rectal cancer remains a challenging disease in our population. Especially in older patients, who are more often affected by co-morbidity, it is unclear if these patients can be treated with good results. Often, elderly patients are not treated because of the increased risk peri-operative. The aim of this study is to evaluate the outcome in patient of 75 years and older, treated for locally recurrent rectal cancer.

Material and methods: The Catharina hospital is a national referral centre for patients with local recurrent rectal cancer. Before surgery, patients underwent neo-adjuvant treatment, including (re-)irradiation with concomitant chemotherapy. The patient follow up, post-operative complications and the survival were enrolled in a database. All patients treated between 1994 and 2013 were included.

Results: In total, 41 patients (mean age 79, range 75-87; 23 male, 18 female) were treated with curative intent. Different types of surgery were performed: low anterior resection (LAR), abdominoperineal resection (APR), abdominoperineal excision (APE), debulking and multivisceral resection. Twenty-four patients (58%) had a radical resection, 13 patients (32%) had an R1 resection and 4 patients (10%) had an R2 resection. The follow up ranged from 0 to 160 months, with a median of 22 months. The five year relapse free and overall survival was 41% and 31% respectively. Thirty-one percent of the patients experienced a grade I-2 complication and 51% developed a grade 3-4 complication. The 30 day mortality rate was 8%.

Conclusion: The survival rates in elderly patients are almost the same as the survival rates in younger patients with local recurrent rectal cancer with acceptable morbidity and mortality rates. This suggests that even older patients can be treated for their recurrence with relative good oncological outcome, and after adequate patient selection, treatment should not be omitted because of fear of higher morbidity and mortality rates.

No conflict of interest.

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284. Anastomotic failure in rectal surgery — the role of a diverting stoma
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Background: Although the surgical techniques have been largely standardized, there remains an ever-present risk of anastomotic failure in rectal surgery, with significant associated morbidity to the patients. Risk factors for this complication have been exhaustively studied and categorized as surgeon-related, patient-related and disease-related. In some cases, the surgeon may choose to mitigate the risk of a leak by performing a proximal diverting stoma. The aim of this study was to determine the incidence rate of anastomotic failure in an experienced oncological center and to evaluate the role of a protective stoma.

Material and Methods: Retrospective study, analyzing all anterior rectal resections performed for rectal cancer in a single institution from 2011 to 2012. Medical records were reviewed and the data analysis was performed with SPSS.

Results: Anterior rectal resection was performed in 262 patients of a total of 378 patients with rectal cancer operated in our institution from 2011 to 2012. The median age of the patients was 67 (32-89) years old and 56% (174) were female. The majority of the tumors (149) were located on the middle third of the rectum, 12 % (32) were tumors from the upper third and 31 % (81) from the lower third. In this case series, 62 % (163) of the patients underwent neo-adjuvant treatment with radiotherapy. A diverting protective stoma was performed in 75.5 % of the patients submitted to radiotherapy and in 83.3 % of the patients with tumors from the lower third of the rectum, in a total of 127 operations. An anastomotic failure/leak was diagnosed in 28 cases (10.7%) — 13 cases having a diverting stoma and 15 without it - with a specific mortality rate of 1.2 %. The management of this complication was conservative in 76.5 % of the patients who had the protective stoma and only in 23.5% of the patients who didn’t.

Conclusions: Even in an experienced oncological center, the integrity of a colorectal anastomosis after an anterior rectal resection for rectal cancer is not always warranted, giving the fact that multiple risk factors might contribute to its failure. Performing a diverting stoma can mitigate the clinical impact of this serious complication.

No conflict of interest.

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285. T1 colon cancer: The balance between oncologic benefit and operative risk of complementary surgical treatment to the endoscopic resection
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Background: Treatment of early-stage colorectal cancers removed endoscopically depends on histopathologic findings but remains controversial. This study aimed to assess the benefit-risk balance for patients who underwent complementary surgery after endoscopic resection of a T1 carcinoma with unfavorable histology.

Material and methods: From January 2008 to December 2012, 41 consecutive patients were included in this retrospective study. Specimens resected after endoscopic polypectomy showed at least one of the following unfavorable factors: no free margin, lymphovascular invasion, poorly differentiated grade, deep submucosal invasion, sessile morphology, and piecemeal resection. The main objective was to assess the benefit-risk balance of an oncological resection performed after the polypectomy. Oncological benefit was measured by the lymph node metastasis rate and the persistence of a residual adenocarcinoma on the specimen. The risk was measured by the occurrence of postoperative severe complications of grade III–IV or death. The associations between these end points and clinicopathologic variables were evaluated by univariate analysis and logistic regression.

Results: Mean age was 65 years (range, 40–88 years). Comorbidities were present in 55% (22/41) of the patients. Peripheral vascular disease was the most frequent comorbidity (15%). Sigmoid colon harbored the primary lesion in the 66% (27/41) of the patients. All resections were approached by laparoscopy with need of conversion to open surgery in only 1 case (adhesions), without intraoperative complications. Median for resected lymph nodes was 12 (range, 10-17). Six patients (15%) had lymph node metastases and seven (15%) had residual carcinomas. Only
one patient (0.2%) had grade III morbidity. There were no postoperative deaths. Patients with lymph node disease received adjuvant treatment. At 5 years of follow-up neither recurrence, nor deaths have been present.

Conclusions: In this series a high rate of lymph node metastatic disease was present even without residual carcinoma on the colon wall, thus complementary surgery should be performed in patients with adverse histopathological criteria of endoscopically resected malign polyps of the colon. The laparoscopic approach by diminishing the postoperative morbidity rate, could improve the oncological benefit of a complete resection.

No conflict of interest.

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286. Laparoscopic surgery for locally advanced (T4) rectal cancer: Long-term outcomes
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Background: To evaluate the technical feasibility and the surgical and oncologic long-term results of laparoscopic-assisted resection in locally advanced (T4) rectal cancer patients.

Material and methods: From January 1998 to December 2012, patients admitted to our colorectal cancer unit with locally advanced (T4) clinical stage adenocarcinoma of the rectum were evaluated. Laparoscopic resection was carried out 10-12 weeks after neoadjuvant chemoradiotherapy initiation. The primary endpoint was cancer-related survival. Data were analyzed according to the intention-to-treat principle.

Results: A total of 59 patients with a mean age of 63.3 years were enrolled in the study. Twenty-one patients (35.6%) were classified as T4a and 38 (64.4%) as T4b. Fifty-seven patients (96.6%) were treated with neoadjuvant chemoradiotherapy. In 81.4% (48/59) of the patients, a surgical procedure with sphincter preservation was performed. The rate of conversion to the open approach was 10.2%. No intraoperative complications occurred. Twenty-one patients (35.6%) developed postoperative complications (28.8% grade I-II and 6.8% grade III-V). The mortality rate was 1.7% (1 death no surgically related). R0 resection was achieved in 83.1%. Mesorectal quality was good in 91.5% of the specimens. The median follow-up was 40.6 months (range 9-63). Five-year distant and local recurrence rates were 21% and 19%, respectively. Overall survival rate at 5 years was 62.2% with a mean for survival of 84 months. Resection without sphincter preservation (p=0.022), node positivity (p=0.038) and circumferential margin involvement (p=0.026) had a statistically significant impact on survival in the multivariate analysis.

Conclusions: Aggressive management of clinical T4 rectal cancer is safe and feasible using the laparoscopic approach and with acceptable surgical and long-term oncologic outcomes. Multicenter randomized clinical trials are warranted to confirm these results.

No conflict of interest.

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288. Role and timing of surgery in metastatic colorectal cancer
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Background: National data suggests that 14% of patients with colorectal cancer present with distant metastases (stage Dukes D). The ISAAC randomised controlled trial was designed to examine the benefits of undergoing surgery before receiving chemotherapy for metastatic disease, although the trial failed to recruit target numbers.

The aim of this retrospective observational study was to assess the management and outcomes of patients presenting with Dukes D colorectal cancer at our unit, with reference to the aims of the ISAAC trial.

Methods: All patients presenting with Dukes D colorectal cancer were identified from a single institution Multi-Disciplinary Team Meeting database dating back to 2004. Case-note review was performed; data was collected on basic demographics, physiological status (ASA), Water low risk assessment score, tumour characteristics and extent, interventions, complications, and survival.

Results: One hundred and three patients were identified. Data was available for 87 patients. Mean age was 72 years. Forty-nine patients were male (56%), 38 were female (44%). Median ASA was II(range II-IV); the median initial Water low score was 13. Thirty-seven patients had right-sided colonic tumours (43%); 50 patients had tumours involving the descending colon, sigmoid or rectum (57%).

Thirty patients underwent surgery (34%): 16underwent (semi-) elective procedures; 14 required emergency surgery. Seventeen procedures were primary site resections; 13 were defunctioning stomas. Twenty patients subsequently received chemotherapy (23%). Thirty patients received systemic treatment alone (34%); 27 did not undergo any intervention (32%).

Overall survival was 10 months. Mean survival was 13.8 months for patients who underwent surgery and systemic therapy; 11.1 months for emergency surgeries, 15 months for elective/urgent procedures.

Mean survival was 11.7 months for systemic therapy alone, and 4.6 months for those who did not receive any intervention. Patients with left-sided tumours had a mean survival of 12.5 months, compared to 6.9 months for patients with right-sided cancers.

Conclusions: In our series, survival was higher for patients who had undergone surgery in addition to adjuvant therapy compared to systemic therapy alone (p=0.63). There appeared to be an increase in mean survival
for those undergoing planned or semi-elective surgery compared to salvage procedures.

No conflict of interest.

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289. Is multi-modality treatment in elderly patients with locally advanced rectal cancer safe? 
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Background: Elderly patients with rectal cancer have an increased risk of receiving under treatment for advanced rectal cancer due to age or co-morbidities. Furthermore, it is unclear how elderly with locally advanced cases tolerate multi-modality treatment and extended surgery. This study is conducted to investigate the morbidity and outcome after treatment with curative intent for locally advanced rectal cancer in elderly patients.

Material and methods: Patients aged ≥ 75 years with cT4M0 rectal cancer who underwent surgery in our institution between 2000 and October 2013 were selected. Clinical data were collected retrospectively including type of (neo)adjuvant therapy, type of surgery and resections, tumor characteristics, post-operative complications, disease recurrence and mortality.

Results: In total 67 patients including 36 (54%) male and 31 female (46%) with a median age of 77.6 years were selected. Most patients were treated with neo-adjuvant therapy (21% radiotherapy and 63% chemoradiation). Of all patients 40.3% were treated with LAP and 31 (46.3%) with APE and in 52% of all patients a multivisceral resection was performed. 57% of the patients received intra-operative radiotherapy (IORT). Median admission time was 11 days. In 42 (53%) none or a grade I-II complication occurred, in 12 patients (18%) a grade III-IV complication occurred and 6 (9%) died within 1 month post-surgery. The six-months mortality rate was 16%. During follow-up 5 patients developed a local recurrence and 10 patients a metastasis. Of the 33 patients who died during follow-up 60% died due to other disease.

Conclusions: In this study acceptable post-operative admission time, morbidity and mortality rates were found in elderly patients treated for locally advanced rectal cancer. Although elderly patients are more susceptible to post-operative complications they should not be refused curative treatment based on age alone. In elderly who are considered fit for surgery treatment is similar to younger patients and should consist of neo-adjuvant treatment followed by radical surgery. Meticulous assessment of the physiological status can be helpful in adequate patient selection.

No conflict of interest.

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290. Influence of micrometastasis in sentinel lymph nodes in colon cancer on prognosis and survival 
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Background: The sentinel node biopsy in colon cancer clearly increases detection of occult metastasis following ultrastaging of the sentinel nodes. The aim of this study was to investigate the prognostic impact and clinical relevance of micrometastasis found in the sentinel lymph nodes in colon cancer patients.

Material and methods: We analysed group of 100 sentinel lymph node biopsies in colon cancer with minimum 3-years follow-up. In this group, according to the patient status, we determined survival comparing the patient without lymph node metastases to the patients with micro- and macrometastases. Additionally we compared the number of patients with disease progression in the groups without lymphatic spread and with micrometastasis (patients without adjuvant chemotherapy). For statistical analysis we used log rank test and test for structure indicator.

Results: There was a statistically significant difference (p = 0.00273) in comparison of the group of patients without metastases in lymph nodes to the group of patients with micro- and macrometastasis. Direct comparison of the group of patients with micrometastases to the group of patients without metastasis and with macrometastasis did not show statistically significant difference (p = 0.66018 and p = 0.16146). Percentiles analysis of the survival showed, that the inclusion of patients with micrometastases to the group of patient with macrometastasis has a positive impact on survival in this group. In the analyzed period, 3 of 65 (4.62%) patients without metastasis to the lymph nodes progressed comparing to the 2 of 6 patients (33.3%) with micrometastases. This difference is statistically significant (p = 0.0084).

Conclusions: There is no statistically significant difference in survival between the group of patients with micrometastasis comparing to the group of patient without lymphatic spread as well as with group of patients with macrometastasis. Group of patients with micrometastases statistically significantly more often has the disease progression (local recurrence, metastatic disease) comparing to the group without lymphatic metastasis.

No conflict of interest.

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291. Rectal cancer proctectomy without covering stoma. The “G. Paolo II” Cancer Research Centre experience 
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Background and Aim: Anastomotic leakage (AL) is one of the most dangerous and feared complications after low anterior resection, ranging from 5 to 28%. Symptomatic anastomotic leaks are associated with mortality of between 6% and 22%. Covering stoma is generally accepted as the main method of anastomotic protection. However there is a growing and new interest about alternative method to stoma by using transanal drainage. This retrospective study aimed to assess the feasibility and safety of an alternative and original device: the transanal tube NO COIL® in patients undergone rectal cancer proctectomy.

Patients and methods: From July 2003 to December 2013, consecutive and unselected patients undergone restorative proctectomy for primary rectal cancer (lower edge ≤12 cm from anal verge) at the Department of Surgical Oncology, National Cancer Research Centre ‘Giovanni Paolo II’ in Bari, were considered for the study. Three hundred twenty-five patients (192 males, 133 females, average age 66.7 ± 11.5 years). Ninety patients received neoadjuvant treatment with surgery scheduled after 6-8 weeks. All the anastomoses were mechanical. No stoma were fashioned. At the end of the operation, the silicone transanal tube NO COIL®, 60-80 mm long, 2 mm thick with a calibre of up to 2 cm, was applied and secured to the perineal skin by two stitches, then removed on the seventh postoperative day if no signs of leakage occurred.

Results: In 16 patients, the transanal tube NO COIL® did not remain in situ for the planned seven days, 30 patients suffered from ulcers in the perianal skin. Overall morbidity rate was 30.4%. Twenty-six patients (8%) developed a clinical anastomotic leakage, 10 males and 16 females. In nine patients AL occurred 3 weeks post-surgery. Leakage subsided with conservative treatment in 6 patients, whereas 22 patients required loop colostomy. The overall stoma rate was 6.7%. No leakage-related deaths occurred, and overall mortality rate was 1.5%.

Conclusions: The transanal tube NO COIL® does not abolish the risk of anastomotic leakage, but in our experience no leakage-related mortality was observed. We also noted a comfortably low percentage of stoma, which means the absence of morbidity related to stoma, low cost single
surgery and better psycho-social impact for the patient. A prospective randomized multicenter study should be planned to define the best anastomotic protection in low-level anastomosis after rectal cancer proctectomy. No conflict of interest.

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293. Pelvic reconstruction with prosthetics in anorectal and sacral chordoma patients following aggressive pelvic floor surgery: The early results

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Aim: Aggressive surgical therapy is mostly recommended in patients with both anorectal and primary sacrococcygeal cancers. Pelvic floor defects secondary to major surgery as abdominoperineal amputation, sacrectomy and multivisceral resections are really surgical challenge. Hereby, we present the early results of patients with graft reconstruction of both anterior and posterior pelvic floor defects.

Patients & Results: Four male and one female oncologic patients with pelvic floor reconstruction between 2011-2013 were enrolled. The mean age and follow-up of the patients were 63 years and 15 month. Pelvic exenteration was performed for advanced rectal cancer (n=2), anal cancer (n=1), sacral chordoma (n=2). Pelvic floor reconstruction was performed via prosthetic grafts and advanced skin flaps. Morbidity rate was 20% (n=1, wound infection) and no mortality was seen. While two patients with rectal cancer had undergone neo-adjuvant therapy, the others received adjuvant therapy. Both sacrococcygeal and intraabdominal recurrences were seen in one patient with sacral chordoma and debulking surgery was performed.

Conclusion: Aggressive pelvic floor surgery is the mainstay in the treatment of locally advanced tumors of this origin. Pelvic gerimation due to exenteration may be challenge to the surgeon and therefore wait for solution. Pelvic reconstruction with prosthetics is a good alternative with encouraging results. No conflict of interest.

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294. Prognostic significance of TGFBI expression in colorectal cancer

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Background: Transforming growth factor β induced (TGFBI) product, an extracellular matrix (ECM) protein, has been implicated as a putative tumor suppressor in recent studies. But, Cancers associated with overexpression of TGFBI may have an increased metastatic potential, leading to poor prognosis in cancer patients. This study evaluated the expression of TGFBI in colorectal cancer, its relationship with clinicopathological characteristics, and its potential prognostic significance.

Methods: A total of 167 patients with primary colorectal cancer after curative surgery were enrolled and the expression of TGFBI was measured using immunohistochemistry in tumors.

Clinicopathologic factors affecting disease free survival were assessed using the Kaplan-Meier method and multivariate Cox proportional hazards models.

Results: The patients included 97 men and 70 women with a median age of 60 (range, 28-91) years. Forty nine patients (29.3 %) were positive for TGFBI expression using immunohistochemistry in tumors. The cancer-related 5-year survival rates were 67.9 %, and the 5-year disease free survival rates were 67.6 %, respectively. Kaplan-Meier analyses indicated that patients with positive TGFBI expression had lower 5-year disease free survival than those with negative TGFBI (54.4 vs. 69.2 %; p = 0.018). Univariate survival analyses showed that gender, lymph node metastasis, distant metastasis, lymphovascular invasion and TGFBI expression were significantly associated with disease free survival of the patients (P=0.050, <0.001, <0.001, 0.024 and 0.020, respectively). Multivariate Cox regression analyses indicated that positive TGFBI expression might be an independent poor prognostic factor for CRC patients (hazard ratio 1.745; 95 % confidence interval 1.033-2.948; p = 0.037).

Conclusions: The positive TGFBI expression may be an independent prognostic factor predicting a poor prognosis for disease-free survival in patients with colorectal cancer. No conflict of interest.

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295. Adjuvant chemotherapy after neoadjuvant chemoradiation and curative resection for rectal cancer: Is it necessary for all patients?

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Background: Adjuvant chemotherapy is currently recommended as a standard treatment for the patients with locally advanced rectal cancer who treated with neoadjuvant concurrent chemoradiation (CCRT) and underwent curative resection. However, the benefits of adjuvant chemotherapy in patients with good responses after preoperative chemotherapy still remain unclear.

Methods: This study was a retrospective review of a prospectively collected data. The patients with locally advanced rectal cancer who underwent curative surgery after neoadjuvant CCRT between January 2006 and March 2011 were identified. Forty-hundred and forty one patients who completed adjuvant chemotherapy (group chemo) were compared with 35 patients who did not receive any adjuvant treatment (group no-chemo).

Results: The median follow-up period was 47.8 months. The demographics and details of treatment were similar between the two groups except for the age (54.0 vs. 64.0 years, P = 0.002) and body mass index (23.8 vs. 21.7 kg/m², P = 0.020). The 5-year disease free survival (DFS) rate for the group chemo was 78.5%, which was significantly higher than the rate for the group no-chemo (63.1%, P=0.016). After stratification of the patients with nodal status, this statistical differences were not maintained but we could see a certain trends of inferior DFS of no-chemo group in every survival curves. In the multivariate Cox regression analysis, no adjuvant chemotherapy (HR, 2.306; 95% CI, 1.101-4.829; P = 0.027) emerged as an independent prognostic factor associated with decreased DFS in the patients undergoing curative resection after neoadjuvant CCRT.

Conclusions: Adjuvant chemotherapy was significantly associated with increased DFS among patients who underwent neoadjuvant CCRT and radical resection for locally advanced rectal cancer and we could not find certain subgroups of patients who may not benefit from of adjuvant chemotherapy. Adjuvant chemotherapy should be considered in every patients after neoadjuvant CCRT irrespective of final pathologic stage. No conflict of interest.

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296. Palliative resection of primary tumour in incurable colorectal cancer: A case controlled study as to whether complete or excision

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Background: There was still a controversy as to whether palliative resection of primary tumor in incurable colorectal cancer (ICRC) is beneficial in point of survival prolongation. However, there was a few studies for the extent of palliative resection.

Purpose: The aim of this study is to estimate the extent of resection of primary tumor in ICRC by using case controlled study.

Methods: A retrospective analysis was performed of 190 patients undergoing palliative surgery for ICRC between 1995 and 2004 in single institution. Variables in relation to patients' demographics, histopathological characteristics of tumor, surgical procedures, and natural course of the disease were examined.

Results: Seventy patients (45.5%) underwent complete resection of primary tumor in ICRC and 84 patients (55.5%) underwent excisional resection. In median months of survival, complete resection group was 22 months and excisional resection group was 12.6 months, and Kaplan-Meier survival curve showed a significant survival benefit in patients undergoing complete resection for primary tumor (p<0.001). Multivariate analysis showed that extra-abdominal metastasis, the excisional resection of primary tumor, and absence of multimodality adjuvant therapy were significantly associated poor survival outcome (p=0.03, 0.034, <0.001, respectively). In survival analysis according to histologic type, low grade tumor had significant survival benefit by complete resection (p<0.001), while high grade tumor had no benefit by complete resection (p=0.786). In high grade tumor, multimodality adjuvant therapy was the single most important factor which was associated with survival.

Conclusions: In healthy patients with ICRC, if histology is low grade and there was no extra peritoneal metastasis, complete resection of primary tumor was the option for survival benefit and local control of disease.

No conflict of interest.

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297. Multimodal approach to stage IV rectal cancer treatment V. Aliev¹, Y.U. Barsukov², S. Tyulyandin², S. Tkachev², A. Nikolaev², M. Fedyanin², D. Kuzmichev², Z.Z. Mamedli², S. Gordeev², I. Tataev²
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The aim of this trial was to investigate safety, efficacy of neoadjuvant chemoradiotherapy in metastatic rectal cancer patients and sphincter preservation rate after such treatment.

Methods: During 2010-2013 neoadjuvant treatment was performed in 75 patients with synchronous metastatic rectal cancer patients. T3 patients had synchronous liver (n=30, 73.1%), lung (n=5, 12.1%), liver+lung (n=3, 6.5%), ovarian (n=1, 2.4%), peritoneal (n=1, 2.4%) metastases. T4 patients had synchronous liver (n=17, 50%), lung (n=5, 14.7%), liver+lung (n=5, 14.7%), ovarian (n=2, 5.9%), retroperitoneal (n=5, 14.7%) metastases. T3 patients underwent (n=41, 54.7%) 3-4 FOLFIRI cycles and 5x5 Gy radiotherapy. T4 patients (n=34, 45.3%) underwent 3-4 XELOX cycles and 36-40 Gy radiotherapy in 4 Gy fractions. Control group included 80 patients who had primary tumor resected as the first stage of treatment. Type of surgery, sphincter preservation rate, R0 resection rate, postoperative complications and survival were analyzed.

Results: 17.6% patients experienced grade 2-3 diarrhoea, 13.2% - vomiting, 10.3% - neutropenia, 20.5% - proctitis, 2.9% - skin toxicity. 60 (80%) patients underwent surgical treatment. 22 (36.7%) had ultralow anterior resection, 15 (25%) - low anterior resection, 12 (20%) - abdomino-perineal resection, 7 (11.7%) - Hartmann procedure, 10 (16.7%) patients had combined resections, 3 (5%) - explorative operations, 3 (8.1%) had anastomotic leak, 1 (2.7%) - bowel obstruction, 2 (3.3%) - pelvic abscess, 2 (8.7%) - postoperative bleeding, 1 (2.7%) - pleuritis, 2 (3.3%) - bladder atony, 38 (63.3%) patients had sphincter-sparing surgery. R0 resections were performed in 27 (45%) patients, 15 (55.5%) had synchronous resections. Median followup was 11.5 months, 1-year survival was 85% in T4NxM1 patients, 80% in T4NxM2 patients. Patients, who had no neoadjuvant treatment had 60% 1-year survival.

Conclusions: Investigated treatment schemes have acceptable toxicity and justify sphincter preservation in this group of patients.

No conflict of interest.

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298. Cytoreductive surgery in colorectal cancer patients with synchronous lung metastases V. Aliev¹, A. Rasulov², Y.U. Barsukov², A. Alakhverdiev², D. Kuzmichev², A. Ovchinnikova², S. Gordeev², H. Djumabaev², V. Kulushov², A. Polynovskiy²
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The aim of this trial was to investigate R0 resection rate in colorectal cancer patients with synchronous lung metastases.

Methods: This retrospective study included 94 colorectal cancer patients with synchronous lung metastases, who underwent treatment during 2004-2014. R0 resection rate, methods of surgical and combined treatment and survival were analyzed.

Results: 64 patients (68.1%) had synchronous lung and liver metastases, 30 (31.9%) only lung metastases, 11 (11.7%) had singular lung metastases. Primary tumor was localized in rectum in 51 (54.3%) patients, 13 (25.5%) of them received neoadjuvant chemoradiation. 12 (12.8%) patients received monotherapy after surgery, others received XELOX, FOLFOX chemotherapy. 78 (82.3%) patients had primary tumor resected. Among 16 (17.1%) patients with primary tumor, 14 had palliative surgery for bowel obstruction. 34 (66.6%) rectal cancer patients had sphincter-sparing surgery. All 11 (100%) patients with singular lung metastases had R0 resection, 8 (72.7%) had thoracoscopic surgery. Median followup was 12.6 months, 2-year survival = 40%. Patients with synchronous lung and liver metastases had 27% 2-year survival, patients with lung-only metastases had 51% 2-year survival.

Conclusions: Isolated resectable lung metastases are rarely observed in rectal cancer patients. Patients undergoing R0 resection for metastatic disease have a tendency to improved survival.

No conflict of interest.

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299. Management of temporary stoma after elective surgery in an Italian tertiary care referral center for rectal cancer “COMRE Group”
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Background: Rectal surgery for cancer often requires the creation of a temporary stoma to protect an anastomosis that can be jeopardized by neoadjuvant therapy. The recanalization can be performed either immediately or several months after surgery (early or delayed). This series reports about the results in the management of the stoma in a tertiary care referral center for rectal surgery.

Materials and methods: One hundred ninety-three consecutive patients undergoing surgery for rectal cancer have been included in this report. All patients underwent anterior rectal resection. Overall, a stoma was performed in 139 patients (75.6%) (M: 78; F: 61; average age: 67.6
years): it was an ileostomy in 83, a colostomy in 56. Among these, adjuvant chemotherapy was performed in 51 patients (36.7%).

Results: Overall closure of ostomy were 124 (89.2%). Early recanalization was performed in 2 cases (1.4%). The average range from surgery to recanalization was 146.4 days (177.6 days after colostomy, 128.3 after ileostomy; overall SD 132.1; p>0.30). The only statistical difference affecting recanalization was the adjuvant therapy, with a later recanalization performed after the therapy (p=0.009). Mortality in 3 cases (2.16%).

Conclusions: In our experience ileostomy was performed in the majority of patients who underwent surgery for rectal cancer and a later recanalization was preferred: early recanalization is currently rarely performed.

No conflict of interest.

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300. A review and update on the anti-angiogenic agent, ABT-510

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Background: Angiogenesis is an obligatory phase and prerequisite leading to tumour invasion and metastasis. Thrombospondin-1 (TSP-1) is a pivotal endogenous anti-angiogenic regulator with actions including antagonism of vascular endothelial growth factor (VEGF) and CD36 induced cell apoptosis. It has been modified and enhanced synthetically in the form of ABT-510, a potent and novel anti-angiogenic therapeutic agent, in the hope of finding an effective chemotherapeutic agent which can prevent the progression of advanced, refractory solid organ tumours.

Methods: Literature regarding TSP-1 and ABT-510 was collated with pertinent articles used for the purposes of review. A comprehensive database search using a keyword search strategy was conducted to find studies evaluating ABT-510. Relevant inclusion and exclusion criteria were applied to limit search results.

Results: Nine human clinical trials involving ABT-510 were found. Of these, five were Phase I and the remaining Phase II. Including all trials, 383 participants (mean 43) received treatment with ABT-510. Four of the trials were conducted using ABT-510 as part of combination therapy (82 patients). Researchers either investigated several types of different refractory solid tumours within the study or focused on one of the following: glioblastoma, soft tissue sarcoma, renal cell carcinoma (RCC) and metastatic melanoma. Patient characteristics within all of the studies were comparable (median age 55, range 19-83). Overall, there was a predominance of male patients (ratio 3:2). All of the studies investigated the safety and efficacy profile of the agent. No major adverse clinical events were described from the administration of low-dose ABT-510. The main outcome measure for most studies was 6 month progression-free survival (PFS). ABT-510 performed poorly in studies investigating different solid tumours (generally <20%) but showed encouraging results in patients with glioblastoma (74%) and metastatic melanoma (86%). The median overall survival time (OST) and time to progression (TTP) were not disclosed for studies investigating multiple tumours. However, ABT-510 performed well in combination with temozolomide and radiation in the treatment of glioblastoma (TTP 450 days) and as a monotherapy in the treatment of RCC (OST 794 days). The data from trials involving ABT-510 is generally favourable despite only modest improvements in OST and PFS as compared to the literature.

Conclusion: To date, first-generation TSP-1 mimetics have entered stage II clinical trials. ABT-510 has had limited success as a monotherapy, however it has proven to be more successful in combination therapies with other agents. ABT-510 is no longer being developed for clinical use; however, future generations of TSP-1 mimetics may be where the future of antiangiogenesis inhibition lies. As such, further development and research within this field is certainly warranted.

No conflict of interest.

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301. Primary sclerosing mucoepidermoid carcinoma of the thyroid

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Background: Primary sclerosing mucoepidermoid carcinoma with eosinophilia (SMECE) of the thyroid is a very rare disease. It is a recently described carcinoma of the thyroid gland associated with Hashimoto’s thyroiditis and considered to have a relatively indolent clinical course.

Materials and methods: We present the clinical and histopathologic findings of a 37-year-old woman recently diagnosed with sclerosing mucoepidermoid carcinoma with eosinophilia of the thyroid. The patient, clinically euthyroid, presented with a thyroid that had been swollen for two years. Ultrasonography of the neck revealed a hypoechoic mass with extracapsular invasion at the right thyroid gland, measuring 4.7 cm × 1.9 cm. Fine needle aspiration cytology suggested thyroid papillary carcinoma. Computed tomography (CT) and ultrasonography revealed an 8-mm-sized heterogeneous mass at the right supravclavicular lymph node. The frozen section revealed metastatic carcinoma in the right level VI, right supravclavicular lymph node. Therefore, total thyroidectomy, central neck dissection and right selective neck dissection were performed.

Results: SMECE is generally thought to be a relatively indolent tumor, but extended resection of SMECE with neck metastasis needs to be considered.

Conclusion: Although SMECE is considered to be a relatively slow growing and non-aggressive tumor, occasional metastasis does occur. Physicians should be aware that extended operation may be required, including total thyroidectomy and/or neck node dissection for metastatic lesions of neck nodes.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.292
Objective: To evaluate the role of surgical optimality and adjuvant treatment method chosen on survival in patients with advanced endometrial cancer.

Materials & Methods: A total of 61 stage III/IV endometrial cancer patients, treated in a tertiary gynecologic cancer center in a period of 15-year, were enrolled into the study. Data were retrospectively retrieved from patients' records. Optimal cytoreduction was defined as <1 cm of maximal residual disease. Descriptive statistics, Log rank test, Cox proportional hazard regression test, and Pearson/Fisher’s chi-square tests were performed. P value of <0.05 was accepted as statistical significance.

Results: Mean age was 58.7±16.4 (range: 32-77). The most common histological type was ‘endometroid’ (78.7%) and the most common disease stage of FIGO was IIIc (57.3%). Of the patients, 53 (86.9%) underwent optimal cytoreduction and 8 (13.1%) had suboptimal cytoreduction. Mean follow-up time was 153.2±25.5 (range: 27-180) months and mean survival was 111.0±12.2 months. Mean survival was 119.0±10.9 months and 22.0±6.3 months for patients with optimal and suboptimal cytoreductions, respectively (p=0.009). While a superiority of radiotherapy to chemotherapy was found in univariate analysis (141.0 vs 63.6 months and mean survival 25.5 vs 10.9 months for patients with optimal and suboptimal cytoreductions, respectively (p=0.015), no significant differences among the adjuvant treatment methods in terms of survival were found in multivariate analysis (p=0.07).

Conclusion: Our findings, together with literature, suggest that advanced stage endometrial cancer patients with optimal cytoreduction have a better prognosis than those with suboptimal cytoreduction. To assess the survival role of type of adjuvant treatment method, however, it is needed further studies in prospective randomized manner.

No conflict of interest.

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303A. Prospective randomized study comparing robotic-assisted hysterectomy and regional lymphadenectomy with traditional laparotomy for endometrial cancer in India
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Introduction: Surgical management is the mainstay for CA Endometrium. Minimally invasive surgery has gained acceptance because it is associated with fewer complications, shorter hospitalization and faster recovery. Adoption of laparoscopic surgery for treatment of endometrial cancer has been slow, primarily because of the steep learning curve and limitations in obese patients.

Materials and methods: A prospective randomized study was undertaken from April 2011 to January 2014. 118 patients who presented with endometrial carcinoma underwent robotic assisted panhysterectomy and regional lymphadenectomy after randomization to either robotic arm (RA) or open arm (OA). Both groups were matched for clinical stage and operation type.

Results: The mean operative time was significantly longer in the RA than in the OA (142.5 vs 117 min, P < 0.001). The operative time but was significantly reduced in the latter part of the RA patients compared with the initial few patients. Operative time for open surgery remained same throughout the series. The mean estimated blood loss was significantly less with RA compared to OA (81.28ml vs 234.04ml, P < 0.001). The average number of retrieved lymph nodes was adequate for accurate staging. Number of lymph nodes removed by robotic method is slightly higher than the open method (30.56 vs 27.60) but with no statistical significance. Conversion rate was nil. The mean hospital stay was significantly shorter in RA (1.94 versus 5.54 days, P < 0.001). One patient in the robotic arm had external iliac vein injury, which was controlled with prolene sutures. None of the patients in open method had any intraoperative complications. In the open method, 17 patients had paralytic ileus, 4 had wound infection. 2 patients developed post-operative hernia and needed mesh repair. There were no major or minor postoperative complications observed in robotic-assisted surgery.

Conclusion: Robotic assisted surgery is an emerging technique in our country. In comparison to open method, it has advantages of decreased blood loss & shorter length of hospital stay. The postoperative complication is comparatively lesser in the robotic group. Morbidly obese patients are more suitable for robotic approach, as chances of arm clash decrease due to an extensive wound defect, the covering of which is impossible without the use of techniques of reconstructive plastic surgery. The latter was conducted for 25 (12.3%) of 203 patients with relapsed vulvar cancer aged 40-61 years. Recurrent tumor was detected in all the patients as exophytic formation with the size no more than 3 cm. Recurrent relapses were found in 10 patients out of 25, tumor excision was carried out in the first relapse. Vulvar tissues had evident rough scarring, so it was impossible to cover the wound defect after radical excision with 2 cm free margins with available tissues. Tumors were located to the left (11 patients) and to the right (14) of the median line. Plasty with a pedicle skin flap was used for postoperative wound closure. Wide excision of recurrent tumor was made first, and then pedicle skin flap with subcutaneous fat was taken from the upper third of the inner thigh (followed by drainage) in dependence on the side of tumor location. Primary wound healing was observed in all patients.

Conclusions: Reconstructive plastic surgery is expedient in patients with relapsed vulvar cancer as it enables radical surgery performing which improves survival of patients.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.294
adequate spacing. As the surgeons gain experience, operative time will decrease further. Therefore robotic assisted rectal cancer surgery is safe with low conversion rates, acceptable morbidity and is oncologically feasible.

No conflict of interest.

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303. Case manager for women with gynaecology cancer
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Background: The gynaecology department at Odense University Hospital has had case managers for patients included in the cancer package since 2008. The catalyst for case managing was the Danish cancer associations recommendation for fast track diagnostics, along with a department project in 2007. Case managers are RN nurse with vast experience within surgical oncology.

Method: The case manager is the patients’ first contact with the department. The nurse calls the women by phone and gives a competent and personal counselling. She informs about exams, projects and provides guidance throughout the entire process. The women can always call the case manager and get the support or help she need. The case manager is available from point of referral through the control process, post surgery.

The case manager can also enhance the womens network by including family and friends in the treatment schedule.

Results: The women have a feeling of confidence throughout the process. The waiting time is reduced and they are well informed. The women are very satisfied, they describe quality as high.

Better planning and coordination of examinations such as MR-scan, PET-scan, CA-125 and surgical process.

Conclusion: It is important that the case manager knows the process for the gynaecological oncology women. The case manager is an important person in regards to making the diagnostic fast tract.

No conflict of interest.

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304. Apps in the rehabilitation of women operated for gynaecological cancer
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Background: Women with cancer search for information for different reasons and via different channels. Women who have had cancer surgery request an easy and accessible way to find information about the department, and what to expect after a cancer surgery. To meet this request in the contest of the modern technological area, the formation and design of the app began.

The intention of the app is to create a connection between the department and the women after they are discharged. To give the women easy technological equipment that can help answer some of their questions, and to give them a direct line to the department, in the form of email, chat and telephone numbers.

Method: The app is being developed in cooperation between health professionals, a social worker, a physiotherapist, members of the hospital’s innovation team, management from the hospital and a private company. The app is made in cooperation with different healthcare professionals to fulfill different social, physical and mental needs of the woman. The service app is offered to all women who have had surgery as a part of their treatment for gynaecological cancer. A nurse can activate relevant subjects adjusted in regard to the woman’s operation. In some degree this makes the app an individual adjustable tool that can meet the woman’s needs.

Results: The app under development will provide an easy and quick way to get information and to get in contact with healthcare professionals specialized in gynaecological cancer. The staff can give the women tools to move forward in their lives and give them professional guidance in relation to their cancer operation.

Conclusion: The development of the app has resulted in, that the different specialized units have been able to benefit from each other’s knowledge and experiences.

We expect an improvement in documentation on women’s unexpected symptoms, accessibility and greater sense of security among patients.

No conflict of interest.

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305. Planning of surgical treatment volume on the basis of prognosis in ovarian granulosa cell tumours
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Background: According to the WHO classification of 2003 ovarian granulosa cell tumors (GCT) refer to borderline tumors or tumors with an unpredictable course that may recur over a long period from 10 to 30 years after the initial diagnosis, and still have an aggressive potential. About 90% of GCT of adult-type are diagnosed in I stage of disease, and prognosis in this particular group of patients is very difficult for evaluation. The most difficult is to make decision about organ-preserving surgery in I stage GCT in young women who wish to preserve fertility.

Purpose: To define criteria for prognosis in patients with ovarian GCTs of the adult type.

Material and methods: Clinical and morphological prognostic factors had been studied in 62 patients with primary ovarian GCT of adult type with 1-IV stages of the disease at the age of 21 to 77 years underwent surgery or combined treatment in N.N. Petrov Research Institute of Oncology from 1980 to 2002. There was carried out a multivariate analysis of clinical, morphological, immunohistochemical data and the results of treatment of ovarian GCT adult type. 72 factors were evaluated, including expression of Ki-67, a mutated tumor-suppressor gene p53, HER-2/neu oncoprotein and inhibin.

Results: It was found that patients` age, condition of their menstrual function, the period of menarche and menopause, duration of symptoms, the accumulation of ascites, sizes, types, variants of the structure and hormonal activity of tumors, the presence of pathological forms of mitosis and the level of overexpression of HER-2 oncoprotein / neu do not affect the prognosis. The prognosis of ovarian GCT of adult-type is influenced by such factors of disease as: the spread of the tumor outside the capsule, tumor mitotic activity (number of mitoses), expression of Ki-67, expression of mutated p53, expression of inhibin. In this case favorable prognosis was associated with such characteristics as I stage of disease, one-sided defeat of ovarian, absence of tumor spread beyond the capsule, low mitotic activity ( 53 mitoses per 10 fields of view), low expression of Ki-67 (10%) and low expression of mutated p53 (5,5%), and high level expression of inhibin (score = 3). Poor prognosis, in contrast, was associated with advanced disease (II-IV), bilateral lesions of ovarian, tumor spread beyond the capsule, high mitotic activity of the tumor (> 9 mitoses per 10 fields of view), expression of Ki-67 (> 11%) and expression of mutated p53 (> 14%) and low expression of inhibin (< 2 points). Based on this study there was proposed mathematical model for adult-type ovarian GCT of dependence of life expectancy of patients and duration of progression-free period of the disease on the level of expression of Ki-67 antigen, a mutated p53 and the mitotic activity, which proved adequate to results of clinical observations with probability p < 0.05.

Conclusions: There was proposed a model allowing estimate prognosis of adult-type GCT and the possibility of conserving surgery in each individual patient.

No conflict of interest.

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306. Gynecological cancers during pregnancy: The cases for the last 5 years our clinic
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Baskent University Ankara Hospital as well as being a reference hospital in the field of gynecologic oncology where because of the Turkey’s most famous gynecologist oncolog works, unusual or rare cases treatment and care is made. In this paper the last 5 years -March 2009 to 2014- a total of 20 gynecologic cancer cases were diagnosed during pregnancy presentation is planned.

Malignancies of the genital tract in pregnancy are uncommon. The most common gynaecological cancer encountered is cervical cancer. 1-3% of all cervical cancer patients are pregnant. After stratifying for stage, the outcome is similar to the non-pregnant state. Ovarian cancer, the second most common gynaecological cancer (%2.4-%5.7 and %5 of all these tumors are malign) in pregnancy has a good prognosis due to early presentation in the majority. Malignant germ-cell tumours are just as common as epithelial ovarian cancers. The presence of a viable pregnancy with gynaecological cancer presents tremendous challenges to the health personnel, especially if the woman wants to conserve both her pregnancy and fertility.

In our clinic with a diagnosis of gynecologic cancer during pregnancy in 5 years a total of 20 cases were detected. 12 of these cases was ovarian cancer, 3 of uterine leiomyoma, 2 of cervix and 1 of placental malignancy.

All these cases will be presented as follows: process of diagnoses, stages, whether or not risk factors and cause of the diseases, if any, infertility history and treatment of infertility associated with a factor there is, the weeks of pregnancy on diagnosis, the treatment plan, surgery, the final decision received with the family about the life of fetus (continuation/termination), if pregnancy continued the fetal/neonatal outcomes, breastfeeding/artificial feeding decisions, newborn/maternal outcomes, nursing care, prognosis and last medical state will be presented with grouping, the number and percentage evaluations.

No conflict of interest.

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Poster Session: Head and Neck Cancer

307. Quadrant parotidectomy versus superficial parotidectomy for treatment of pleomorphic adenoma: Initial results
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Introduction: We propose quadrant parotidectomy (QP) which is less radical than superficial parotidectomy and less conservative than extracapsular dissection. QP entails dissection over one of the two trunks of the facial nerve with generous resection safety margin. Primary outcome is incidence and fate of facial palsy.

Methods: Phase I (validation stage): Retrospective analysis of specimens of superficial parotidectomies for the microscopic extent of the neoplastic cells. Phase II (pilot stage): Ten initial quadrant parotidectomies were evaluated as a pilot prospective stage and compared to historical superficial parotidectomies cases. The extent of resection in QP was adjusted according to the results of phase I data. The rate of temporary and permanent facial nerve palsy was compared using Chi-squared and Fisher exact tests.

Phase III (confirmation stage): This stage is still under way in the form of a randomized, controlled trial comparing quadrant parotidectomy (QP) versus superficial parotidectomy (SP). The trial registration number is NCT01607866 (www.clinicaltrials.gov). Sample size was calculated according to published data on facial palsy incidence rates. Aiming to pick a 20% reduction in the complication rate with a power of 80% and α error of 10% (5% one tail), we will recruit 58 patients per group.

Results: Phase I: Extracapsular tumor extent ranged from 1:10 mm. Phase II: Two cases of permanent and five cases of temporary nerve palsy were recorded in SP group. Ten QP were recorded without temporary or permanent palsy. On comparison, Chi-squared was statistically significant in favour of QP (P = 0.023). Fisher exact test results was not statistical significant (P = 0.079).

Conclusion: Quadrant parotidectomy is an oncologically safe operation that effectively protects the facial nerve. Randomized study is under way to confirm that.

No conflict of interest.

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308. Bone marrow micrometastases in head and neck squamous cell carcinoma: A pilot study
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Background: The survival of patients with head and neck squamous cell carcinoma (HNSCC) is catastrophically affected by locoregional recurrence and distant metastases. Despite the appearance of adequately treated disease recurrence and metastases occur. Disseminated tumour cells (DTCs) may be the cause for this. Developing techniques to detect DTCs and establishing their significance could enable clinicians to identify patients who could benefit from additional systemic therapy.

This study aimed to determine whether bone marrow micrometastases (BMM) could be identified by immunocytochemical methods and if there was any correlation, in this small group, with histological characteristics of the tumour.

Materials and Methods: After obtaining ethical approval, patients diagnosed with primary T2-T4 HNSCC were recruited. All patients underwent bone marrow aspiration whilst under general anaesthetic for surgical
309. Endometrial cancer dissemination to the neck
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Background: The majority of patients experiencing dissemination after the treatment of endometrial cancer suffer from peritoneal or pulmonary distant metastases. In a relatively small number of patients other organs can be involved as the sole site of distant relapse. Herein we report a case of the dissemination of an endometrial cancer to the lymphnodes of the neck eight years after radical treatment of the primary disease.

Materials and methods: The 78 years old patient with a history of radical treatment of endometrial cancer was evaluated at the General Surgery Clinic for a neck mass of several months of duration. After clinical evaluation the patient refused further diagnostic procedures and treatment. Four weeks afterwards she presented to the Emergency Department with a massive venous hemorrhage from ulcerated neck mass. After initial haemostasis, informed consent for further diagnostic procedures and treatment was obtained. A CT of the neck and a FNAB were performed which allowed to establish the diagnosis of a metastatic endometrial cancer. In the absence of other metastatic foci a modified neck dissection (Jawdyski-Crile operation) was proposed.

Results: A modified radical neck dissection with a skin plasty to cover the defect were performed. In the postoperative course the patient suffered from a partial necrosis of the skin flaps. In the two years follow-up she is alive and well with no evidence of disease.

Conclusion: A modified radical neck dissection is a treatment of choice for a solitary unilateral metastatic mass in the neck originating from endometrial cancer.
No conflict of interest.
http://dx.doi.org/10.1016/j.ejso.2014.08.302

310. Variations of nasolabial flap in oral cancer reconstruction:
Analysis of 54 cases in a tier 2 city hospital in India
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Background: Nasolabial flaps have been recognized as versatile, simple, easy to harvest local flap that can cover a variety of defects on the face, nose, lip and the oral cavity. We present the success and utility of variations of Nasolabial flap for small to medium sized defect after excision of lip and oral cancer.

Patients and Methods: We retrospectively studied a group of 54 patients, which included 35 males and 19 females, who had undergone excision of oral cancer and reconstruction using nasolabial flaps between 2008 and 2013. Clinically these patients were T-1 N0, T-2 N0, T-3 N0 invasive squamous cell carcinoma of buccal mucosa, tongue, gingivobuccal sulcus, palate and lip. Immediately after surgical excision, one stage reconstruction of the defect was done using a type of nasolabial flap. Each of these patients was followed up over the median period of one year.

Results: The following number patients underwent surgical excision as per anatomical location:
• 24 patients of buccal mucosa cancer,
• 21 patients of gingiva buccal sulcus cancer,
• 04 patients of palate cancer,
• 03 patients of lip cancer and
• 02 patients of tongue cancer.

All the patients underwent single stage reconstruction of defect using a type of nasolabial flap.

We have used following variations of nasolabial flap for oral reconstruction such as:
• Superiorly based flap,
• Inferiorly based flap,
• Laterally based flap and
• Folded flap to make it broad round
• Flap based on subcutaneous tissue

Flap viability was reliable and was not affected by performance of a synchronous neck dissection as well as ipsilateral facial artery ligation. We have used crescent extension on lateral nasal area for better cosmetic result.

Minor wound complications were observed in 6 patients and one patient had complete flap loss. Functional results were satisfactory and cosmetic results were good in most of the patients.

Conclusions:
• The nasolabial flap is a reliable and minimally traumatic local flap for one stage reconstruction of small to medium size defects in the oral cavity.
• The abundant blood supply allows its modification to cover large defects and to obtain better cosmetic results.
• The versatility of the flap minimizes the use of local tongue flaps and split thickness grafts for covering small and medium size defects in cases of buccal mucosa and lip cancers.
• It has a high viability rate, low complication rate, is quick and easy to perform in addition to its satisfactory functional and cosmetic results.
• It can be done by a surgical oncologist without a help of a plastic surgeon.
• It can be done safely at small set up hospitals which are major contributors to health care services in India
No conflict of interest.
http://dx.doi.org/10.1016/j.ejso.2014.08.303

311. Near total laryngectomy – complications, function & survival: A sixteen-year institutional experience
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Background: Near total laryngectomy (NTL), a voice preserving dynamic tracheopharyngeal shunt procedure, is an alternative to total laryngectomy in selected laryngeal & hypopharyngeal cancers, but has not gained wide acceptance due to perceived fear of surgical complexity. We report our institutional experience with NTL during last 16 years.

Material & methods: A retrospective analysis was carried out from Feb 1998 to Apr 2014. We studied 63 patients who underwent NTL with respect to complications, functional results & survival outcome. Survival was analysed using Kaplan-Meier method.

Results: Sixty two male patients & one female patient with median age of 56 years were studied. Two patients died in postoperative period (Postop day 6 & 26) due to cardiopulmonary event. Median hospital stay was 12 days (range 6-58 days). Pharyngocutaneous fistula was most common complication (25 of 63 patients, 39.6%) & most (20 of 25) were managed conservatively with five patients requiring surgical intervention. Other complications were- aspiration in eight patients (12.7%); wound infection or dehiscence in 5 patients (7.9%); shunt stenosis in 2 patients (3.2%); tracheostoma narrowing in 5 patients (7.9%) with four patients requiring stoma refashioning; chyle leak in one patient (1.6%). Good quality speech was attained by 43 patients (68.2%); 10 patients (15.8%) had fair quality voice; 4 patients (6.3%) obtained bad voice; 5 patients (7.9%) did not develop speech at all. Fifty patients (79.3%) developed normal swallowing function; 12 patients (19%) developed dysphagia due to neopharyngeal stricture but all were managed successfully with dilatation. Ten patients (15.8%) had neck recurrence (4 salvaged with surgery); 5 patients (7.9%) had local recurrence (one salvaged with surgery); 4 patients (6.3%) developed distant metastasis (3 pulmonary & one spinal); 2 patients (3.2%) developed new primary (1 base tongue & other tonsil/ soft palate). Two-year and 5-year disease free survival was 66.1% and 51.2% respectively.

Conclusion: NTL is an oncologically acceptable alternative to total laryngectomy for selected group of lateralised laryngeal and hypopharyngeal cancer. It gives good functional results with normal swallowing and physiologic maintenance free speech in majority of patients. Most of the complications are well tolerated and can be managed conservatively.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.304

Table 1. Survival Analysis at 18 months

<table>
<thead>
<tr>
<th>Groups</th>
<th>Stage</th>
<th>No. of patients</th>
<th>Mortality (n)</th>
<th>Survival (%)</th>
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<td></td>
<td>16</td>
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<td>100</td>
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<tr>
<td>II</td>
<td></td>
<td>23</td>
<td>05</td>
<td>78.27*</td>
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<tr>
<td>III</td>
<td></td>
<td>19</td>
<td>05</td>
<td>75.69*</td>
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<td>IV</td>
<td></td>
<td>28</td>
<td>19</td>
<td>32.14*</td>
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</table>

<table>
<thead>
<tr>
<th>Grade</th>
<th>No. of patients</th>
<th>Mortality (n)</th>
<th>Survival (%)</th>
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<tr>
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<td>-</td>
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</tr>
<tr>
<td>II</td>
<td>45</td>
<td>14</td>
<td>68.89**</td>
</tr>
<tr>
<td>III</td>
<td>36</td>
<td>13</td>
<td>63.89**</td>
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<tr>
<td>IV</td>
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<td>02</td>
<td>33.33</td>
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<table>
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<tr>
<th>Tumor thickness***</th>
<th>No. of patients</th>
<th>Mortality (n)</th>
<th>Survival (%)</th>
</tr>
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<tbody>
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<td>48.00</td>
</tr>
<tr>
<td>IV</td>
<td>22</td>
<td>14</td>
<td>36.37</td>
</tr>
</tbody>
</table>

* stage II & III: p=0.729 ** grade II & III: p=0.635 ***tumor thickness:p=0.00
The overall survival (OS) at 18 months was 66.27%.
The good prognostic group - I & II (< 1.0 cm) and the poor prognostic group - III & IV (1.0 cm or >) had a cumulative survival at 18 months of 94.87% and 42.45% respectively.

Conclusion:
The study reiterates that the tumor thickness may be the single most important prognostic factor in the cancer oral tongue.
The drawback with the TNM staging is, its failure to give a proper representation to the tumor thickness.
1.0 cm thickness forms the watershed between the good and the poor prognostic groups. (p = 0.00)
The results however would need to be validated with a larger study group.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.464

313. Expression of vitamin D receptor in head and neck cancer (HNC), immunoreactivity scoring (IRS) and relation of serum vitamin D levels (SVDL) and effect of oral vitamin D supplementation with chemoradiotherapy with special reference to quality of life

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Background: Head and Neck Cancer (HNC) is a major health problem in the India. Late diagnosis results in low treatment outcomes and considerable costs. Vitamin D receptor (VDR) is involved in cell growth and differentiation in normal human tissue and via wide spectra of activities is involved in anticancer defence mechanisms of the body. Decreased serum Vitamin D (are associated with higher cancer incidence and mortality in men colorectal, breast, lung and prostate cancers. Oral complications are a frequent problem ranging from 12% for patients receiving adjuvant chemotherapy to nearly 100% for patients receiving greater radiation doses. The objective of the present study is to determine VDR expression, correlation with SVDL and effect of pre and post vitamin D supplementation on functional performance and QOL outcomes in patients with chemo and radiotherapy regimen.

Materials and methods: n = 110 HNC patients were included between April 2012 and October 2013. A total of 15 normal healthy, age and sex matched and unrelated to patients were also recruited served as ‘controls’. Punch biopsy was taken from the cancer tissue and HPE and VDR expression evaluated with Immunoreactivity scoring (IRS). Pre and post serum vitamin D levels were estimated. The mean age of cases was slightly higher (42.67 ± 10.83 vs. 48.45 ± 13.48).

All patients were supplemented with oral vitamin D for a period not less than 120 days along with standard management of HNC as per stage of the disease. Quality of life was assessed applying three different scales of the disease. Quality of life was assessed applying three different scales (OMS), Swallowing Performance status scale (SPSS) and categorical scale.

Results: The mean % cells stained was significantly different and lower (37.6%) in cases as compared to controls (p = 0.013). However, the mean Intensity and IRS scores were found similar between controls and cases. The mean IRS score of stage IVB was found significantly different and lower as compared to both Stage III (Z = 3.51, p = 0.005) and Stage IVA (Z = 3.011, p = 0.016). The mean IRS scores increase with age, higher in males, higher in grade GX, decrease with stage, higher in those who received chemotherapy. The Kruskal-Wallis (H) ANOVA revealed significantly different IRS scores among staging (H = 18.46, p < 0.001). The mean Vitamin D levels of cases was significantly different and lower as compared to controls (-1.33 ± 0.62 vs. -1.90 ± 0.43, U = 327.00, p = 0.002). The Vitamin D supplementation significantly improved erythema, edema, ulceration and pain in patients those who received the supplementation. Similarly significant improvement in scores of SPSS and Categorical scale was also observed in group supplemented with same.

Conclusion: VDR expression was decreased in HNC compared to controls and patients with lower expression had advanced disease compared to those with higher VDR expression. Serum Vitamin D levels in cases of HNC were lower compared to controls. Concomitant vitamin D supplementation reduces toxicity and improves quality of life.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.465

314. Minimally invasive parathyroidectomy in patients with primary hyperparathyroidism: Intra-operative PTH measurements and frozen section analysis are not beneficial in case of positive pre-operative imaging

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2 Martini Ziekenhuis Groningen, Radiology and Nuclear Medicine, Groningen, Netherlands
3 Martini Ziekenhuis Groningen, Internal Medicine, Groningen, Netherlands
4 Martini Ziekenhuis Groningen, Pathology, Groningen, Netherlands

Background: Primary goal of our study was to evaluate whether intra-operative PTH measurement and frozen section analysis affect intra-operative decision making when pre-operative localising studies are positive.

Material and methods: A retrospective analysis was performed in a series of 95 individuals with primary hyperparathyroidism who underwent surgery between December 2005 and December 2013.

Results: Minimally invasive parathyroidectomy (MIP) was performed in 80 patients. The mean operation time was 40 minutes. Bilateral exploration was necessary in 15 patients due to insufficient pre-operative localisation. Sestamibi scan was more sensitive in localizing than ultrasound (86 % vs. 30%). Frozen section analysis altered the surgical plan in 6 patients. In 2 patients bilateral exploration was performed because of insufficient decrease in PTH level.

Conclusions: Optimal pre-operative localisation and reporting with ultrasound and parathyroid scintigraphy is vital to perform successful MIP. Frozen section analysis and IOPTH measurement are helpful in case of re-do surgery. Multiple gland disease and inconsistent preoperative imaging studies but contribute little in routine cases with well defined adenomas

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.482
ABSTRACTS

Poster Session: Hepato-Pancreatobiliary Cancer

315. MicroRNA-122 as a serum biomarker for hepatocellular carcinoma
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¹University Hospital Aintree, Liverpool, Liverpool, United Kingdom
²MRC Centre for Drug Safety Science, University of Liverpool, Liverpool, United Kingdom
³Department of Molecular and Clinical Cancer Medicine, University of Liverpool, Liverpool, United Kingdom

Background: MicroRNA-122 (miR-122) is an hepatocyte-specific oligonucleotide abundantly expressed in the liver. It shows great promise as a novel serum biomarker of liver disease and recently, it has also been proposed as a marker for diagnosing hepatocellular carcinoma (HCC). The role of miR-122 as a biomarker for diagnosing HCC in a heterogeneous cohort of patients with and without HCC and with chronic liver disease of various aetiologies is to be interpreted in the context of underlying liver disease.

Methods: 194 patients with (n = 104) and without (n = 90) were enrolled on the study. Serum miR-122 levels were determined by qRT-PCR and the results expressed by the ΔCt (cycle threshold) method after normalisation against an endogenous small RNA (U6snRNA). Statistical differences between the groups were determined by D'Agostino and Pearson Normality and Mann-Whitney tests.

Results: Serum levels of miR-122 were significantly higher in the patients with HCC compared to healthy controls (p = 0.0019). However, no difference was seen between those with underlying chronic liver disease and the HCC group (p = 0.338). No difference was seen between the chronic disease and HCC group by underlying condition: HBV (p = 0.98); HCV (p = 0.25); alcoholic liver disease (p = 0.41). ROC analysis confirmed these findings (Normal vs HCC: AUC 0.7, p = 0.0022 but chronic disease vs HCC: AUC 0.54, p = 0.337).

Conclusions: As HCC usually develops from chronic liver disease it is likely that levels are raised due to the disease rather than the tumour. Thus, the role of miR-122 as an independent biomarker for HCC needs to be interpreted in the context of underlying liver disease.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.307

316. Comparative study between uncinate process carcinoma and pancreatic head carcinoma after pancreatoduodenectomy (clinicopathological features and surgical outcomes)
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²Gastro Entorology Center, Surgery, Mansoura, Egypt

Background: Pancreatic head cancer is considered to have the worst prognosis of the peripancreatic carcinomas. The clinicopathological features of uncinate process pancreatic cancer are poorly published.

Methods: We retrospectively studied patients who underwent pancreatodudenumectomy (PD) for pancreatic head adenocarcinoma. This study included three groups of patients. Group A patients with pure pancreatic head carcinoma (PPHC), group B patients with combined head and uncinate process carcinoma (CPHUC) and group C patients with pure uncinate process carcinoma (PUPC). Preoperative, intraoperative and postoperative variables were collected.

Results: The study included 157 patients. Jaundice was the most common presenting symptom in PPHC and CPHUC. Abdominal pain was the most common presenting symptom in PUPC. The mean common bile duct (CBD) and pancreatic duct diameters were significantly smaller in PUPC group (P = 0.0001). The venous invasion was significantly observed more in PUPC group and vascular resection was done in 50% of cases. The number of patients with microscopically residual tumor was significantly highest in PUPC group after PD than in other two groups (P = 0.001). Recurrence rate occurred in 54.2% in PUPC group, 34.8% in CPHUC group and 22.7% in PPHC group after PD (P = 0.007). The median survival was 19 months in PPHC groups, 16 months in CPHUC group, and 14 months in PUPC group (P = 0.02).

Conclusion: PUPC presented with abdominal pain with more vascular infiltration. The recurrence rate was common after PD for uncinate process carcinoma especially locoregional recurrence and the overall survival rate was found to be lower.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.308

317. Surgery for common bile duct carcinoma
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²Central Hospital, General Surgery, Bolzano, Italy

Background: Carcinoma of the mid (MCBDC) or distal third (DCBDC) of the common bile duct is a fairly rare nosological entity in the West, accounting for 13–23% of tumours of the extrahepatic bile ducts. The surgical treatment varies in relation to the site: in the case of DCBDC the operation of choice is duodenopancreactectomy (DP), whereas for MCBDC there is still no unanimous consensus of opinion regarding the type of surgery. The prognosis of these tumours is, on the whole, better than that of proximal cholangiocarcinoma.

Materials and methods: We retrospectively assessed 37 pts with non-hilar bile duct tumours observed in our department from 1990 to 2011. The patient series comprised 21 men and 16 women, with a mean age of 71 years. The presenting symptom was jaundice in 95% of cases. 23 cases were DCBDC and 14 cases MCBDC.

Results: 15 pts were treated with a radial intent by either DP (13 cases) or by resection of the common bile duct (2 cases). 10 pts with local inoperability or liver metastases were treated with a palliative biliodigestive anastomosis. 12 pts were excluded from surgery and treated endoscopically. Postoperative staging identified 1 pt as stage Ia, 2 pts as stage Ib, 8 pts as stage IIa, 3 pts as stage IIb, and 1 pt as stage III according to the new TNM classification. There was no operative mortality. Survival at 1, 2 and 5 years was 51%, 27% and 14%, respectively.

Conclusions: MCBDC or DCBDC are tumours that offers fairly good prospects of survival. Surgical radicality is achieved essentially by obtaining ducal and radial margins which are free of microscopic infiltration and by means of a thorough lymphadenectomy. These conditions can be achieved more easily in DCBDC owing to the extent of the DP they require. In MCBDC the anatomical contiguity with the portal vein is responsible for a lower resectability rate.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.308
318. A systematic review of the role of hepatectomy in the treatment of metastatic gastric adenocarcinoma


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2 Altnagelvin Area Hospital, Surgery, Derry, United Kingdom
3 University Hospital Aintree, Hepatobiliary, Liverpool, United Kingdom
4 Cancer Research UK, Liverpool Cancer Trials Unit, Liverpool, United Kingdom

Background: Gastric cancer has a high mortality, with many patients presenting with advanced disease. Many patients who undergo curative gastrectomy will subsequently develop metastatic disease. Hepatectomy has an established place in treating metastases from a variety of cancers but its role in gastric cancer is not clear. This review sought to systematically appraise the literature to establish the role of hepatectomy in treating gastric cancer metastases.

Material and methods: Medline and EMBASE were searched for all papers publishing data on survival of patients with metastatic gastric adenocarcinoma who underwent hepatectomy. Primary outcome was survival following hepatectomy. Secondary outcomes were investigation of prognostic factors.

Results: Seventeen studies with 438 patients were included. There were no randomised controlled trials. Perioperative mortality was 2%, with a morbidity between 17–60%. Overall 1-year survival was 36–88%, 3-year survival was 14–56% and 5-year survival was 10–60%. Patients with solitary metastases appeared to have better survival (3-year survival 56–62%). Other favourable survival characteristics included unilobar disease (3-year survival 52–72%), and metachronous presentation (5-year survival 29%). No advantage was demonstrated with either adjuvant or neoadjuvant chemotherapy. Increased age was not associated with poorer prognosis.

Conclusions: Few patients with hepatic metastases from gastric cancer are suitable for hepatectomy, but for those suitable there appears to be survival benefit. Patients with synchronous, multiple or bilobar metastases have worse survival. The evidence supporting the role of hepatectomy in the treatment of hepatic metastases from gastric cancer is weak. However in a selected group there appears to be a survival advantage. Hepatectomy should be considered in these patients in the setting of a randomised trial.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.309

319. The role of hepatectomy in the management of metastatic renal cell carcinoma: A systematic review


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2 Altnagelvin Area Hospital, Surgery, Derry, United Kingdom
3 University Hospital Aintree, Hepatobiliary, Liverpool, United Kingdom
4 Cancer Research UK, Liverpool Cancer Trials Unit, Liverpool, United Kingdom

Background: The role of hepatectomy for renal cell carcinoma metastases is unclear. Approximately 50% of patients will develop metastases, one third of which involve the liver. Median survival for metastatic disease is less than one year, but there have been reports of curative intent hepatectomy. This study sought to systematically evaluate the literature to offer guidance on the role of hepatectomy in patients with metastatic renal cell carcinoma.

Material and methods: Medline and EMBASE were searched for all papers publishing data on survival of patients with metastatic renal cell carcinoma who underwent hepatectomy with curative intent. Primary outcome was survival following hepatectomy; secondary outcomes were factors considered prognostic for survival.

Results: Seven studies with 164 patients were included in this review. There were no randomised controlled trials. Perioperative mortality was 4.3% and morbidity rate ranged from 13–30%. 1-year survival was 78–94%, 3-year survival was 45–62% and 5-year survival was 34–43%. Overall median survival ranged from 16–48 months. Three studies compared survival between patients with synchronous and metachronous presentation of metastases, two of which showed a statistically significant difference in favour of a metachronous presentation. Three studies compared survival between patients with solitary and multiple metastases; no difference was demonstrated.

Conclusions: There were a number of small studies in this review, none of which were randomised controlled trials. All studies included a highly selected cohort of patients. Patients presenting with metachronous metastases have better survival post hepatectomy. In highly selected patients hepatectomy may offer a survival benefit but the evidence base is weak.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.311

321. Is AFP level a better prognostic of survival than tumour burden in patients with hepatocellular carcinoma undergoing living donor liver transplantation?

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2 Salmaniya Medical Complex, General Surgery, Manama, Bahrain
3 Continental Hospitals, Surgical Gastroenterology HPB Surgery and Liver Transplantation, Hyderabad, India
4 Chang Gung Memorial Hospital, Liver Transplant Center, Kaohsiung, Taiwan

Background: Hepatocellular carcinoma (HCC) is one of the leading causes of death worldwide. The commonly used criteria for listing patients with HCC for treatment with living donor liver transplantation (LDTL) are: Milan criteria and University of California, San Francisco (UCSF) criteria. Both Milan and UCSF criteria focus on the tumour burden. We have analyzed our experience with LDLT in patients with HCC and Hepatitis C virus (HCV) associated liver disease in order to determine if alpha-fetoprotein (AFP) level is a better predictor of outcome than the tumour burden.

Materials and methods: We have identified all patients with HCV related liver disease and HCC who have undergone LDLT in one center during the period from December 2000 to December 2012. Outcomes from the prospective database were compared for patients who met Milan criteria (single tumour ≤5 cm, maximum of 3 total tumours with none >3 cm) or not, and for patients with different cut-off AFP level. Univariate and multivariate analysis of factors influencing overall survival (OS) and recurrence free survival (RFS) were performed.

Results: A total of 115 patients with HCC and HCV associated liver disease received LDLT during the study period. OS for the whole study group was 91.7% at 5 years, 82.9% at 3 years and 80.2% at five years. Number of tumors (HR = 1.61) the overall tumor size (HR > 1.12) and MELD score (calculated without HCC exception points; HR = 1.09) were significant factors influencing survival on univariate analysis. True MELD score was also significantly influencing RFS on univariate analysis (HR = 1.53). The serum AFP level had no influence on overall and recurrence free survival regardless of the cut-off point. There was no difference in outcomes for patients within and beyond Milan criteria.

Conclusions: Tumor burden and MELD score were factors influencing OS and RFS in patients undergoing LDLT for HCC and HCV associated disease. Pretransplant AFP level did not influence outcome.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.310
322. The cholangio-anastomosis on segment 3 to palliate the jaundice of hilar cholangiocarcinoma, which results?
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1EHU-1st November 1954, Hepatobiliary Surgery and Liver Transplantation, Oran, Algeria

Background: Overcome the effects of biliary obstruction is the main goal of palliative treatment of patients with hilar cholangiocarcinoma (HC), it aims to fight against jaundice, pruritus and cholangitis that kills these patients early, and for who palliative surgery has its advantages. The goal of this study is to analyze the results of the internal derivation on segment III bile duct.

Materials and methods: It’s a retrospective study from July 2008 to March 2014 on the operated patients HC, benefiting of a cholangio-anastomosis on the bile duct of segment II.

Results: From July 2008 to March 2014, nineteen patients with cholestatic jaundice secondary to malignant obstruction of the upper biliary confluence received cholangio-anastomosis on the hepatic duct of segment III, it was 11 women and 8 men with an average age of 54 years (range 35–69 years). It was 13 Klatskin tumors, and 06 cancers of the gallbladder invading the hilum. The efficiency was 100% and the perioperative mortality was 26.31%. Morbidity was dominated by external biliary fistula ‘36.8%’ and wound infection ‘15.78%’. The average of the post-operative stay was 19 days.

Discussion: Surgical internal derivations have no superiority compared to the non-surgical procedures, insertion of a stent is seen as the method of choice, surgical internal derivation has its advantages in patients with good life expectancy and failure of percutaneous or endoscopic techniques, but especially in case of a change during the intraoperative time of the attitude from curative to palliative, after confirmation of the non-resectability of HC. Cholangio-anastomosis of a jejunal loop on the bile duct of segment III is favored by most authors, but is contraindicated in some cases. The perioperative mortality is not negligible.

Conclusion: Cholangio-anastomosis on the bile duct of segment III of the liver is an alternative in some cases of HC.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.312

325. Salvage transplantation for post resection recurrence in hepatocellular carcinoma associated with hepatitis C virus aetiology: A feasible strategy?
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2Maria Sklodowska Curie Institute of Oncology, Surgical Oncology, Cracow, Poland
3Chang Gung Memorial Hospital, Liver Surgery and Liver Transplantation, Kaohsiung, Taiwan

Introduction: We analyzed the feasibility of salvage liver transplant after liver resection in Hepatocellular carcinoma with HCV etiology.

Method: All the patients with HCC with HCV etiology who underwent living donor liver transplant from July 2002 to November 2012 were studied. Their recurrence rate, mortality, and prognostic factors were analyzed and compared between primary transplant and salvage transplant.

Results: One hundred and nine patients underwent liver transplant for hepatocellular carcinoma associated with HCV etiology within the University of California, San Francisco (UCSF) criteria. 18 were post hepatectomy salvage transplants and 91 were primary transplants. Median follow-up time was 31 months. One, three and five years recurrence free survivals were 72%, 72%, 46% for salvage group and 91%, 73% and 46% for primary transplant group which were not statistically significant (p = 0.328). One, three and five years overall survival rates were 76%, 76% and 65% in salvage group and 92%, 85% and 85% in primary transplant group respectively. The difference in overall survival rates was statistically significant (p = 0.031).

Material and methods: The medical records, laboratory results, pathological specimens and radiographic studies for the patient undergoing resection were reviewed.

Results: The patient presented with a three-month history of pain, jaundice, and weight loss. At endoscopic retrograde cholangiopancreatography (ERCP) an oedematous ampulla was biopsied, cytology obtained and a plastic double pigtail stent placed for biliary drainage. Despite no history of liver disease, grade B oesophageal varices were encountered. A computed tomography (CT) scan revealed no mass lesion, however, evidence of portal hypertension was apparent. Histopathology of the biopsy revealed the presence of high-grade dysplasia within a distal bile duct adenoma. Liver biopsy was performed to investigate the aetiology of the portal hypertension, with histology confirming congenital hepatic fibrosis (CHF). With potential for malignant progression within the high-grade dysplastic adenoma, following detailed deliberation within the multidisciplinary team environment, the decision was made to undertake a TIPSS to enable a pancreaticoduodenectomy. Despite a challenging postoperative period, discharge was achieved. The final pathology revealed an early distal bile duct cholangiocarcinoma with clear resection margins and no nodal metastases.

Conclusions: This experience has provided evidence that a prophylactic TIPSS procedure can be successfully performed for preoperative portal decompression in the context of non-cirrhotic portal hypertension for patients requiring pancreatic resection. While not without risk, a potentially curative resection was performed in a patient for whom abdominal surgery was initially thought impossible. We believe that following careful multidisciplinary selection, certain patients with pancreatic disease may benefit from this approach in order to achieve resection, which previously would have been contraindicated.

Notably CHF has been associated with the development of cholangiocarcinoma in only four previous instances, with this case being only the second reported distal bile duct cholangiocarcinoma.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.313
Conclusion: Salvage Transplantation for post hepatectomy recurrence for patients with Hepatocellular carcinoma associated with HCV related chronic liver disease seems to offer inferior overall survival rates than Primary transplantation.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.315

326. Pancreatoduodenectomy for pancreatic malignancies in very young children
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Background: Pancreatoduodenectomy (PD) for malignant pancreatic neoplasms in children is generally avoided. This study was intended to analyze the pancreatic anastomotic technique, type of reconstruction and postoperative outcomes from authors experience and the world’s literature.

Materials and methods: This is a report concerning a two children 5 year girl, 1 year and 10 month boy with a solid pseudopapillary tumor and malignant teratoma respectively, which localized in the pancreatic head. In both cases primary tumors were completely resected by PD with duct-to-mucosa pancreatojejunostomy and authors method of totally isolated Roux-en-Y pancreaticobiliary tract reconstruction.

Results: There was no postoperative mortality and morbidity. An overview of surgical technique, postoperative and long term functional outcomes is provided. From 1952 to the 2013 year we found 98 cases with children PD and only 20 cases with PD in children younger than 5 year.

Table: Complication after pancreatectoduodenectomy in children.

<table>
<thead>
<tr>
<th>Author, year of publication</th>
<th>Age at surgery, years</th>
<th>Postoperative Complications, %</th>
<th>Complications</th>
<th>Reoperation</th>
<th>Follow-up years</th>
</tr>
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<tr>
<td>Becker W.F., 1957</td>
<td>1</td>
<td>NR</td>
<td>Biliary fistula</td>
<td>None</td>
<td>3</td>
</tr>
<tr>
<td>Jung S.E., 1999</td>
<td>11</td>
<td>20</td>
<td>Postoperative adhesion</td>
<td>Adhesiolysis</td>
<td>2</td>
</tr>
<tr>
<td>Shorter N.A., 2002</td>
<td>13</td>
<td>14</td>
<td>Splenic vein thrombosis, esophageal varices</td>
<td>None</td>
<td>6</td>
</tr>
<tr>
<td>Dasgupta R, 2005</td>
<td>9</td>
<td>40</td>
<td>Pancreatic fistula, delayed gastric emptying, wound infection</td>
<td>None</td>
<td>&gt;1</td>
</tr>
<tr>
<td>Yu D.C. 2009</td>
<td>9</td>
<td>40</td>
<td>Subphrenic abscess</td>
<td>None</td>
<td>3</td>
</tr>
<tr>
<td>Reichman T.W. 2011</td>
<td>NR</td>
<td>NR</td>
<td>Pancreatic fistula, abscess, aortoenteric fistula</td>
<td>Drainage of abscess</td>
<td>Died of aortic rupture</td>
</tr>
<tr>
<td>Marchegiani G. 2011</td>
<td>16</td>
<td>29</td>
<td>Portal vein thrombosis, portal hypertension, esophageal varices, multiple episodes of gastrointestinal bleeding</td>
<td>Bypass graft to the left portal vein</td>
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<tr>
<td>Muller C.O. 2012</td>
<td>12</td>
<td>46</td>
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<td>Transient pleural effusion</td>
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<td>Transient delayed gastric emptying</td>
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<td>Intussusception</td>
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<td></td>
<td>Pancreatic, biliary, and digestive fistula</td>
<td>None</td>
<td>&gt;2</td>
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<tr>
<td></td>
<td>2</td>
<td></td>
<td>Portal thrombosis, portal stenosis</td>
<td>Percutaneous thrombectomy, balloon dilatation, placement of stent</td>
<td>&gt;2</td>
</tr>
<tr>
<td>Faircloth A.C. 2012</td>
<td>17</td>
<td>NR</td>
<td>Intraoperative blood loss during portal vein reconstruction, multisystem organ failure</td>
<td>None</td>
<td>Died of postoperative day 6</td>
</tr>
</tbody>
</table>

Abbreviations: NR, not reported.

Roux-en-Y pancreaticobiliary tract reconstruction.

Conclusions: PD in childhood has an acceptable mortality, a short-term morbidity similar to that observed in adults, and a low risk of endocrine or exocrine pancreatic dysfunction.

No conflict of interest.

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327. Roux-en-Y pancreaticobiliary tract reconstruction after Whipple procedure in high-risk pancreatic fistula group
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Background: Pancreatoduodenectomy (PD) is the standard treatment for patients with peripancreatic adenocarcinoma. Significant progress in surgical technique and perioperative management has substantially reduced the mortality rate of PD. Despite recent improvement PD remains dangerous procedure with high level of postoperative morbidity. Pancreatic fistula (PF) is the major cause of septic complications after PD. PF rate is significantly higher in patients with soft pancreatic tissue and thin pancreatic duct. This study evaluated a new pancreaticobiliary tract reconstruction technique after PD, which aims to reduce PF rate in high-risk patients.

Materials and methods: This study took place at the Clinic of Na-
was done using a single loop standard reconstruction (SR) in 31 patients and by an original technique — totally isolated Roux-en-Y loop’s (RR) in 26 patients. The focus group were high risks patients for postoperative pancreatic fistula, with ‘soft’ pancreatic tissue and without dilatation of the main pancreatic duct. Pancreatic fistula was defined as drainage of greater than 50 ml of amylase rich fluid on or after 3d postoperative day.

Results: No statistically significant difference was observed in the rates of pancreatic fistula comparing to the type of reconstruction (RR, 33.5% vs SR, 38.5%; P = .35), but in the SR group most of fistula incidences were rated as more severe — grade C according to ISGPF classification (RR, 3.2% vs SR, 19.2%; P = .04). The rate of interventional radiology drainage procedures was lower in RR group (RR, 12.9% vs SR, 30.8%; P = .033) as well as need of reoperation (3 reoperation was performed in the SR group). There were evident decreasing of incidences of delayed gastric emptying (DGE) in RR group (RR, 9.7% vs SR, 34.6%; P = .026) also as in length of postoperative hospital stay — RR (15.7 days [range, 7–30 days]) compared with those undergoing SR (30.4 days [range, 12–54 days]) P = .044.

Conclusions: Use of the alternative Roux-en-Y technique for reconstruction following the Whipple procedure decrease the intensity of PF and necessity of postoperative interventional radiology drainage, achieved shorter hospital stays.

No conflict of interest.

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328. Prognostic value of excision repair cross-complementing gene-1, dihydropyrimidine dehydrogenase, and human equilibrative nucleotide transporter-1 expression in patients with ampullary carcinoma
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Background: Efforts to improve survival after surgery in patients with ampullary carcinoma (AC) should be focused on adjuvant chemotherapy because most AC patients show an extremely high rate of recurrence even after a curative resection. Unfortunately, randomized controlled trials have revealed that fluorouracil-based or gemcitabine (Gem) alone regimen shows a modest benefit as the primary adjuvant chemotherapy for resected ACs. Meanwhile the addition of platinum compounds, such as cisplatin, to a Gem-based regimen demonstrated an improvement in survival of patients with locally advanced or metastatic biliary tract cancer including AC.

In previous reports, it has been demonstrated that excision repair cross-complementing gene-1 (ERCC1), dihydropyrimidine dehydrogenase (DPD), and human equilibrative nucleotide transporter-1 (hENT1) are useful biomarkers associated with the efficacy of platinum, 5-fluorouracil and Gem chemotherapies.

The objective of this study was to investigate the biomarker expression profiles of ERCC1, DPD and hENT1 for clarifying their value as a prognostic biomarker in AC patients after curative surgery.

Materials and methods: A total of 49 eligible patients who received a curative pancreaticoduodenectomy (R0 or R1), between January 1989 and December 2012 at Shimane University Hospital, were registered. Patients with the stage Tis or receiving any adjuvant chemotherapy were excluded from the analysis. Various clinicopathological factors, including the immunohistochemical expression of ERCC1, DPD and hENT1, were evaluated in correlation to disease recurrence and patient’s survival.

Results: The median recurrence-free survival (RFS) and overall survival (OS) were 24.5 months and 32.4 months, respectively. In multivariate Cox regression analysis on RFS, low DPD expression (DPDlow) (HR 8.18: 95% CI 1.71–46.3; p = 0.008) and combined ERCC1/DPD expression (ERCC1low/DPDlow vs. ERCC1high/DPDhigh: HR 135.6, 95% CI 11.8–1,940; p < 0.001, ERCC1low/DPDlow vs. either ERCC1low or DPDlow: HR 12.8; 95% CI 2.19–81.9; p < 0.001) were also identified as an independent risk factor of survival. However, intratumoral hENT1 expression has failed to show the prognostic value for disease recurrence and survival.

Conclusion: DPDlow and combined ERCC1low/DPDlow predicted early tumor recurrence and poor survival. Our study demonstrated that intratumoral expression profile of DPD and ERCC1 was an efficacious biomarker for predicting postsurgical survival in AC patients after curative surgery. DPD and ERCC1 expression could potentially serve as a therapeutic target for adjuvant therapy.

No conflict of interest.

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329. The impact of gemcitabine plus S-1 combination therapy in patients with highly advanced or recurrent pancreatic and biliary tract cancers
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Introduction: Chemotherapy with Gemcitabine (GEM) was regarded as the standard treatment for advanced pancreatic cancer (PC). In the GEST study, monotherapy with S-1, oral fluoropyrimidine, demonstrated non-inferiority to Gem in overall survival for locally advanced and metastatic PC. And Gem plus S-1 (GEM) combination therapy was reported superior to Gem in some retrospective studies. Also, GEM has produced promising results in phase II studies and is considered to be a promising regimen for the treatment of advanced biliary tract cancer (BTC). We have experienced 2 cases of advanced PC and BTC treated with GEM and reported the results and effectiveness.

Cases and results: Case1: 61-year-old man with locally advanced PC (cT4N3M0) invading common hepatic artery with abdominal para-aortic lymph node metastases. Concurrent chemoradiotherapy containing S-1, and subsequently GS therapy was administered. As the reduction of primary tumor and lymph node metastases was confirmed with FDG-PET/CT examination and the serum CA19-9 level was decreased remarkably (2018.2 → 20.1 ng/ml) after completion of 3 courses of GS, then pancreatoduodenectomy with partial resection of portal vein were achieved (pT2N0M0;pStage2). Adjuvant chemotherapy with Gem was started on an outpatient clinic. After 6 courses of this treatment, serum CA19-9 level was elevated (29.2 → 1035.3 ng/ml) and liver metastases were detected with CT examination, therefore the GS therapy was restarted. CA19-9 level was decreased gradually and the patient has been alive without disease progression for 13 months.

Case 2: 72-year-old male was presented with obstructive jaundice and liver dysfunction. Diagnostic workup revealed BTC (Bs,Bm,C) and hepatic-pancreaticoduodenectomy was performed. The surgical findings were T1(cT1a)Hinfa,Pancm1,PVcm1,N1M0;Stage II, and histopathological findings were moderately to poorly differentiated tubular adenocarcinoma, pT2(s)N0M0; fStageII. Three years after surgery, FDG-PET/CT examination revealed peritoneal dissemination and then GS therapy was administered. After completion of 11 courses of GS, abnormal accumulation which suggests recurrence was not detected with FDG-PET/CT examination and the patient remains alive for 3 years and 1 month after Surgery.

Conclusion: The two cases under study suggest that the combination therapy of GEM plus S-1 showed a higher efficacy than that of Gem monotherapy, and may be one of the effective form of chemotherapy for the treatment of highly advanced pancreatic and biliary tract cancers.
330. A surgical glue, cyanoacrylate-based, for the prevention of bilomas post major liver resection


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The ‘biloma’ is an encapsulated collection of bile outside the biliary tree, supported by a predominantly intrageneric biliary fistula. The incidence of bilomas post-hepatic resection is in the literature between 4–17%. In addition, with the advent of neoadjuvant chemotherapy in combination with biologic drugs, the incidence of bilomas increased significantly, reaching between 16 and 42%. Patients with post-operative bilomas have a higher risk of severe complications (54.3% vs 29.2%, P = 0.002), a prolonged postoperative hospital stay (29 days versus 14 days, p < 0.001) and a post-operative mortality (8.6% vs. 2.6%, P = 0.045) compared with patients without biliary fistula.

Based on literature and our experience the key factor in biliostasis seems to be the adhesive ability of any substance to the liver resection surface.

We, therefore, hypothesized to apply on the hepatic resection area the cyanoacrylate glue (Glubran 2), that exhibits high adhesive capacity in order to reduce the formation of biliary fistulas. Glubran 2 is a surgical glue of synthetic origin, for indoor and outdoor use, with haemostatic, adhesive, sealant and bacteriostatic properties.

Materials and methods: In 2013 at the National Cancer Institute of Naples, we performed 95 major liver resections, including 63 for metastatic colorectal cancer who underwent neoadjuvant chemotherapy. In all patients the surgical glue (Glubran 2) was applied, on the hepatic resection surface.

Results: No type of complication, related to the use of Glubran 2, has been highlighted. The incidence of bilomas was comparable to that reported in the literature (11%) and lower than 21% incidence reported in our experience in the last two years.

Conclusions: The use of Glubran 2 proved to be free from complications, and has significantly reduced the incidence of bilomas in our series.

No conflict of interest.

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331. Neoadjuvant folfitri + bevacizumab in patients with resectable liver metastases from colorectal cancer: Results from a phase 2 trial and comparative analysis of early PET/CT scan vs RECIST criteria in predicting outcome

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Background: Preoperative treatment of resectable liver metastases from colorectal cancer (CRC) is a matter of debate. The aims of this study were to assess the feasibility and activity of bevacizumab plus FOLFIRI in this setting and to explore the role of PET/CT with (18)F-FDG in predicting the efficacy of treatment and to compare it to the standard dimensional Response Evaluation Criteria In Solid Tumors (RECIST) response.

Methods: Thirty-nine patients with resectable liver-confined metastases from CRC were enrolled from 2007 to 2009. They received bevacizumab followed by irinotecan, leucovorin, 5-fluouracil. A single-stage, single-arm phase 2 study design was applied with 1-year progression-free rate as the primary end point. PET/CT evaluation was performed before and after 1 cycle of treatment. For each lesion, the maximum SUV and the TLG were determined. A ≤50% change from baseline was used as a threshold for significant metabolic response for maximum SUV. Standard RECIST response was assessed with CT after 3 months of treatment. Pathologic response was assessed in patients undergoing resection. The association between metabolic and CT/RECIST and pathologic response was tested with the McNemar test; the ability to predict progression-free survival (PFS) and overall survival (OS) was tested with the Log-rank test and a multivariable Cox model.

Results: Objective response rate was 66.7%. Of these, 37 patients (94.9%) underwent surgery, with a R0 rate of 84.6%. Five patients had a pathological complete remission (14%). Out of 37 patients, 16 (43.2%) had at least one surgical complication. At 1 year of follow-up, 24 patients were alive and free from disease progression (61.6%). Median PFS and OS were 14 and 38 months, respectively. Above the enrolled patients 33 underwent PET/CT evaluation. After treatment, there was a notable decrease of SUV and TLG. Early metabolic PET/CT response had a stronger, independent and statistically significant predictive value for PFS and OS than both CT/RECIST and pathologic response at multivariate analysis. The predictive value of CT/RECIST response was not significant at multivariate analysis.

Conclusion: Preoperative treatment of patients with resectable liver metastases from CRC with bevacizumab plus FOLFIRI is feasible. PET/CT response was significantly predictive of long-term outcomes during preoperative treatment and its predictive ability was higher than that of CT/RECIST response after 3 months of treatment. Such findings need to be confirmed by larger prospective trials.

No conflict of interest.

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332. The Charlson – age comorbidity index (CADI) predicts early mortality following surgery for pancreatic cancer

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Background data: Although surgical resection represents the only hope for cure in pancreatic cancer, it is associated with significant morbidity and mortality. Furthermore, in some patients disease progression occurs very early after surgery and no tangible benefit is seen from the operation. Identification of pre-operative predictors of death within the first year of surgery could help in the counseling of patients diagnosed with pancreatic cancer.

Methods: Retrospective study on patients who underwent resection for pancreatic adenocarcinoma over an 11-year period (2002–2012). Age-adjusted comorbidity index (CADI) was calculated and logistic regression models were used to determine predictors of mortality within 1-year of surgery. Kaplan Meier curves and Cox proportional hazards models were developed to determine hazard ratios on survival.

Results: Surgery with curative intent was performed in 497 patients: 136 (27%) died within the first year. A CADI score greater than 4 was predictive of increased length of stay (p < 0.001), post-operative complications (p = 0.042), and mortality within 1-year of pancreatic resection (p < 0.001). A CADI score of 6 or greater increased 3-fold the odds of death within the first year.

Conclusion: CADI is useful to predict outcome after pancreatic resection for pancreatic cancer. Patients with a high CADI score have less than 50% likelihood of being alive 1 year after surgery. This information should be used when considering the appropriateness of pancreatic resection in patients with multiple comorbidities.
333. Health-related quality of life of patients with hepatocellular carcinoma submitted to multiple therapy modalities

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Background: Hepatocellular carcinoma (HCC) is a major health problem worldwide. The main goal of treatment has been overall and disease free survival. Recently, interest has been given to the preservation of health related quality of life (QoL) of HCC patients. The main goal of this study was to evaluate the QoL of HCC patients submitted to multiple treatment modalities.

Methods: A nonrandomized, prospective data collection with a cross-sectional analysis of QoL was performed. QoL scores were obtained using the Functional Assessment of Cancer Therapy Hepatobiliary (FACT-Hep) Questionnaire.

Results: 34 patients completed the assessment. The mean age at diagnosis was 62.6±11.37 years. Chronic liver disease was present in 82.4% of patients. The most frequent etiologies of underlying liver disease were alcohol (44.1%), hepatitis B (32.3%) and hepatitis C infection (20.6%). QoL was related to Child-Pugh stage although the results were not statistically significant (p = .101), social/family well-being showed significant differences (p = .024). Comparison of QoL by etiology of HCC revealed significant differences in FACT-Hep (p = .044), FACT-G (p = .016) and functional well-being (p = .025) scores. There were no statistically significant differences in QoL between patients submitted to curative, palliative or symptomatic treatments (p = .650).

Conclusions: QoL evaluation should be considered alongside treatment response in HCC patients. Although several factors, not related to treatment, may reduce the QoL of these patients, in order to clarify the optimal strategies in the treatment approaches of HCC patients, it is expected that QoL be included as an end point in treatment algorithms of hepatobiliary multidisciplinary oncological boards.

No conflict of interest.

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334. Does the pre-operative C-reactive protein or neutrophil-lymphocyte ratio predict survival after resection for pancreatic cancer?

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Background: Pancreatic cancer remains a leading cause of cancer mortality in the UK with 5-year survival only increasing from 2% to 3.6% in the past 30 years. Only 20% of new cases are staged as having disease amenable to curative pancreaticoduodenectomy (PD). In these patient outcome remains poor with only 15% 5-year survival. Better disease sub-stratification may allow identification of patients most likely to gain survival benefit from PD. Patient inflammatory response has been linked with overall survival in a number of cancers and so may be useful in sub-stratifying patients considered for PD. We systematically reviewed the literature to determine the prognostic significance of C-reactive protein (CRP) and neutrophil-lymphocyte ratio (NLR).

Methods: A literature search of Medline, EMBASE and CINAHL was performed using the PRISMA guidelines, to identify studies which analysed the association between high or low pre-operative CRP or NLR and survival outcomes after PD for pancreatic cancer. Bibliographies of identified papers were used to identify any further studies of interest. The primary outcomes assessed was overall survival, disease free survival and cancer-specific survival. Quality of studies was assessed using the GRADE criteria.

Results: 327 articles were identified of which 10 were included for final review. Total population studied comprised 807 patients. Six studies analysed the prognostic significance of CRP (n = 485) while eight studied NLR (n = 685). All studies analysing CRP showed a trend to longer survival in patients with lower CRP with 3 demonstrating CRP to be an independent predictor of survival on multivariate analysis. NLR was also shown to predict longer overall or disease free survival in all but one of the studies analysed with three achieving statistical significance and two demonstrating NLR to be an independent predictive factor.

Conclusions: CRP and NLR are associated with survival outcomes after resection of pancreatic cancer. They may therefore be useful pre-operative, prognostic adjuncts in the sub-staging of resectable pancreatic cancer. The lack of statistical significance in some studies may be explained by the heterogeneity of the study populations regarding cancer stage, co-morbidity and adjuvant treatment used. Further, prospective studies are warranted to validate the prognostic significance of raised inflammatory markers in pancreatic cancer.

No conflict of interest.

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335. Single institutional experience of pancreatic cancer surgical treatment

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Background: Pancreatoduodenectomy is the procedure of choice for cancer of pancreas and periampullary zone. Contributions of combined surgical operations, including pancreatectoduodenectomy are rare.

Materials and methods: From 1987 to 2013 in Rostov Research Institute of Oncology for cancer of biliopancreatoduodenal zone, as well as for locally advanced cancers 585 pancreatectoduodenectomies and 25 total pancreatectomies have been performed. Pancreatectoduodenectomies were performed for cancer of the head of the pancreas — 264 (45.1%), the major ductal papilla — 178 (30.4%), duodenum cancer — 19 (3.2%) and for the cancer of distal part of common bile duct — 25 (4.3%), malignant tumors of the stomach — 48 (8.2%), colon — 39 (6.7%) kidneys — 7 (1.2%) and retroperitoneal tumors — 5 (0.9%). Histological examination revealed adenocarcinoma in 96% of cases, neuroendocrine cancer was in 2% and undifferentiated carcinoma was estimated in 2%.

Results: Since 2006, 227 pancreatectoduodenectomies have been performed. On reconstructive stage of pancreatectoduodenectomy we predominately formed pancreaticojejunostomy enterosynostosis ‘end-to-side’. Postoperative complications were noted more than in 40% of patients. 11 patients died. Postoperative mortality was 4.8%. In case of total pancreaticojejunostomy postoperative period was complicated in 23 (92%) patients. 8 patients (32%) died. After pancreatectoduodenectomy for ductal carcinoma of the pancreatic head 3 and 5 years lived 21.3% and 6.1% of patients, respectively. After total pancreatectomy 5 year survival rates were not observed. After performing pancreatectoduodenectomy for cancer of major ductal papilla 3 and 5 year survival rates were respectively 31.9% and 18.3%.

Conclusions: Survival after pancreatectoduodenectomy for pancreatic cancer, as well as after pancreatectoduodenectomy for invading tumors from adjacent organs at the present stage of development of surgery are
336. Number of nodules, Child-Pugh status, margin positivity and microvascular invasion but not tumour size are prognostic factors of survival after liver resection for multifocal hepatocellular carcinoma
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**Background:** Presently, the role of liver resection (LR) for multifocal hepatocellular carcinoma (HCC) remains controversial. However in many regions world-wide, LR remains the only treatment modality available to such patients which offers the possibility of long-term cure. To determine the outcomes and prognostic factors of patients with multifocal HCC after LR.

**Methods:** This is a retrospective analysis of 110 patients who underwent potentially curative LR for pathologically proven multifocal HCC between 2000 to 2011.

**Results:** The median age was 64 (range, 18–84) years and there were 88 males (80.0%). Sixty-one patients underwent a major hepatectomy and the overall postoperative mortality was 1.8%. Sixty-eight patients had liver cirrhosis of which 58 were Child’s A and 10 were Child’s B. The 1- and 5-year overall survival (OS) was 82% and 44% respectively. The corresponding 1- and 5-year recurrence-free survival (RFS) was 57% and 19%, respectively. Multivariate analysis demonstrated that number of nodules (>3), margin positivity, Child-Pugh status and presence of microvascular invasion were independent prognostic factors of OS.

**Conclusions:** LR followed by treatment of recurrences may result in reasonable long term survival and should be considered in a selected group of patients with multifocal HCC. Number of nodules (>3), margin positivity, Child-Pugh status and presence of microvascular invasion but not tumour size were independent predictors of OS. These findings have potential implications on the AJCC staging for multifocal HCC.

No conflict of interest.

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337. Imaging patterns of hepatocellular carcinoma and response to Yttrium 90
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**Background:** Hepatocellular carcinoma (HCC) exhibits a variable response to Yttrium 90 (90Y) radioembolization. Imaging response assessment criteria in transarterial therapies appear to display an imperfect correlation with survival. We sought to evaluate whether specific imaging patterns of HCC at presentation may predict tumor response. Additionally, we assessed specific tumor features and their relation with overall survival (OS) and progression-free survival (PFS).

**Methods:** A retrospective cohort of 16 patients with HCC diagnosis selected for 90Y radioembolization was reviewed. Computed tomography (CT) images before and after treatment were assessed for specific tumor features. Tumor response was graded according to mRECIST, EASL and Choi criteria. HCC characteristics associated with OS and PFS were documented.

**Results:** Sixteen patients were included in the study, with a median follow-up of 26.2 months. The median overall and post-radioembolization survival was 37.5 months and 22.6 months respectively. Tumor size (p = 0.046) and number of tumor nodules (p = 0.029) recorded at baseline significantly changed with radioembolization. No complete imagingological responders were recorded according to any criteria. Both mRECIST and EASL criteria reported a majority of stable disease (61.5% and 53.8%, respectively). Choi response criteria classified most patients as responders (69.2%). Radiologic tumor response according to imaging assessment criteria exhibited no relation with patient survival.

**Conclusions:** HCC imaging features at presentation may predict tumor response to radioembolization. Prospective trials with larger cohorts are necessary in order to confirm and further extend the assessment of radioembolization response and related predictors and to determine tumor characteristics related to PFS and OS.

No conflict of interest.

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338. The role of receptor activator of nuclear factor kappa-B (RANK) – signaling in pancreatic adenocarcinoma
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**Background:** Receptor Activator of Nuclear Factor kappa-B (RANK) and its ligand (RANKL) are well-described players in osteometabolism, immunomodulation and carcinogenesis. RANKL is known to induce Cyclooxygenase 2 (COX2). The role of RANK, RANKL and their COX2-dependency in human Pancreatic Ductal Adenocarcinoma (PDAC) has not been described so far.

**Materials and methods:** Protein expression of RANK, RANKL and COX2 was analyzed by western blot and qRTPCR. A lentiviral si-RNA mediated knockdown of RANK was performed in two previously described pancreatic cancer cell lines BxPc3(RANK−KO) and Panc-1(Panc1[RANK−KO]). Proliferation rates of cells were determined by established MTT assays. Cell fractioning was performed and evaluated via Western blots. Cytochemical staining for RANK and RANKL was performed in both cell lines and evaluated via confocal microscopy. Distribution of RANK and RANKL expression was analyzed via immunohistochemical staining (IHC) in tissue specimens of 34 PDAC patients.

**Results:** RANKL, RANK, and COX2 were expressed in western blot and qRTPCR. A lentiviral si-RNA mediated knockdown of RANK was performed in two previously described pancreatic cancer cell lines BxPc3(RANK−KO) and Panc-1(Panc1[RANK−KO]). Proliferation rates of cells were determined by established MTT assays. Cell fractioning was performed and evaluated via Western blots. Cytochemical staining for RANK and RANKL was performed in both cell lines and evaluated via confocal microscopy. Distribution of RANK and RANKL expression was analyzed via immunohistochemical staining (IHC) in tissue specimens of 34 PDAC patients.

**Results:** RANKL, RANK, and COX2 were expressed in PDAC cell lines on mRNA- and protein level. Panc-1 cells showed high levels of RANK but low levels of COX2 expression. In contrast, BxPc3 cells showed low levels of RANK-expression but high levels of COX2 expression. COX2 is inducible on mRNA- and protein level. Panc-1 cells showed high levels of RANK but low levels of COX2 expression. In contrast, BxPc3 cells showed low levels of RANK-expression but high levels of COX2 expression. COX2 is inducible on mRNA- and protein level. Panc-1RANK-KO cells showed increased proliferation rate significantly compared to a non-malignant reference pancreas cell line after RANKL stimulation (p < 0.05). Panc-1RANK-KO and BxPc3RANK-KO cells did not respond to RANKL stimulation. Tissue IHC staining of PDAC specimen (n = 34) revealed nuclear RANKL and cytoplasmic RANK protein expression. RANK expression correlates with high T-stage (p = 0.001). Cytoplasmic RANK expression is associated with poor survival (p = 0.004).

**Conclusion:** This is the first study to report the role of RANK and RANKL in PDAC. The RANK pathway is activated upon RANKL stimulation in PDAC cell lines, resulting in target gene expression such as
COX2. Interestingly, RANKL showed nuclear expression in pancreatic cancer cells suggesting a potential role in transcription. The presence of RANK in tumor might predict stage of disease and patient prognosis. **No conflict of interest.**

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339. Long-term outcomes after hepatic resection for hepatocellular carcinoma. A single-centre experience

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**Background:** Hepatic resection is the mainstay of the curative treatment of primary hepatic tumors, with constantly improving short and long term results. Radiofrequency ablation (RFA)-assisted liver resection is a relatively new method of transection of the liver parenchyma with favorable intra- and perioperative results. The aim of this study was to investigate the oncological efficacy (long term overall survival/OS and disease free survival/DFS) and to confirm the favorable short term morbidity and mortality.

**Materials and methods:** Between May 2004 and January 2007, 28 patients underwent 32 resections with removal of 50 hepatocellular carcinoma (HCC) lesions at the First Department of Surgery, University of Athens Medical School, Athens, Greece.

**Results:** Thirty-day morbidity and mortality were 42.8 and 0% respectively. Blood transfusion required 28.5% of the patients. The median hospital stay was 16.5 days (range 5–34). The 1- and 3-year OS were 92.9 and 65.7%, respectively. The 1- and 3-year DFS were 62.3 and 54.6% respectively. No patient developed metastatic disease or local recurrence at the margin site. Twelve patients (42.5%) developed in the liver recurrence away from the resection area.

**Conclusion:** RFA-assisted liver resection is a safe and oncologically efficacious method for the surgical treatment of HCC with results comparable to other surgical techniques. **No conflict of interest.**

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340. Surgical treatment of cancer of the gallbladder

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**Introduction:** Late diagnosis and prognosis; cancer of the gallbladder always requires the interest of different medical and surgical teams.

**Aim of the study:** Evaluate the preliminary results and complications of cancer surgery of the gallbladder in our service.

**Materials and methods:** This is a prospective study from September 2009 to April 2014 and 314 cases were identified. This study includes:

- epidemiological — panic patients (age-sex-location and tumor staging) therapeutic — panic: gesture — curative palliative, morbidity, mortality

**Results:**

- female: 230 femmes (73%) of 84 men (27%).
- Average 62-year age.
- reason for consultation: right upper quadrant pain and jaundice

Hundred and twenty-eight patients were operated on, the gesture was:

- Curative: 59 patients (46%).
- Workaround: 48 patients (37%) immediate post-operative morbidity minimal.
- immediate post-operative mortality: two cases.

**Conclusion:** Improved prognosis of cancer of the gallbladder only be done by taking early and specialized load and better diagnostic and therapeutic mastery of this type of cancer. **No conflict of interest.**

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341. ypT0, ypN0, ypM0 resection in locally advanced pancreas ductal adenocarcinoma with synchronous liver metastases, following neoadjuvant chemoradioimmunotherapy and surgery

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**Background:** Pancreatic ductal cancer is a highly lethal disease which is refractory to chemotherapy or radiation. Only 10–20% of patients are resection candidates as the majority have locally advanced and/or metastatic disease at presentation. There has been some advance in borderline resectable cases treated in the neoadjuvant fashion, however surgery to the primary in the presence of metastatic disease is still considered an absolute contraindication. We would like to illustrate our recent experience deploying multiple axes of therapy combining systemic cytotoxic chemotherapy, radiation and immunotherapy to achieve complete pathological response as proven by surgical resection of the primary and metastatic sites.

**Materials—Methods—Results—Case report:** A 72 year-old previously fit and well female was reviewed for symptoms of abdominal discomfort, backache and weight loss. Initial ultrasound (US) and subsequent staging by CT, FDG-PET, laparoscopy and EUS indicated a T4 N1 cancer in the head of the pancreas. The patient underwent laparotomy with view to pancreateoduodenectomy in February 2012. Exploration showed the common hepatic artery and the coeliac axis to be encased by tumour and the patient was deemed inoperable as the results of pancreateoduodenectomy for cancer requiring arterial resection are uniformly reported as poor. Two weeks after recovery from explorative surgery the patient was randomized into a clinical trial of Gemcitabine with or without heat killed whole cell Mycobacterium obuense (IMM101 – NCT 01303172), and allocated to the active arm. CT scanning after 12 weeks showed a RECIST criteria partial response in both the primary and liver metastases. In August 2012, with a Ca19.9 of 38000 U/L, nab-paclitaxel (Abraxane) was added to Gemcitabine & IMM101. In view of the dramatic response, consolidation chemoradiation to the primary tumour and vascular encasement followed in February 2013 to a dose of 59.4 Gy in 33 fractions with concomitant capcitabine; the patient continued with immunotherapy throughout radiation treatment. Four months post chemoradiotherapy, CT and PET scanning showed no active FDG uptake in either primary tumour or liver, and that the primary tumour appeared to have regressed from the coeliac and common hepatic artery but maintained involvement of the portomesenteric junction. In November 2013 the patient underwent a Whipple’s procedure and a left lateral hepatectomy. Detailed histopathological analysis showed a complete pathological response to neoadjuvant therapy in both the primary site and liver metastasis.

**Conclusion:** Complete pathological regression of both primary pancreatic and metastatic disease is exceptionally rare to achieve and a combination of immunotherapy with chemotherapy and/or radiation would potentially aim to increase resection rates and survival outcomes.
343. Irreversible electroporation for the treatment of unresectable, locally advanced pancreatic cancer in the Leiden University Medical Centre; a phase I/II study
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Background: An important amount of patients presenting with pancreatic cancer are diagnosed in stage III (locally advanced pancreatic cancer (LAPC)) due to vascular involvement. In some cases this unresectability is decided at exploratory laparotomy. At present in these patients no local therapy is applied during surgery. Irreversible electroporation (IRE) is a new technique for local ablation of tumours. It uses high voltage electric pulses to provide irreversible poration of the cell membrane. Since its effect is due to ultrashort pulses, production of heat is limited and it therefore maintains important collagen structures like vessel/bowel walls and bile ducts.

Materials and methods: A prospective phase I/II study was started in November 2013, evaluating the safety and feasibility of IRE in patients undergoing an exploratory laparotomy for locally advanced pancreatic cancer, that appears unresectable during surgery. 15 patients are to be included. Local progression free survival, tumour down staging, immunologic tumour response, NRS pain scores and length of hospital stay are monitored. The first 5 patients are videotaped during treatment with irreversible electroporation. Pre- and postoperative imaging is compared, up to 9 months follow-up. We will present these first data.

Results: Four patients have been treated up to now. All IRE procedures were uncomplicated and no adverse events were reported. CT scans on the 5th postoperative day as well as after three months show multiple hypo-intense areas where the needles were placed. No thrombosis of hepatic arteries and veins and no damage to bile ducts was seen. The mean length of postoperative stay in the hospital was nine days.

Conclusions: Up to now irreversible electroporation in patients with locally advanced, unresectable, pancreatic cancer appears to be safe and feasible.

No conflict of interest.

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344. Impact of the type of venous reconstruction and venous tumour infiltration in portal vein resection for borderline resectable pancreatic cancer
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7 UK Vascular Resection for Pancreatic Study Group, United Kingdom

Background: Involvement of the porto-mesenteric veins in borderline resectable pancreatic cancer is no longer a contraindication to surgery. However, there is no consensus on the ideal method of vascular reconstruction. The effect of depth of tumour invasion of the vessel wall on clinical outcome is also unknown. We aim to assess the morbidity, in-hospital mortality and overall survival between the different types of venous reconstructions (primary closure (PC), end-to-end anastomosis (EA) and interposition graft (IG)) as well as the impact of the depth of tumour infiltration of the vessel wall on histological examination on survival.

Methods: This is a UK multicenter retrospective cohort study on all consecutive patients with T3 adenocarcinoma of the head of the pancreas undergoing pancreaticoduodenectomy with vein resection (PDVR) between December 1998 and June 2011. Kaplan–Meier methods were used to estimate median survival, log-rank test to compare survival estimates and Cox models to describe factors associated with survival.

Results: 230 patients were included of whom 129 (56%) had PC, 65 (28%) had EA and 65 (16%) had IG. There was no difference in morbidity (26 (20.2%) vs 14 (21.5%) vs 9 (25%), p = 0.82) or in-hospital mortality (6 (4.7%) vs 3 (3.1%) vs 2 (5.7%), p = 0.80) between the 3 groups. Median survival was 18.84 (PC), 27.6 (EA) and 12.96 (IG) months, with no significant difference between the groups when adjusted; PC vs EA (adjusted Hazard Ratio (aHR) 0.85, p = 0.45) and PC vs IG (aHR 0.95, p = 0.82). Details of histological vein involvement were available for 124 patients. 64 (51.6%) had histological evidence of vein involvement, which was superficial and limited to the tunica adventitia in 38 (59.4%). There was no difference in median survival between patients with and without histological vein involvement (20.9 vs 22.8 months, p = 0.48 log-rank test; aHR 0.95, p = 0.84).

Conclusion: The presence and depth of tumour involvement of the vein does not impact survival and there is no difference in morbidity and mortality between the different types of venous reconstruction.


No conflict of interest.

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345. Cystic bile duct dilatation and malignant transformation risk (a west Algerian series)
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Introduction: Cystic dilatation of the biliary tract is a rare disease usually discovered in the pediatric age, with female predominance in Asian people, however 20–25% of patients have their disease diagnosed in adulthood. Its incidence is 1/200,000 inhabitants, it is often associated with an abnormality of the bilipancreatic junction and its evolution can be characterized by many serious complications essentially risk of malignant transformation in bile duct tracts.

Materials and methods: From July 2008 to march 2014 twenty patients were operated in the service for congenital cystic dilatation of the bile ducts. From these, three patients presented a carcinoma.

Results: There were fifteen women and five men, with ages from 20 to 75 years. Five patients underwent a cholecystectomy previously. In all patients the diagnosis was made preoperatively (CT, MRI). There were types I, IV, V (Caroli’s disease), and VI (isolated from cystic duct dilatation) of Todani.

Surgical management was as follows: 18 resections of common bile duct and reconstruction using an Y jejunal loop (with resection of hepatic segments 4 and 5 and hepatic pedicle node dissection in a patient with
associated gallbladder carcinoma), one left hepatectomy (Todani type V) and one cholecystectomy (Todani type VI).

Four patients presented postoperative external biliary fistula requiring reoperation in one case. The average hospital stay was 14 days, with extreme of 18 days. Histological results showed:

-Tis adenocarcinoma in a patient (Todani type VI)
-Fibrolamellar hepatocellular carcinoma in the patient operated for Caroli disease (Todani type V)
-pT2N0M0 gallbladder carcinoma in the patient who underwent segmentectomy 4 and 5 associated to the bile duct resection (carcinoma was diagnosed preoperatively).

Discussion: 15% of patients in our series presented a carcinoma. No more surgery was required for the type VI patient since the carcinoma was pTis. The two other patients are alive with no recurrence, respectively with 18 and 25 months follow up.

Conclusion: Congenital cystic dilatation of the biliary tract is a condition rarely found in adults (only 8% after 40 years), female (1/4). Abdominal pain, jaundice, and cholangitis are the main modes of revelation of this disease. Biliary carcinoma risk, justifies the systematic surgical resection of the extrahepatic bile duct with biliodigestive reconstruction.

No conflict of interest.

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346. Cancer of the gallbladder and abnormal biliopancreatic junction

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Introduction: Abnormalities biliopancreatic junction are considered pre disposantes lesions of the biliary tract cancers; However, they remain rare in our daily practice.

Aim of the work: Demonstrate through a notice displayed a typical demonstration of this association cases.

Material: This is a young female patient of 36 years with cystic dilatation of the common bile Todani type I, associated with a tumor of the gallbladder bud.

Results:

We operated this patient, surgical exploration include:

- A gallbladder with a malignant tumor bud look at his background.
- An inflammatory hepatic pedicle completely distorted by the presence of a large choledochal cyst.
- Several nodes of the hepatic pedicle whose extemporaneous histological analysis benign.
- Absence of liver metastases or carcinomatosis nodules.
- Is performed:
  - A puncture the cyst with intraoperative cholangiography showing a cyst type 1 Todani saaciforme kind.
  - Retro duodeno-pancreatic separation showing the absence of inter-aortic lymphadenopathy-cellar.
  - Resection of choledochal cyst.
  - Bisegmentectomy IVb-V.
  - Flushing hepatic pedicle.
  - Jejunal anastomosis hepaticojejunal.

Conclusion: The risk of malignant cystic dilatation of the common bile duct, as well as its association with cancer of the gallbladder is still valid, by adopting a vigilant diagnostic and therapeutic radical attitude vis-à-vis the disease.

No conflict of interest.

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347. Hepatic trisegmentectomy IV, V and VI for gallbladder cancer

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Introduction: Radical approach in the surgical treatment of cancer of the gallbladder is the only way to improve the survival of this type of cancer known poor prognosis.

Materials and methods: It is an old woman of 65, with pain in the right upper quadrant without jaundice or palpable mass, abdominal CT scan did reveal the presence of a tumor of the gallbladder extending segments IV and V liver without invasion pedicle or peritoneal carcinomatosis signs.

We decided to make this patient.

Result:

Surgical exploration was found:

- Gallbladder seat of a tumor process at its bottom.
- Invasion by contiguity of segment IV and V.

The intraoperative ultrasound — found an extension to the segment VI.

Hepatic pedicle — free.

Absence of liver metastases.

Absence of peritoneal carcinomatosis. We proceed to:

rétroduodeno-pancreatique — separation to ensure the absence of lymphadenopathy inter-aortitis cellar.

Full — dissection of the hepatic pedicle.

trisegmentectomy — IV, V and VI.

pathological — extemporaneous examination of the overlap of the cystic duct returned without signs of neoplastic infiltration to a conservative attitude towards the common bile duct.

The postoperative course was uneventful.

current year survival without recurrence.

Discussion: We see in this case:

-extension of flooding to the segment VI.

hepatic pedicle — free despite the importance of the extension of the hepatic side slope.

absence of lymphadenopathy inter-aortitis cellar.

These two factors have led to a radical and a possibility of sizeable resection approach.

Conclusion: Improved prognosis of cancer of the gallbladder only be done by taking early and specialized load and better diagnostic technique mastery and especially this type of cancer whenever the opportunity for curative resection appears.

No conflict of interest.

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348. Hepatocellular adenoma in male patients

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Background: Hepatocellular adenomas (HCA) are rare benign tumors in the liver that occur predominantly in women taking oral contraceptives. Presentation in male patients is even rarer with scarce information in the literature. We describe a series of cases of HCA's in male patients treated at a tertiary referral hospital.

Methodology: Male patients that presented hepatocellular adenomas submitted to liver resection at Paul Brousse Hospital (PBH) were identified. Results of surgical treatment with focus on malignant transformation and hemorrhage were analyzed.
Results: A total of 17 male patients were submitted to hepatic resections due to HCA at PBH between 1981 and 2013. Median age was 45 years (18–72). The median size of the lesions was 9 cm (1.2–13). Two patients (11.8%) were exposed to androgenic/anabolic steroids. Sixteen (96.1%) patient shad a single lesion.

Three patients (17.6%) with tumors size of 8.7, 10 and 11 cm presented with clinically evident hemorrhage. Two of them were treated with embolization and posterior surgery. The third one was treated by immediate surgical resection.

Eight patients were treated by liver segmentectomy, five by right hepatectomy, one by atypical resection, one by left heptectomy, one by right hepatectomy plus segment I resection, other by right heptectomy extended to segment IV under total liver exclusion and extracorporeal circulation.

Pathological examination disclosed malignant transformation in 3 patients (17.6%) with tumors size of 4.5, 9, and 11 cm.

Hemorrhage was present in 13 pathologic specimens (76.5%) with median tumor size of 10 cm (1.9–13).

Conclusions: Hepatocellular Adenomas are a rare event in male patients with only 17 cases surgically resected in a referral center in a period of 32 years.

Surgical resection is indicated due to the risk of malignant transformation (17.6%) and hemorrhage (clinically evident – 17.6%, pathological specimens – 76.5%).

No conflict of interest.

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350. The role of palliative surgery in unresectable pancreas cancer: Retrospective study
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Background: The patients with advanced pancreas cancer may not be amenable to curative surgery and be treated with chemotherapy or palliative treatment. These groups of the patients suffer from debilitating symptoms associated with pancreas cancer, which makes their quality of life miserable. In this retrospective study, authors tried to show efficacy of palliative pancreatectomy for the patients, who are regarded as having unresectable pancreas cancer at initial diagnostic work up.

Material and methods: From May 2003 to August 2013, all patients who were diagnosed as pancreas ductal adenocarcinoma were evaluated through medical records. The total 546 patients were divided into four groups; chemotherapy only (Group 1; 246), referring to terminal care center hopeless (Group 2; 109), curative surgery (Group 3; 123), and palliative resection (Group 4; 68). In addition, subgroup analysis was done in palliative surgery group 4, divided into the intended and the unintended. Through medical records, diagnosis, date of diagnosis, date and name of operation, regimen and duration of chemotherapy, usage of pain killer including duration and kinds of drugs, results of radiologic studies and pathologic reports. SPSS 20.0 was used for statistical analysis.

Results: There were no differences in demographics and characteristics among the four groups except for age. The mean survival duration of Group 1, 2, 3 and 4 were 244.3 ± 221.3, 108.7 ± 96.6, 568.3 ± 426.0 and 511.9 ± 580.2 (p < 0.001). In aspect of using opioid, Group 3 and 4 were significantly lower compared to Group 1 and 2 (p < 0.001). Between group 3 and 4, there were no significant differences in length of hospital stay, frequency of readmission and using opioid. In subgroup analysis of group 4, there were no significant differences in all parameters including survival duration and rate of using opioid.

Conclusion: Palliative pancreatectomy in pancreas cancer improved patients’ survival duration and quality of life. No conflict of interest.

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351. Stromal hyaluronan in pancreatic cancer
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Introduction: Pancreatic cancer is a disease with poor survival due to late presenting symptoms, aggressive growth behaviour and poor response to chemotherapy. Hyaluronan is expressed in the voluminous pancreatic cancer stroma, and has been proposed to promote malignant properties. In this study stromal hyaluronan in pancreatic cancer is studied in vivo and pre- and postoperative serum levels of hyaluronan is measured.

Method: The expression of hyaluronan in the pancreatic cancer stroma was examined in 23 patients that underwent surgery for pancreatic cancer and compared with the expression in healthy pancreatic tissue from 10 controls. Circulating hyaluronan was measured in serum pre- and postoperatively and compared with healthy controls.

Results: Low expression of hyaluronan in the pancreatic cancer stroma was associated with shorter postoperative survival. Circulating hyaluronan was significantly higher in serum from pancreatic cancer patient when compared with healthy individuals.

Discussion: The stromal deposition of hyaluronan affects the outcome in pancreatic cancer. Further, it is detected in serum and has a potential as a tumor marker. This study highlights the importance of the tumor stroma in pancreatic cancer.

No conflict of interest.

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352. Prognostic factors predicting survival after resection of pancreatic neuroendocrine tumours
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Background: Pancreatic neuroendocrine tumours (pNETs) represent a rare entity compared to pancreatic adenocarcinoma. Although pNETs are predominantly associated with good prognosis, a subset of patients suffers from recurrence, requiring further treatment after initial curative resection. In other more common malignancies, predictors of recurrence such as lymph node ratio (LNR) or proliferation indices (Ki67, etc.) have extensively been investigated. The low incidence of pNETs and worldwide distribution of recently updated different staging systems (ENETS/UICC) induced us to create a regional database and reevaluate tissue slides for analyses of prognostic factors predicting survival and tumour relapse.

Material and methods: We performed a retrospective analysis of all surgically treated patients with pNET in the federal state of Salzburg (Austria) from 1997–2013. Clinicopathological data were compiled from a prospectively maintained database. Existing histopathological data was reevaluated by pathologists and complemented with immunohistochemical staining for proliferation markers as well as hormonal tumour activity. Prognostic factors predicting disease free survival (DFS) and overall survival (OS) after pancreatic surgery with curative intent were assessed through statistical analysis with SPSS.

Results: We included forty patients (female: n = 24) with a median age of 61 years (14–84). Grading by immunohistochemical staining with MIB-1/Ki-67 revealed 55% G1, 30% G2 and 15% G3 tumours. 83% of cases were classified as R0 resection, 25% showed positive lymph
nodes (N1). 10% of all patients underwent synchronous minor liver resection for hepatic metastasis. The median OS and DFS of our cohort were 25.9 and 21.1 months. The following factors showed significant association with survival: LNR, Ki67-index, resection margin status, grading, N- and L-status (all p < 0.05).

Conclusions: After surgical treatment of malignant pNETs, besides other known factors of recurrence, Ki67 and LNR are powerful predictors that might help to stratify patients for adjuvant treatment in prospective studies. In our opinion, radical resection with regional lymphadenectomy should be the standard procedure. Synchronous liver resection is feasible in selected patients. We plan to establish a nationwide, prospective, auditable databased for surgically treated pNETs in Austria. This would aid in further molecular and genetic analyzes of tumorigenesis as well as development of future multimodal treatment regiments.

No conflict of interest.

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354. A new potential target in pancreatic neuroendocrine tumours: Endoplasmatic reticulum stress pathway
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Background: Endoplasmatic Reticulum (ER) stress represents a highly conserved cellular defence mechanism, responding to perturbations of ER function. ER stress—related apoptotic cell death and its regulative mechanisms in human cancer imply new promising targets for anticancer drug development. So far, the involvement of ER-stress in pancreatic neuroendocrine tumor (PNET) carcinogenesis still remains unclear.

Material and methods: We analysed the expression pattern of three key players of ER-stress (CHOP, ATF4 and BIP/GRP78) through a human tissue microarray (TMA) of PNETs resected between 1997 and 2013. All cases were extensively characterized pathologically and clinically according to published guidelines.

Results: Forty-nine cases (29 female and 20 male) with PNET (40.8% immunohistochemically endocrine-positive) showed the following detailed clinico-pathological characteristics: G1-3 56.3—29.2—14.5%; pT1-4 39.8—23.4—32.7—4.1%; pN0-1 67.3—32.7%; pM0-1 79.7—20.3%. Immunohistochemical characterisation revealed a significant upregulation of CHOP, ATF4 and BIP in all cases compared to pancreatic control tissue. Furthermore, a partial significant shift of CHOP and ATF4 was noticed between the cytosol and the nuclei, where these act as transcription factors. Correlation analysis generally indicated a tendential association of clinicopathological data with localized expression of ER-stress associated proteins, especially BIP and CHOP were significantly associated with grading and pathological T-categories.

Conclusions: In summary, these three ER-stress members are upregulated in PNET, indicating the presence and involvement of the ER-stress pathway in this rare tumor entity. As ER-stress is able to support continuous proliferation and survival even under adverse micro environmental conditions in human tumorigenesis, the present data demonstrates an additional possible therapeutic anticancer option in PNETs.

No conflict of interest.

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355. Survivin expression in hepatocellular carcinoma: Its prognostic role in overall survival following a curative liver resection
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Introduction: Survivin is a member of the inhibitors of the apoptosis (IAP) family, involved in cell division regulation and inhibition of apoptosis. Overexpression of survivin has been found in many human malignancies usually accompanying more aggressive forms followed by worse outcomes. This study aimed to assess the potential prognostic role of survivin expression in hepatocellular carcinoma surgically treated. We also examine whether established prognostic markers (grade, vascular
356. Mast cells density positive to tryptase correlate with angiogenesis in pancreatic ductal adenocarcinoma patients undergone to surgery

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Background: Literature data suggest that cells such as mast cells (MCs), are involved in angiogenesis. MCs can stimulate angiogenesis by releasing of several pro-angiogenic cytokines stored in their cytoplasm. In particular MCs can release tryptase, a potent in vivo and in vitro angiogenic factor. Nevertheless few data are available concerning the role of MCs positive to tryptase in primary pancreatic cancer angiogenesis. This study analyzed MCs and angiogenesis in primary tumour tissue from patients affected by pancreatic ductal adenocarcinoma (PDAC).

Method: A series of 31 PDAC patients with stage T2N0M0 (by AJCC for Pancreas Cancer Staging 7th Edition) were selected and then underwent to surgery. Tumour tissue samples were evaluated by mean of immunohistochemistry and image analysis methods in terms of number of MCs positive to tryptase (MCDPT), area occupied by MCs positive to tryptase (MCAPT) microvascular density (MVD) and endothelial area (EA). The above parameters were related each to other and with the main clinic-pathological features.

Results: A significant correlation between MCDPT, MCDPT, MVD, EA group to each other was found by Pearson t-test analysis (r ranged from 0.69 to 0.81; p-value ranged from 0.001 to 0.003). No other significant correlation was found.

Conclusion: Our pilot data suggest that MC positive to tryptase may play a role in PDAC angiogenesis and they could be further evaluated as a novel tumoricidal biomarker and as a target of anti-angiogenic therapy.

No conflict of interest.

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357. Liver resection for hepatocellular carcinoma diagnosed patients who were under surveillance for liver diseases: A survival analysis

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Background: Hepatocellular carcinoma (HCC) has a poor prognosis since it rapidly progresses with its aggressive biological behavior and is usually diagnosed at an advanced stage. The majority of liver tumors develop in the background of chronic liver diseases, which makes a curative treatment more difficult. The aim of our study was to evaluate survival and to identify possible prognostic factors for survival of patients who were under surveillance for liver diseases and were diagnosed for HCC and underwent surgical treatment for a given period of time.

Materials and methods: In a period of 3 years (2011–2013) we retrospectively reviewed 45 patients who were under surveillance for liver diseases diagnosed with HCC. Patients received one of 3 initial surgical treatment modalities: hepatic resection, radiofrequency ablation and transarterial chemoembolization. The choice of treatment was based on the Child-Pugh classification and tumor staging.

Results: The mean age of the patients was 56±10 years. The 1-, 3-, and 5-year survival rates were 75%, 57%, and 50%, respectively. Initial symptoms, serum alpha-fetoprotein levels, presence of portal vein tumor thrombosis, Child-Pugh class, TNM stage, tumor size and the number and type of HCC were found to be independent prognostic factors.

Conclusion: This study provides helpful information in determining the survival outcomes and treatment strategies for HCC diagnosed patients who were under surveillance for liver diseases.

No conflict of interest.

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358. Echoguided hepatic resection for “ghost” colorectal metastases
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Background/aims: Hepatic metastases from colorectal cancer (CRC) are frequently missed at operation by simple inspection and palpation, even when correctly identified by preoperative imaging. The role of routi-

Methods: In a series of 83 histologically-confirmed CRC-related liver metastases, resection was performed using IOUS in 67 patients. Resections included formal heptectomies, segmentectomies, subsegmentectomies and non-anatomical hepatic wedge resections.

Result: IOUS demonstrated the presence and the location of 8 (10%) non-visible and impalpable lesions, with successful resection in each case. 5 out of 22 lesions under 1 cm of maximal diameter (23%) were occult to surgical evaluation; Among those nodules with maximal diameter between 1 and 5 cm, 3/59 (5%) remained surgically not visible. Finally, all of 22 tumours >5 cm in maximal diameter were palpable. Among pa-

Conclusions: The detection of non-visible and impalpable CRC liver metastases with IOUS is recommended, particularly for the diagnosis and localization of small metastases, avoiding blind resections and permitting a more selective resectional approach.

No conflict of interest.

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359. Neoadjuvant chemotherapy followed by hepatic resection for primarily resectable colorectal metastases
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Background: Hepatic resection in metastatic disease from colorectal cancer, performed in selected cases, offers the best chance for long-term survival. Neoadjuvant chemotherapy (NACT) has been advocated in some cases initially deemed irresectable, with few reports of the efficacy of such a strategy and the influence of the response to chemotherapy on the outcome of radical hepatic resection.

Patients and methods: Between December 1995 and June 2013, 114 patients with colorectal liver metastases underwent hepatic resection with curative intent. 32 of these patients, (14 males, 18 females, mean age: 58 ± 9 years; range: 40–77 years) deemed as ‘resectable’ cases at the time of diagnosis were treated with neoadjuvant chemotherapy. A 12-year survival analysis was performed. Chemotherapy included mainly oxaliplatin or irinotecan containing regimens for a median of 6 courses.

Results: 68 patients (60%) had synchronous and 46(40%) metachro-

Conclusions: The response to neoadjuvant chemotherapy is likely to be a significant prognostic factor affecting cancer-specific survival after radical hepatic resection for colorectal metastases.

No conflict of interest.

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360A. Assessment of tumour response and resection rates in unresectable metastatic colorectal liver metastases following cetuximab with neoadjuvant chemotherapy
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Introduction: Surgical excision of colorectal liver metastases (CLM) is potentially curative. Liver metastasis presents in 50% of colorectal cancer patients, of whom 80% will be inoperable at diagnosis. Only a minority of patients with liver metastases is amenable directly to surgery (20%).

Materials and methods: This is a prospective, randomized study of 152 patients with KRAS wild-type non-resectable liver metastases were randomly assigned to group A or B. 76 patients in group A, received cetuximab with FOLOX6 (54 patients) or FOLFIRI (22 patients) and 76 patients in group B, received FOLOX6 (46 patients) or FOLFIRI (30 patients). CT assessment for resectability was performed after every 4 cycles. Patients with resectable disease were offered surgery. The primary end point was response rate evaluation according to RECIST criteria. Secondary end points were R0 resection rate of liver metastases, perioperative morbidity and mortality.

Results: An objective response rate was noted in 48 (63.1%) patients in group A, and 34 (44.7%) patients in group B (difference 11%, 95% CI -8 to 30; odds ratio [OR] 1.62, 0.74—3.59; P < 0.01). 8 (10.5%) patients had radiological complete response (CR); 40 (52.6%) patients had partial response (PR) in group A; in group B, none had CR and all 34 (44.73%) patients had PR. The R0 resection rate was higher in group A than in group B [32 (42.1%) vs 22 (28.9%) patients] (difference 11%, 95% CI -8 to 30; odds ratio [OR] 1.62, 0.74—3.59; p=0.001).

Most common postoperative complication was liver failure (12.5% in group A and 18.1% in group B). Postoperative mortality was similar in both groups; 5.3% in group A and 2.6% in group B (difference 11%, 95% CI -8 to 30; odds ratio [OR] 1.62, 0.74—3.59; p=0.45). The median follow-up was 28 months, Median OS from were 25.7 in group A and 22.3 in group B (dif-

Conclusions: Combination chemotherapy plus cetuximab resulted in high response rates, rapid tumour shrinkage with a 100% R0 resection rate. The objective response rate was 63.1% with a PR & CR of 52.6% and 10.5% of the patients, respectively. 26.4% of patients had stable disease. Complete resection of previously unresectable colorectal liver metastas-

can be performed with minimal morbidity and mortality.

No conflict of interest.

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360. Surgical treatment of primary and metastatic liver cancer
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Background: Improvement of primary and metastatic liver cancer surgical treatment results.

Materials and methods: 248 patients with primary and metastatic liver cancer were radically operated in Rostov Research oncological Institute. There have been 97 right-side hemihepatectomies (21 of them were extended), 24 left-side hemihepatectomies, segmentectomies, bisegmentectomies, and 127 atypical liver resections were made. 24 patients were
re-operated, from liver re-resection, until extended hemihepatectomy. There were 124 operations made on metastatic liver cancer, 63 of them were single-step. 28 operations were made in two stages. At first, the primary tumor was removed, than, within 1.5 – 4 months, operation on liver was made. The majority of single-step combined operations were made on metastatic colorectal cancer (combined hemihepatectomies and abdomino-perineal resections). In 4 cases of metastatic stomach cancer gastrectomy was combined with right-side hemihepatectomy. In 4 cases of metastatic pancreatic cancer, distal pancreatic resection together with right-side hemihepatectomy have been conducted in 1 case, and atypical liver resection was made in 2 cases. Gastropancreaticoduodenal resection (Whipple procedure) was combined with liver right lobe bissegmentectomy during operation of 1 patient.

Results: 19 patients (15.7%) died after hemihepatectomies; 3 (2.4%) patients died after segmental and atypical resections. Lethality after hemihepatectomy made up 8.3% (48 operations, 4 patients died) in the last 3 years. The main cause of death in early post-operative period was acute hepatorenal insufficiency.

3-years and 5-years overall survival at primary liver cancer made up 38.3% and 30.8%, 38.4% of patients lived for 3 years, and 25.8% lived for 5 years after removal of colorectal cancer hepatic metastasis.

Conclusion: Liver resection significantly prolongs life of patients with liver cancer, and in some cases it provides complete recovery. Such operations should be made only in large specialized centers. No conflict of interest.

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361. Results of the combined treatment of liver metastases from various primary solid tumours by single institution multidisciplinary team

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Introduction: Surgical treatment of liver metastases from solid tumours should be provided by multidisciplinary teams. Aim of the present study is to analyse results of the combined treatment of patients with different solid tumours and liver metastases by single institution multidisciplinary team for last 8 years.

Method: This is a retrospective analysis of 166 patients (84 females and 82 males), aged from 19 to 78 years (mean 58 ±11.2), treated due to liver metastases of solid tumours from various primary localizations, except neuroendocrine tumours. In every patient perioperative systemic therapy was evaluated in agreement with current national/European recommendations. In the follow-up time (median 35 months) 46% of patients died.

Results: Liver resections were performed in 107 (65%) patients, including 19 patients in whom resections were supplemented with (RF-)thermal ablations of liver metastases, that were solely surgical treatment in the next 59 (36%) patients. Perioperative mortality was 1.2%. Grade II complications according to the Dindo-Clavien classification were found in 33 (19.8%) patients, whereas grade III and IV complications were treated in 8 (4.8%) patients. One-, 3-, and 5-year survival rates were 78%, 41%, and 37%, respectively. Five-year overall survival in patients with colorectal carcinoma after liver resection of metastatic colorectal cancer was 48%.

Conclusion: Combined treatment of patients with liver metastases from non-endocrine solid tumours by the multidisciplinary team is safe and effective. Nearly 50% of 5-year survival is achievable in carefully selected group of patients. Hepatic resection is optimal method of surgical treatment of liver metastases. No conflict of interest.

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362. Simultaneous and staged resections of primary colorectal cancer with synchronous liver metastases

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Introduction: Liver metastasis of colorectal cancer is common. Resection of solitary tumors of primary and metastatic colorectal cancer can have a favorable outcome. But the optimal surgical strategy for resectable, synchronous, colorectal liver metastases remains unclear. This study aimed to compare the surgical outcome and survival benefit between synchronous and staged resection of liver metastases from colorectal cancer.

Methods: Clinicopathologic data, treatments, and postoperative outcomes from 110 patients who underwent synchronous (48 patients, group A) or staged (62 patients, group B) colorectal and hepatic resections at clinic of National cancer institute in period of 2008–2013 were reviewed.

Results: Postoperative complications in patients with synchronous resections (group A) were observed in 13 cases (27.1%), including 5, 1, 4, 2, 0 and 1 of grades I, II, IIIa, IIIb, IV and V respectively. Similar results have been reported in group B after staged resections, where overall postoperative complications registered in 16 patients (25.8%), including 4, 3, 6, 3, 0 of grades I, II, IIIa, IIIb, IV respectively. Overall level of post-operative complications in the groups A and B after surgical stages finishing did not differ statistically ($p = 0.96$). Overall 3-year survival in the group of patients with synchronous resections (group A) was 42% and in the group B 55% ($p = 0.22$).

Conclusions: Analysis of our research indicated necessity of the development of differentiated approach in management of synchronous colorectal liver metastatic cancer. Simultaneous resections of colorectal cancer primary lesions and hepatic metastases were safe and could serve as a primary option for selected patients. Subsequent research should be directed towards study of prognosis factors and criteria for patients selection for surgical treatment groups, assessment of economic effect, and patients life quality. No conflict of interest.

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363. Surgical treatment of rectal cancer with synchronous liver metastasis

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Introduction: Surgical treatment of metastatic rectal cancer remains the only method that improves survival. But the optimal surgical strategy for resectable synchronous rectal liver metastases remains unclear. This study aimed to compare the surgical outcome and survival benefit between simultaneous and staged resection of liver metastases from rectal cancer.

Methods: Comparative analysis of treatment outcomes of 41 patients with metastatic rectal cancer with synchronous liver metastases (sMRC), who underwent surgical interventions in the clinic of the National Institute of Cancer from November 2008 to September 2013 was provided. The patients were randomized into the groups of simultaneous (group I) and staged (group) surgical treatment.

Results: Obtained results analysis did not demonstrate statistically reliable difference in the level of early post-surgical complications in study groups according to Clavien-Dindo scale (Grade II; IIIa; IIIb; IVa) that were 4.7%; 14.3%; 9.5%; 4.7% and 10%; 10%; 5%; 0%, respectively, in the groups I and II. No post-surgical lethality was registered in the groups. The most serious complications (Clavien Grades IIIb, IVa) were reported in patients of group I that underwent excision of more than 40% of liver parenchyma (hemihepatectomy + segment/section). In 3 patients (14.3%) of the group I partial colonic anastomotic leak developed in early post-surgical period; this was not registered in the group II ($p = 0.21$). In staged resections group (group II) total cumulative 3-year survival was 40.0%, while at simultaneous surgical approach (group I) this characteristic was reliably higher — 61.9% ($p < 0.001$).
Conclusions: Simultaneous resections in sM-RC patients allow achieving better results of total 3-year survival comparing with staged resections. Radical treatment performance by simultaneous resection improves patients’ quality of life and reduces terms of hospital treatment. Simultaneous resections including removal of primary tumor and liver resection (≤ 4 segments) is safe, up-to-date surgical tactics at sM-RC.

No conflict of interest.

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364. Impact of neoadjuvant administration of bevacizumab on downsizing of colorectal liver metastasis
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Background: Patients with colorectal liver metastases (CRLM) benefit from liver resection. Bevacizumab is being administered more often with time as part of neoadjuvant systemic therapy for these patients. Our purpose was to evaluate the effectiveness of preoperative bevacizumab administration in downsizing of CRLM.

Materials and methods: A retrospective analysis of patients undergoing hepatectomy for CRLM who received only neoadjuvant chemotherapy (chemotherapy group, n = 105), or neoadjuvant chemotherapy and bevacizumab (chemotherapy and bevacizumab group, n = 68). We compared demographic characteristics, metastatic disease characteristics, response to preoperative chemotherapy, postoperative complications, disease-free and overall survival.

Results: The addition of bevacizumab to preoperative chemotherapy adds to the control of the metastatic disease based on the RECIST criteria (92.6% vs 81.9%, p = 0.041). It also improves the absolute decrease (22 mm vs 13.5 mm, p = 0.005) as well as the percentage decrease (34.9% vs 19.7%, p = 0.035) of the overall size of the metastases in the liver. There was no difference between the two groups in regards to the complication rate (36.2% vs 39.7%, p-value 0.641) and also to the severity of complications (major complications 17.1% vs 19.1%, p-value 0.741%).

Conclusion: Neoadjuvant administration of bevacizumab improves the downsizing of CRLM, without affecting the perioperative morbidity or mortality.

No conflict of interest.

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365. A neutrophil to lymphocyte ratio of 2 prior to liver resection predicts disease-free and overall survival in patients with colorectal liver metastasis
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Background: Neutrophil to lymphocyte ratio (NLR) and other markers of inflammation have been associated with the survival in patients with various types of malignancy. Elevated NLR has been shown to increase both risk of death and the risk of recurrence in patients who undergo surgery for colorectal liver metastasis. We aim to define the role of the neutrophil to lymphocyte ratio (NLR) as a potential prognostic factor for patients undergoing curative liver resection for colorectal liver metastasis.

Material and methods: We conducted a retrospective analysis of 262 patients who underwent liver resection for colorectal liver metastasis in 2 clinical institutions in the UK from January 2005 to December 2012. An elevated NLR > 2 was considered to be elevated. Univariate and multivariate Cox regression models were used to determine the role of NLR in overall and disease-free survival.

Results: An NLR > 2 was significantly associated with a presence of more than 3 liver metastasis (p = 0.03), extrahepatic disease (p = 0.03) and primary tumour in situ (p = 0.013). Administration of neoadjuvant chemotherapy was associated with NLR < 2 (p = 0.003). Multivariate Cox regression analysis showed NLR higher than 2 to be an independent prognostic factor regarding disease-free survival (odds ratio = 1.85; 95% confidence interval = 1.11–3.06; p = 0.017) and overall survival (odds ratio = 2; 95% confidence interval = 1.28–3.12; p = 0.002).

Conclusions: An elevated NLR of more than 2 appears to be an independent factor of disease-free survival and overall survival. It could be a useful prognostic tool, easily calculated and with no extra cost.

No conflict of interest.

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366. ‘Post-chemotherapeutic’ effect of bevacizumab on colorectal liver metastasis
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Background: Neo-adjuvant treatment with Bevacizumab, a monoclonal antibody against vascular endothelial growth factor, is often used in patients with a view to liver resection for colorectal liver metastases (CRLM). The purpose of this study was to evaluate a possible prolonged action of bevacizumab to the control of progression of CRLM after its termination.

Materials and methods: A retrospective analysis of patients undergoing hepatectomy for CRLM who received only neoadjuvant chemotherapy (chemotherapy group, n = 105), or neoadjuvant chemotherapy and bevacizumab (chemotherapy and bevacizumab group, n = 68). We compared demographic characteristics, metastatic disease characteristics, response to preoperative chemotherapy, postoperative complications, disease-free and overall survival.

Results: The patients of the bevacizumab group demonstrated a better control of the metastatic (disease progression 5.9% vs 16.2%, p = 0.041). Regarding the progression of CRLM in the interval between the end of neoadjuvant systemic therapy and liver resection, the four parameters that were investigated included the absolute increase of the bigger metastasis size (2.5 mm vs 6.5 mm, p = 0.027), the percentage increase of the bigger metastasis size (16% vs 26%, p = 0.008), the absolute increase of the overall size (Overall Size of Metastases: sum of diameters of all liver metastases) of metastases (3 mm vs 8 mm, p = 0.06), and the percentage increase of the overall size of metastases (12% vs 35%, p = 0.006), indicate that the metastases of the patients of the bevacizumab group showed a much smaller progression in regards to size when compared to the progression of the size of the liver metastases in the chemotherapy only group.

Conclusion: Bevacizumab’s administration as part of neoadjuvant systemic therapy for CRLM adds to the control of the disease. Additionally, following its termination, it appears to have a prolonged attenuating effect on the progression of the liver metastases size. This finding could indicate that administration of cytotoxic chemotherapy in the interval between termination of bevacizumab and hepatectomy because of fear of disease progression, may not be necessary.

No conflict of interest.

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367. Targeting VEGF in patients with colorectal liver metastasis prior to hepatectomy: Impact on peri-operative course
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Background: Neo-adjuvant treatment with Bevacizumab is often used in patients prior to hepatectomy for colorectal liver metastasis (CLRM). This is a retrospective study to investigate whether Bevacizumab, a monoclonal antibody against vascular endothelial growth factor, can be associated with an increased rate of perioperative complications in patients undergoing hepatectomy for CLRM.

Materials and methods: A retrospective analysis of patients undergoing liver resection for CRLM who received neo-adjuvant chemotherapy and bevacizumab (group 1, n = 133), or chemotherapy alone (group 2, n = 103). We compared demographics, surgical characteristics and perioperative course.

Results: Perioperative complications were reported in 39.8% of patients in group 1 and 35.3% in group 2 (p = 0.418). Of these complications, 20 (19.4%) in group 1 and 20 (15%) in group 2 were classified as major (Clavien 3,4) (p = 0.523). The median time from the end of systemic treatment to the time of liver resection was 62 days (23–173 days) for the chemotherapy group and 66 days (35–147 days) for the chemotherapy and bevacizumab group.

Conclusion: Neo-adjuvant chemoradiotherapy along with bevacizumab was not associated with an increased risk of post-operative complications after hepatic resection. An interval of 8 weeks between the last dose of bevacizumab and liver resection appears to be safe for a surgical procedure without adverse effects on the clinical outcome.

No conflict of interest.

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368. Multiple bilobar colorectal liver metastases: Different techniques, a common goal. A district community hospital experience
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Background: Over the last decade, the surgical approach to metastatic colorectal cancer radically changed, passing from a ‘pure’ surgical to an Oncosurgical model. Nowadays we are experiencing the evolution and the more profound interaction between chemotherapy and surgery and we are facing with new and alternative surgical techniques for the treatment of liver metastases. Applying new integrated strategies (both surgical and chemotherapeutic), the overall resectability rate for patients presenting with liver colorectal metastases (CLM) increased from 20 to 30–45%.

Aim of the study is to compare the outcomes of patients affected by multiple bilobar CLMs treated with two oncological approaches: the Two Stage Hepatectomy strategy (TSH) and the combination of Hepatic Resections plus RFA (so called ‘Chip and Burn’, CB).

Materials and methods: This study was performed in two district community hospitals (S. Paolo Savona and S. Corona Pietra Ligure), belonging to the same territorial compound (Azi 2 Savonese), sharing the same surgical strategy, protocols and hepatobiliary team. From September 1997 to April 2013, 48 patients underwent an hepatectomy for multiple bilobar CLMs in our centers. We analyzed those patients dividing them into two groups of surgical treatment: TSH and CB groups. We excluded from the analysis 15 patients who weren't fit to complete the second stage of TSH due to progressive disease or worsening of general conditions. In both groups was administered the chemotherapeutic regimen that was recommended by the international guidelines. Short-term outcome and overall survival were compared in patients having TSH and those treated by CB strategy.

Results: Of 48 patients undergoing hepatectomy for multiple bilobar CLMs, 29 (60.4%) underwent a TSH strategy and 19 (39.6%) were submitted to CB. The 90 days mortality rate following hepatectomy was 2.08% overall (0 versus 5.26% in TSH and CB respectively). Median survival was 35 months overall, 37 and 27 months in the TSH and CB groups respectively. Three and five-year overall survival rates were 47.7 and 30.8% (55 and 37.7% in the TSH group; 37 and 21% in the CB group). DFS patients are in the TSH and 1 in the CB group (14% and 5% respectively).

Conclusions: In this limited and low powered study, both the procedures seem to be safe and effective but TSH strategy appears to have a better outcome both in terms of 3 and 5 years survival and disease free survival.

369. Assessing the predictive and prognostic value of the biomarker TP53 in patients with resectable colorectal liver metastases treated with and without neoadjuvant fluorouracil based chemotherapy: A p53 research group study
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Background: The presented study aims to determine whether the biomarker TP53 is prognostic or predictive.

Methods: A consecutive cohort of 76 patients who had been homogenous diagnosed and staged to have resectable colorectal liver metastases (CLM), and who had been treated either with neoadjuvant chemotherapy plus surgery or with surgery only, was identified.

The TP53 mutational status was assessed retrospectively from archived formalin fixed paraffin embedded (FFPE) material of diagnostic biopsies. DNA was analyzed using a standardized gene-specific sequencing kit. The primary outcome measure was overall survival.

Results: Median survival for all 76 patients was 44.2 months. A significant interaction was noted between neoadjuvant chemotherapy and TP53 status (p = 0.0454). To illustrate this effect, patients treated with and without chemotherapy are described separately:

In the presence of neoadjuvant chemotherapy, mutant TP53 was significantly associated with poor survival (p = 0.005). TP53-mutant patients had a threefold higher risk to die (HR = 3.12; 95% CI: 1.46 to 6.95). Adjustment for known prognostic factors revealed a 5.49 times higher risk to die for TP53 mutant patients (p = 0.0001; 95% CI: 2.28 to 13.24).

In patients treated with surgery alone, survival was not negatively affected by a mutant TP53 status (p = 0.54).

Conclusions: For the first time we demonstrated the presence of a significant interaction between response to neoadjuvant chemotherapy and the TP53 mutational status. Mutant TP53 independently predicted a significant
**370. Simultaneous versus delayed resection for patients with synchronous colorectal liver metastases**

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**Background:** In recent years, the simultaneous resection for synchronous colorectal liver metastases is gaining more and more ground. However, there is no universal accepted surgical strategy for these patients. The aim of this study was to compare the short and long term outcomes of simultaneous resections with delayed resections.

**Materials and methods:** The patient records of patients who had liver resection at two Hepato-Pancreato-Biliary (HPB) units from 2000 to 2012 were evaluated and a retrospective database was created. In this database were included only patients who underwent simultaneous or delayed resection for synchronous colorectal liver metastases. Patients who received the ‘liver first’ approach were excluded from this study.

**Results:** Of the 143 hepatic resections that were performed, 37 were simultaneous resections and 106 were delayed resections. Major hepatic resections were performed in 25 (61%) and 70 (65%) of patients in the simultaneous and delayed groups respectively (P = 0.705). There were no differences in post-operative complications (P = 0.580) or post-operative mortality (P = 0.098). With regards the admission for hepatectomy, the length of hospital stay was 13 (min 7, max 48) and 10.5 (min 3, max 15) days in the simultaneous and sequential groups respectively (P = 0.041). The 3-year overall survival was 74% and 71% in the simultaneous and sequential groups respectively (P = 0.57). The 3-year recurrence free survival was 25% and 20% in the simultaneous and sequential groups respectively (P = 0.360).

**Conclusion:** Simultaneous resections result in similar short-term and long-term outcomes as patients receiving sequential resections with comparable metastatic disease.

**No conflict of interest.**

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**371. Radioembolization using yttrium-90 following by redo hepatectomy for colorectal liver metastases: Concerns and feasibility**

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**Background:** Surgical resection is the only potentially curative strategy in the treatment of patients with colorectal liver metastases (CLM). Unfortunately, only about 10%–15% of patients are candidates for resection. Preoperative chemotherapy aims to increase the number of patients that may be eligible for liver resection by downsizing liver metastases. For patients with unresectable, chemotherapy refractory CLM the available treatment options are limited. Selective inter-arterial radiation therapy (SIRT) is one of the most promising treatment options for this group of patients. Although only a small number of these patients have been reported as becoming candidates for potentially curative hepatic resection following sufficient reduction in the volume of liver metastases, the question arises regarding the safety of liver resection in these patients.

**Conflict of interest:** No conflict of interest

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**372. Reverse treatment for patients with colorectal cancer and synchronous liver metastasis**

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**Background:** For patients with colorectal cancer and synchronous liver metastasis, the reverse approach inverts the classical treatment sequence as it starts with systemic chemotherapy, followed by resection of the liver metastases, and finally removal of the primary tumor. This current study aimed to assess the feasibility and long-term survival after a reverse treatment.

**Patients and methods:** Between August 2008 and May 2013, 28 patients (15 males, 13 females, median age 64 years) underwent a reverse treatment approach. Histopathological tumor response to chemotherapy was assessed using the Mandar score that grades tumor response (TRG) from grade 1 (complete response) to grade 5 (no response). Long-term survival was calculated by Kaplan-Meier survival curves, whereby survival times started after diagnosis. Data were extracted from our prospective hepatobiliary database.

**Results:** Different chemotherapy regimen were used, whereby most patients received Folfox (Leucovorin, 5-FU and Oxaliplatin), and underwent 6 cycles before liver surgery. Bevacizumab and/or Cetuximab were used in 19 patients. Adverse effects of the chemotherapy were observed in 16 patients and were mostly mild, except for 3 patients who presented an anaphylactic reaction to Oxaliplatin or Cetuximab.

Median numbers of liver metastases per patient were 5 (1–24), with a median size of 48 mm (7–150 mm). Liver metastasis showed a complete or good response (TRG 1–2) in 15 patients and a poor response (TRG 3–4) in 13 patients. Only one patient had a disease progression under treatment, and thus, the primary tumor was not resected.

Median disease-free survival was 5 months (0–51 m). Tumor recurrence occurred as new liver metastases in 12 patients, liver metastases concomitantly with another location in 5 patients (4 pulmonary and 1 ovary), 2 pulmonary lesions and 1 para-ana tumor. Recurrences were treated by surgery, radiofrequency ablation, chemotherapy or by a combination of these modalities. Actually, seven patients are without tumor recurrence after a median follow-up of 8 months (2–51 m) after resection.
of the primary tumor. Median overall survival was 41.4 months (9.3–68.2 m).

**Conclusion:** The reverse treatment approach is feasible and well supported by most patients. It offers a promising long-term survival for well selected patients with metastatic colorectal cancer.

**No conflict of interest.**

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**373. Long survival can be obtained after liver resection for single metastases from NET**

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**Background:** Resection is the only potentially curative treatment for metastatic neuroendocrine tumors (NETs); however, criteria determining which patients would benefit from surgery are still needed. Little information is available regarding the number of metastases as a prognostic factor. We evaluated the results of surgical treatment in a series of patients with NETs metastatic to the liver where only a single metastases was identified and resected.

**Methodology:** Patients that presented liver metastases from NETs submitted to liver resection at Paul Brousse Hospital (PBH) were identified. We selected those cases where only one single metastases was identified and resected. Results of surgical treatment and follow up were determined.

**Results:** A total of 76 patients were submitted to hepatic resections for metastatic NETs at PBH between 1984 and 2013. Eleven patients presented one single metastases in the preoperative exams. In the pathologic postoperative evaluation two patients presented multiple lesions and were excluded, resulting in a total of 9 patients (11.8%). Seven patients were male. Median age was 59 years. The small bowel was the primary tumor site in 2 cases, followed by the pancreas, thyroid and rectum in 1 case each. In four patients the primary tumor remained undiscovered. The mean size of the liver lesions was 9.8 cm (0.8–208). Grade was G1 in 4 patients, G2 in 4 others and G3 in 1. The metastases were synchronous in 7 cases. R0 resection was achieved in all cases. The mean of follow up was 79.6 months (8–179).

Three patients had recurrence.

One patient had recurrence at the lymph nodes of the hepatic pedicle 20 months after the hepatic resection. The patient was submitted to hilar lymphadenectomy and chemotherapy and is alive without disease 68 months afterwards.

A second patient presented liver, lung and peritoneal recurrence 8 months after the hepatic surgery for a G3 lesion. This patient died 36 months after with progressive disease.

The third patient had hepatic recurrence 28 months after the liver surgery. This recurrence was treated with hepatic resection and chemotherapy. She died 166 months after the first hepatic surgery with disease progression.

The median of survival of the patients without recurrence was 49 months (8–179).

Two patients lost follow up at 8 and 15 months. A third patient died at 53 months from histologically proven lung cancer without any sign of NET progression. The others three patients were alive free of disease at 45, 124 and 179 months.

**Conclusions:** Single metastases from NETs are a rare event.

Long survival can be obtained after hepatic resection for single liver metastases from G1/G2 NET.

**No conflict of interest.**

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**374. Audit to one and two stage hepatectomy after portal vein embolization for non-resectable colorectal metastas at The Institute of Oncology, Porto, Portugal**

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**Background:** Liver metastasis of colorectal cancer is related to complex clinical management. Overall, 75% of patients will develop liver metastatic disease and in only 20–30% will this be amendable by surgery. Multimodal strategies have emerged to rescue patients with limited but unresectable liver disease. Among these strategies, conversion chemotherapy and portal vein embolization (PVE) to increase remnant liver volume are useful options. The aim of this work is to audit the impact of these strategies at our institution.

**Methods:** Between January 2010 to December 2013 the records of all patients with colorectal liver metastasis treated with curative strategy as: chemotherapy (doublet/triplet with or without target therapy), PVE and one or two stage hepatectomy were reviewed.

**Results:** These series included 22 patients. Sixteen were male, with a median age of 59 years. In 17 patients the primary tumour was located in the colon and synchronous metastases were seen in 21 patients.

Out of 22 patients, 6 did not complete curative strategy, due to disease progression or insufficient hypertrophy. As a conversion strategy, preoperative chemotherapy was used in 20 patients with 9 patients receiving target therapy.

Sixteen patients underwent surgery.

The surgeries performed were a two-stage resection in 4 patients, synchronous hepatectomy in 2 patients and sequential hepatectomy in 10 patients (3 underwent contra lateral percutaneous thermal ablations before surgery). R0 resections were obtained in 69% of cases, the remaining were R1. Regarding postoperative complications, there was no mortality and 4 adverse events in a total of 20 liver surgical procedures were registered.

After a median follow up of 15.5 months after hepatic surgery, liver metastasis-specific overall survival was 86% at 3 years and a median treatment specific overall survival of 24 months for those who completed curative strategy.

**Conclusions:** The curative strategy for unresectable liver disease was feasible at our institution without mortality and limited morbidity. The heterogeneity in the chemotherapy protocols observed suggests optimal chemotherapy is yet to be defined and further investigation is required.

**No conflict of interest.**

http://dx.doi.org/10.1016/j.ejso.2014.08.364

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**375. The role of surgery in the treatment of colorectal liver metastases: What changed over the years?**

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**Background:** To analyze the prognostic factors involved in overall survival in patients undergoing surgical treatment for colorectal liver metastases (CLM) and to describe perioperative morbidity and mortality. To also evaluate the role of neoadjuvant chemotherapy in overall survival.

**Materials and methods:** From January 1997 to September 2013, 276 patients with CLM underwent surgery at our institution, 193 having synchronous metastases and 83 metachronous. 176 patients (64%) underwent resection of CLM with curative intention. 135 patients received neoadjuvant chemotherapy, of which 96 presented with synchronous
metastases and 38 with metachronous ones. Preoperative, intraoperative and postoperative data results were retrospectively reviewed. Patients were divided into three time periods: a first period from January 1997 to December 2008 (n = 29), a second period from January 2004 to December 2008 (n = 68), a third period from January 2009 to September 2013 (n = 85).

The following parameters were analyzed and related to overall survival: timing of metastases (metachronous versus synchronous); neoadjuvant chemotherapy; number, diameter and site (unikolbar versus bilobar) of CLM before and after neoadjuvant treatment; RECIST; levels of preoperative carcinoembryogenic antigen (CEA); presence of extrahepatic disease; type of hepatic resection (minor, major, extended); involvement of hepatic pedicle lymph node; eventual resection.

The following parameters were analyzed and not related to overall survival: findings at the intraoperative ultrasound; hepatic pedicle clamping; intraoperative blood loss; perioperative complications; hospital length of stay.

Kaplan-Meier survival and Cox regression analysis were used. A p value < 0.05 was considered significant.

Results: Median overall survival was 44.8 months in patients undergoing hepatic resection and 14 months in the non resected group. The presence of preoperative extrahepatic disease, elevated CEA levels, multiple and bilateral pattern of CLM and > 5 cm in size were negative prognostic factors. No difference in terms of complications were observed among the three time periods. No benefit in terms of overall survival was shown in the neoadjuvant chemotherapy group.

Conclusion: Surgery is the mainstay of treatment of CLM, with a mortality < 1% and a morbidity at around 31%. Although negative prognostic factors can be identified preoperatively, the chance of surgical cure has not to be denied to any patients as surgery is the only factor that has a significant impact on overall survival.

No conflict of interest.

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376. Radiofrequency ablation of colorectal liver metastases after effective downstaging by chemotherapy provides good survival rates and should therefore always be considered


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Background: Systemic chemotherapy is able to downstage colorectal liver metastases (CRLM), initially unsuitable for local treatment, to locally treatable disease. Surgical resection has proven to add to survival in these patients. The aim of our study was to evaluate the outcome of patients with CRLM, treated with RFA after effective downstaging by chemotherapy, and to identify factors associated with recurrences and survival.

Material and methods: Patients with liver dominant CRLM, initially unsuitable for local treatment but candidates for RFA after downstaging by systemic chemotherapy were analysed. Chemotherapeutic regimen consisted predominantly of XeloX with or without bevacizumab. Pre-operative work-up consisted of PET-CT, CT and/or MRI. Follow-up was conducted with PET-CT or CT thorax and abdomen.

Results: Fifty-one patients with a median of 7 lesions were included. After chemotherapy, the median number of lesions seen on CT and intra-operative ultrasound were 3 and 5 respectively. Median survival was 49 months and was associated with the presence of extrahepatic disease at time of presentation and recurrences after treatment (p = 0.00), with a trend towards lesion size (p = 0.06). Estimate cumulative survival at 1-, 3- and 4 years was 90% (CI 82.8–97.2%), 63% (CI 47.7–78.3%) and 45% (95% CI 26–64) respectively. Median disease free survival was 6 months and was increased when not all lesions were recovered onIOUS (p = 0.03) and decreased when extrahepatic disease was present (p = 0.01).

Conclusion: RFA for CRLM effectively downstaged by chemotherapy provides potential local control and survival-benefit. Follow-up imaging and assessment of local treatment possibilities after palliative chemotherapy for liver dominant CRLM by a multidisciplinary team should therefore always be considered.

No conflict of interest.

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377. Liver colorectal metastases surgical treatment outcomes: Oncological coloproctological unit experience

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Background: Surgical treatment of resectable colorectal liver metastases (CRLM) can achieve 5-year survival rates at the level of 30–50%. However, most publications affecting this topic contain the results of collaborative management of coloproctological and hepatopancreatoobiliary or specialized hepatopancreatoobiliary units. The purpose of our study is to evaluate CRLM surgical treatment outcomes in oncological coloproctological unit.

Material and methods: CRLM surgical treatment in N.N.Alexandrov National Cancer Centre started only in 2002. The prospective analysis of retrospective data of 426 (236 men, 190 women) CRLM patients undergoing complete cytoreduction from 2002 to 2013 in oncological coloproctological unit is submitted in this paper. Synchronous and metachronous metastases have been identified in 253 and 173 patients, respectively, with average age of 58.4 ± 10.2 (22–83) years. No adjuvant therapy was performed to our patients until 2007. From the whole amount of patients, 121 had no previous to surgery treatment modalities, 35 had transarterial therapy for liver dominant CRLM by a multidisciplinary team should therefore always be considered.

Conclusions: Surgery is the mainstay of treatment of CLM, with a mortality < 1% and a morbidity at around 31%. Although negative prognostic factors can be identified preoperatively, the chance of surgical cure has not to be denied to any patients as surgery is the only factor that has a significant impact on overall survival.

No conflict of interest.

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378. How does Ki-67 status influence outcomes for resectable neuroendocrine liver metastases?
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Background: The purpose of this study is to assess how Ki-67 influences outcomes for patients undergoing resection of neuroendocrine liver metastases (NELM).

Methods: A retrospective review of patients whom underwent liver resection for NELM between January 1989 to October 2010 was performed. Outcomes were collated and stratified against their tumour Ki-67 grade.

Results: 33 patients (13 male, 20 female) underwent liver resection during the study period. Median age at the time of liver resection was 62 years of age. 20 patients underwent major liver resection, 3 combined ablation and major liver resection and 10 segmentectomy/metastatectomies performed. Post-operative 90 day mortality was 0%. 70% of NELM originated from a small bowel primary. 97% achieved immediate symptom control. Retrospective pathological review of Ki-67 was pending at the time of abstract submission.

Conclusion: Resection of NELM reduces symptoms from patients with functional tumours. Five-year overall survival is reported between 41–100% and five-year progression-free survival is reported between 5–54% in the literature. Further research is required in order to guide the management of patients with NELM.

No conflict of interest.

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379. How has the Advanced Colorectal Multidisciplinary Team Meeting affected patient outcomes?
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Background: The purpose of this study was to audit the outcomes of the Advanced Colorectal Multidisciplinary Team (MDT) Meeting.

Methods: Patients discussed in the Advanced Colorectal MDT meeting since its inception on the 1st April 2013 to 1st April 2014 were retrospectively reviewed. Data was collected on colorectal cancer stage at the time of diagnosis, proposed management plan, objectives of treatment(s), treatment performed, morbidity and overall survival.

Results: Aintree University Hospital has an overall resection rate of 47.7% for colorectal liver metastases. Median overall survival for resected patients is 46 months, with a 5-year survival approaching 42%. Complete analysis of data is currently pending at the date of abstract submission. We aim to investigate how the Advanced Colorectal MDT has influenced the resection rate for colorectal liver metastases, the timing of liver intervention with respect to other treatment modalities and the outcomes with respect to operative morbidity, mortality and overall survival.

Conclusion: Management of stage IV colorectal cancer has become increasingly complex with multiple treatments available. The timing and objective of treatment varies depending on the individual patient. Consensus on the best management for each individual patient must now be obtained across a wider cohort of specialities.

No conflict of interest.

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380. Oxaliplatin-induced hepatic sinusoidal obstruction in patients undergoing resection for colorectal liver metastases: An assessment of its reversibility
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Background: A specific association of oxaliplatin to hepatic sinusoidal obstruction syndrome (SOS) has been reported and confirmed in various studies. The ability to predict risk for the development of SOS is limited, however, multiple reports acknowledge the role of splenic volume as a biomarker. In patients with colorectal liver metastases (CRLM) undergoing hepatic resection after neoadjuvant oxaliplatin based chemotherapy, SOS is common and has been correlated with an increase in morbidity. However, very little is known about the reversibility of SOS. Potentially, SOS induced by adjuvant treatments of primary colorectal tumours, also plays a role. In this study, we assessed the reversibility of SOS in patients undergoing resection for CRLM.

Methods: From all patients that underwent curative surgery for CRLM between 2000 and 2012, two groups were included. Firstly, a group of patients who received oxaliplatin based chemotherapy solely for primary colorectal cancer in adjuvant setting was determined (n = 35). Secondly, patients who hadn’t been exposed to any form of systemic treatment were identified (n = 43). Exclusion criteria comprised: systemic therapy <3 cycles, prior splenectomy and lymphohaematogenous disorders. Of all patients, CT-scans were reviewed. CT scans were performed during follow-up after resection of the primary colorectal tumour or CRLM. Spleen length, width and thickness were objectified on the last scan before, and the first 2 scans after resection for CRLM. From the average of these measurements, splenic volume was calculated using the splenic index. Splenomegaly was defined as a spleen >314.5 cm³.

Results: The last scan before, and the first two scans after resection of CRLM were fulfilled with a median of 9 (0–42), 14 (3–50), and 18 (4–57) months after completion of adjuvant chemotherapy, respectively. In the oxaliplatin group, splenomegaly was found in 51,4% of patients vs. 20,9% in the oxaliplatin negative group (p = 0.005). In univariate analysis, administration of oxaliplatin significantly correlated with splenomegaly (OR 4; 95%CI 1,49–19,4; p = 0.006) as well as gender (male: OR 5,16; 95%CI 1,4–19,4; p = 0.015) and patients length (OR 1,06; 95% CI 1,004–1,113; p = 0.036). In multivariate analysis, solely administration of oxaliplatin remained significant in relation to splenomegaly (OR 3,84; 95%CI 1,34–11,03; p = 0.013).

Conclusion: This study demonstrates that when utilizing spleen volume as a biomarker, the incidence of SOS is higher in patients with CRLM treated with adjuvant oxaliplatin based regimens for their primary tumour as compared to patients where no systemic treatment is administered. The significant time span between systemic treatment and objectified measurements, splenic volume was calculated using the splenic index. Splenomegaly was defined as a spleen >314.5 cm³.

No conflict of interest.

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381. Is the aggressive surgical resection mandatory for concomitant liver and lung metastasis in colorectal cancer?
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Background: Liver and lung metastasis in colorectal cancer is a frequent and common clinical setting. Although the extent of liver or lung surgery has commonly been considered large to minimize the risk of recurrence, there are no established guidelines for the resection of both organs. Aggressive liver resection has been associated with improved survival, whereas the role of combined liver and lung resection is controversial.

Methods: Patients with synchronous liver and lung metastasis of colorectal cancer treated with curative-intent liver resection at our institute from January 2000 to March 2014 were retrospectively selected. All patients were divided into three groups: only liver resection, only lung resection, and both liver and lung resection. Clinical and pathological characteristics of each group were compared.

Results: A total of 58 patients were included, of whom 42 (72%) underwent only liver resection, 6 (10%) only lung resection, and 10 (17%) both liver and lung resection. The median age was 59 years (range, 29–78 years), and the median follow-up period was 26 months (range, 1–111 months). In terms of survival, there were no significant differences between the groups. The overall survival rates at 1 and 5 years were 90% and 57%, respectively. The 5-year disease-free survival rate was 62%.

Conclusion: Aggressive liver resection for colorectal liver metastasis may improve survival in patients with concomitant liver and lung metastasis. Further studies are needed to determine the optimal strategy for managing patients with synchronous liver and lung metastasis.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.369
Background: Liver and/or lung metastasis is commonly encountered in patients with colorectal cancer. The efficacy of aggressive surgical resection for the hepatic metastasis is validated. However, the surgical approach for concomitant liver and lung metastasis in colorectal cancer patients is equivocal.

Methods: Clinicopathologic data were retrospectively reviewed from 234 patients of colorectal cancer with concomitant liver and lung metastasis during 5-year period. Clinical outcome and survival data were analyzed.

Results: From January 2008 through December 2012, 234 colorectal cancer patients with concomitant liver and lung metastasis were evaluated. After excluding combined other organ metastasis, 129 patients (55.1%) revealed to synchronous concomitant liver and lung metastasis from colorectal cancer and 36 patients (15.4%) were metachronous metastasis. And surgical resection was performed in 33 patients (25.6%) in synchronous metastasis and 6 (16.7%) in metachronous metastasis. In metastatic pattern analysis on liver and lung, more number of lesion and bilateral distribution were observed in synchronous group than metachronous group (Liver, p = 0.001 & p = 0.003; Lung, p = 0.001 & p = 0.002). Patients undergone surgical resection showed better overall survival in both synchronous and metachronous group in survival analysis (p = 0.001 & p = 0.028). Especially, complete resection of both liver and lung metastatic lesion by simultaneous or staged operation revealed better survival outcome than single resection out of two metastatic lesion in synchronous metastatic group (p = 0.037). Primary site of colorectal cancer and complete resection were significant prognostic factors by multivariate analysis for patients with surgically removed concomitant liver and lung metastasis (Rectal primary: p = 0.006, HR 1.475; complete resection: p = 0.003, HR 3.084).

Conclusion: Surgical resection for hepatic and pulmonary metastasis in colorectal cancer can improve complete remission and survival rate in resectable case. Because colorectal cancer itself with concomitant liver and lung metastasis is not a poor prognostic factor as well as a contraindication for surgical treatments, the aggressive surgical approach may be recommended in well-selected resectable case.

No conflict of interest.

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382. Thermographic monitoring of radiofrequency and microwave ablation in a perfused porcine liver model

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Background: Radiofrequency ablation (RFA) and microwave ablation (MWA) are currently the two dominant modalities for ablative treatment of unresectable liver tumours. Both are safe, effective and easy to use, but two particular clinically relevant issues arise due to technical specifications of either technique. Incorporation of vessels within the ablation zone can cause cooling in the nearby tumour target area (heat-sink effect) with risk of local recurrence. The ablation process is regularly monitored with b-mode sonography to ensure successful tumour ablation with appropriate safety margins, but tissue scarving or gas bubble formation may hamper interpretation of sonographic images. A number of other imaging modalities like contrast-enhanced ultrasound have been examined to monitor the ablation process. This study for the first time examines thermographic monitoring for RFA and MWA.

Material and methods: Porcine livers (n = 4) were connected with a closed perfusion system flushed with 37 °C warmed phosphate buffered saline. RFA and MWA of healthy liver tissue were performed at peripheral sites as well as central locations nearby large vessels for additional evaluation of heat sink effects. Intervention was monitored with a thermographic camera (Model A35sc, FLIR). Liver surface infrared emission changes were recorded real-time during all ablative stages. Ablation zone was measured and evaluated by gross pathology and immunohistochemistry for the detection of residual vital tissue within the expected ablation site, especially near large vessels. Surface temperature was evaluated with FLIR Tools Plus software and statistically analyzed.

Results: Average time to successful ablation was significantly longer in RFA compared to MWA (5.5 min. ± preheat time 2.5 min. vs. 2 min.) The local surface temperature during central RFA near adjacent vascular structures was up to 30% lower compared to peripheral RFA, even though RFA was capable of reaching much higher peripheral surface temperatures than MWA (81 °C vs. 63 °C). Results of histopathologic examinations concerning vital tissue within the ablation zone and effects of RFA and MWA on vascular structures are still pending at time of submission but will be presented at the meeting.

Conclusions: Thermographic imaging is a suitable tool to monitor correct ablation process and demonstrate a significant heat sink effect for RFA but not MWA near large vessels. MWA reaches consistent surface temperatures with successful ablation much faster than RFA, mainly due to technical reasons. With further validation for in-vivo ablation, infrared monitoring might be useful to ensure appropriate ablation especially near vascular structures.

No conflict of interest.

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383. Can RECIST be considered a predictor of outcome in patients with liver metastases from colorectal cancer?

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Background: To evaluate the impact on surgery and Overall Survival of Response Evaluation Criteria In Solid Tumors (RECIST) in patients receiving neoadjuvant chemotherapy for colorectal liver metastases (CLM).

Materials and methods: From January 1997 to September 2013, 135 patients affected by CLM underwent neoadjuvant chemotherapy prior to surgery with curative intent. Patients were divided into three groups according to the RECIST, evaluated on the computed tomography scan: 74 patients (55%) showing Partial Response (PR), 33 patients (24%) showing Stable Disease (SD), 28 patients (21%) Progressive Disease (PD). No Complete Response was recorded. Percentage of resectability and radicality achieved in the PR, SD, PD group were respectively 81.1%, 81.8%, 35.7%.

The percentage of resection R0 and R1 achieved in the PR group who underwent hepatic resection with curative intent were respectively 73.3% and 16.7%.

The percentage of resection R0 and R1 achieved in the PD group who underwent hepatic resection with curative intent were respectively 55% and 11%.

The percentage of resection R0 and R1 achieved in the PD group who underwent hepatic resection with curative intent were respectively 82% and 10%.

There was no statistically significant difference in terms of Overall Survival in the patients who underwent hepatic resection between the PD and the PR + SD groups.

Conclusion: Although the percentage of patients who underwent surgery with curative intent, in the PD group, is as low as 35.7%, in this group the radicality achieved (R0 and R1) was very high (82 and 10% respectively).
No significant difference in terms of Overall Survival was evidenced between the group of patients who underwent progression of disease after neoadjuvant chemotherapy (PD) and the group who showed a partial response or a stable disease (PR + SD), according to the RECIST.

Therefore, RECIST are not reliable criteria for selecting candidates for surgery. The chance of surgery with curative intent should be given to all patients with CLM, irrespective of the type of response they show after the neoadjuvant chemotherapy administration.

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**Poster Session: Lung Cancer**

384. Correlation of non-small cell lung carcinoma surgical treatment and local recurrence of the disease

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**Background:** For years, it is believed that, in patients with primary non-small cell lung carcinoma (NSCLC), lobectomy represents the minimal extent of resection, even in tumors that are small enough for wedge or segment resection to achieve completeness of resection.

**Materials and methods:** This study followed 114 patients surgically treated for NSCLC in three medical institutions: Institute for Lung Diseases, Clinical Center of Serbia and Institute for Oncology and Radiology of Serbia, from year 2002 to 2010, who had a local recurrence of the disease. Due to great number of surgical procedures that are appropriate for specific disease stage and patients’ general condition, all operations were sorted in: type 1 — sparing surgery (atypical and segmental resection), type 2 — standard operations (lobectomy and bilobectomy), type 3 — extensive surgery (all types of operations larger than bilobectomy), type 4 — conserving surgery with thoracic wall resection, type 5 — standard operations with thoracic wall resection, type 6 — extensive surgery with thoracic wall resection. Time to local recurrence was observed depending on the operation type.

**Results:** There was a statistically significant difference in time to local recurrence in relation to type of primary tumor resection (Log-rank test; \( \chi^2 = 16.103; p = 6.56*10^{-5} \)). Results of cross-analysis of local recurrence and operation types are shown in the Table. As shown, patients treated with lobectomy and bilobectomy have a significantly longer time to local recurrence than patients with these operations extended to thoracic wall resection, which is related to the initial disease stage.

**Conclusion:** Results indicate that the extended surgery, as well as higher initial disease stage and the quality of surgical work, affect strongly earlier recurrence of NSCLC.

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Significant \( p \)-values are determined in relation to the Bonferroni correction (\( a_1 = 0.05/15 = 0.0033 \)).

**No conflict of interest.**

385. Radical operation of stage IIIB locally advanced non-small cell lung cancer with carina, pericardium, superior vena cava and pulmonary trunk invasion: Our center experience

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**Background:** Due to the serious complications and high mortality during perioperative period, locally advanced non-small cell lung cancer (LANSCLC) is recommended to receive chemotherapy, radiotherapy or targeted therapy instead of surgical treatment. The operation required excellent ability for the surgeon and the treatment effect is still undefined. Here, we presented a highly complex surgical procedure of stage IIIB lung cancer patient and aimed to discuss on the surgical treatment of LANSCLC.

**Materials and methods:** A 72-year-old male with heavy smoke was diagnosed as stage IIIB lung cancer according to the CT scan. His right superior and middle lobar bronchus, carina, trachea, pericardium, superior vena cava right and pulmonary trunk were invaded by the mass. The patient was underwent radical resection of the tumor with right superior and middle lobar, superior vena cava, part of the right pericardium and part of right pulmonary trunk. And reconstruction of trachea and carina (via anastomosis of right inferior lobar bronchus, trachea and left main bronchus), superior vena cava (through anastomosis of stump of the vein, artificial blood vessel and auricula dextra) and right pulmonary trunk were performed subsequently. We also executed systematic lymph node dissection and closed thoracic drainage before closure.

**Results:** The operation lasted about 13 hours and accomplished smoothly. The patient was received intensive postoperative care including nutritional support therapy, application of antibacterial agents, sucking sputum by using bronchoscope. A CT scan indicated normal function of artery, artificial blood vessel and the rest of the lung tissue on the day 13 postoperatively. On day 17, the patient was discharged safely.

**Conclusions:** It required ultra excellent ability for the surgeon to accomplish such operations. In our department, we performed about 4 similar operations per year and follow-up study was executed for each patient. However, the curative effect of surgical treatment for stage IIIB lung cancer patients is still controversial. Whether the surgical therapy can improve the progression-free survival and overall survival for these patients still requires further investigation.

**No conflict of interest.**

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386. ALCAM overexpression in primary tumour predicts shorter overall survival in cutaneous melanoma patients
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Background: ALCAM (activated leukocyte cell adhesion molecule, CD166, MEMD), a transmembrane protein belonging to the immunoglobulin superfamily (Ig-SF), plays an important role in initiation and progression of melanoma and in formation of locoregional and distant metastases. Studies conducted on melanoma cell lines revealed that ALCAM overexpression is strictly correlated with an increase of cytoaggregation and the ability of cancer cells to form nests—a feature associated with enhanced metastatic potential. Moreover, homotypic ALCAM-ALCAM interactions were found to be a key element of intercellular adhesion and formation of cell nests.

Material and methods: Formalin-fixed paraffin-embedded tissue specimens from 104 primary cutaneous melanomas and 16 nodal metastases were studied for the expression of ALCAM measured by immunohistochemistry. ALCAM immunoreactivity in cancer cells was analyzed and correlated with classical clinicopathological features and patients’ survival.

Results: High ALCAM expression in neoplastic cells of the primary tumor is strongly correlated with unfavorable prognosis, defined as shorter overall and cancer-specific overall survival (P = 0.049 and P = 0.003, respectively), in patients with cutaneous melanoma. Increased ALCAM expression in primary tumor cells is significantly related to greater Breslow thickness and higher Clark level (P = 0.008 and P = 0.001, respectively). A statistically significant correlation was observed between high percentage of ALCAM (+) cells, the presence of ulceration (P = 0.035) and the decrease of lymphocytic infiltrate intensity (P = 0.01). Analysis of ALCAM expression in nodal metastases demonstrated that the loss of ALCAM-positive cells is associated with deeper infiltration within the primary tumor according to the Clark classification (P = 0.032). Furthermore, it was observed that decreased ALCAM expression in nodal metastases is related to poor prognosis in melanoma patients (P = 0.032).

Conclusions: (1) High ALCAM expression in melanoma cells of the primary tumor can be used as a marker of negative outcome and may indicate a more invasive phenotype of cancer cells, which would require a more intensive therapeutic strategy. (2) Low expression of ALCAM in lymph node metastases is a feature associated with unfavorable prognosis in patients with cutaneous melanoma.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.376

387. Detection of clinical occult lymph node metastases by lymphoscintigraphy and sentinel node biopsy in anorectal melanoma patients
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Aim: Primary anorectal melanoma is a rare and very aggressive disease. Between 0.4 and 1.6 per cent of all melanomas arise in the anorectal region and this is the most frequent site of melanoma after skin and retina. To our knowledge, this is the first report dealing with a sentinel node (SN) biopsy performed in the management of anal melanoma patients. The goal was to investigate the clinical utility of lymphoscintigraphy and SN biopsy to detect clinically occult nodal disease.

Material and methods: We evaluated 33 patients; 24 hours prior to surgery they received intradermally four injections of 40 MBq of 99mTc-nanocolloidal around the surgical scar or primary tumour. We used a disposable self-lighting anoscope for a correct injection of the radiocolloid. The imaging was carried out with a 15 min dynamic g-camera acquisition followed by a delayed 5 min acquisition. To properly identify the site of SN, a 57Co marker and flood were used. During surgery blue dye and g-probe were used in order to detect the node involvement.

Results: In 16 patients the lymphoscintigraphy detected a bilateral lymphatic drainage pathway to groin, in 9 patients to left groin and in 8 patients to right groin. The scintigraphic findings imaged 28 SNs in the left groin and 30 in the right groin. All identified lymphatic basins were biopsied and pathology showed metastases in 15 patients (45.5%). These patients subsequently underwent a total inguino iliac lymph node dissection. At the time of writing 9 patients with positive SN biopsy are dead while the others are still alive. In the group of 18 patients with negative sentinel node the survival is statistically higher than the group of 15 positive SN.

Conclusion: This study, in spite of a limited number of the observed cases, demonstrated that lymphoscintigraphy and SN biopsy are very useful in anorectal melanoma patients to detect clinically occult metastases. Furthermore, early diagnosis of nodal metastases would permit to start adjuvant treatment very soon after surgery, in order to prevent the possible growth of occult disease and the spread to local or distant sites. The prognostic value of this approach has still to be investigated on a large prospective series of melanoma patients, by evaluating the disease-free interval and the survival.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.377

Poster Session: Minimal Invasive Surgery

388. The STOMACH trial: Surgical technique, open versus minimally invasive gastrectomy after chemotherapy
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Background: Aim of this prospective randomised, multi-center trial is to compare open gastrectomy with minimally invasive gastrectomy for gastric cancer in patients that received neoadjuvant chemotherapy.

Laparoscopic surgery has been shown to provide important advantages in comparison with open procedures in the treatment of several malignant diseases, such as less peri-operative blood loss, faster patient recovery and shorter hospital stay. All while maintaining similar results with regard to tumour resection margin and oncological survival. In gastric cancer the role of laparoscopic surgery remains unclear. Current recommended treatment for gastric cancer consists of radical resection of the stomach, combined with lymphadenectomy. The extent of lymphadenectomy is considered a marker for radicality of surgery and...
389. The analysis of the cryo impact and cement plastics efficacy in surgical treatment of giant cellular tumour of the cortical bones

K. Abdikarimov1, M.A. Gafur-Akhunov1, A.A. Tojiboyev1, U.F. Islamov1, S. D. Urumbae1, R.R. Davletov1, B.B. Sultonov1
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Background: To study the cryo impact and cement plastics results after excochleation of the giant cellular tumour of cortical bones.

Materials and methods: Excochleation of the tumor with filling of the empty cavity by medical osteal cement; II group - double-blind randomisation of patients being performed excochleation of tumor with filling of empty cavity by medical osteal cement;

Conclusions/Expectations: Preliminary studies show promising results for laparoscopic gastrectomy, but the number of studies is small and due to lower incidence of gastric cancer in the West they are often underpowered. A prospective randomised clinical trial is indicated in order to establish the optimal surgical technique in gastric cancer: open versus minimally invasive gastrectomy.

No conflict of interest.

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390. Our experience of radical totally laparoscopic operations in oncology

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Background: The use of laparoscopic access in cancer surgery is constantly increasing. It became a standard for some procedures: laparoscopic hysterectomy, colon resection, laparoscopic gastrectomy. We want to report our experience in performing oncologic radical operations laparoscopically.

Material and methods: We analysed 1217 consecutive laparoscopic operations performed in our clinic. There were 560 (45%) radical surgeries for various cancers among them: colorectal resections - 176, gastrectomy with D2-lymphadenectomy - 48, esophagectomy - 5; anatomatic resection of liver - 3. There were 230 operations for gynaecological malignancies, including 82 radical hysterectomies with pelvic and paraaortal lymphadenectomy. For urologic cancer were 89 interventions: radical nephrectomy - 54, partial nephrectomy - 26, prostatectomy - 5. We have experience of 9 pelvic exenterations with the formation of uretero-ilieno-conduit for recurrent and complicated pelvic tumors. Simultaneous operations (cholecystectomy, hernioplasty) were performed in 81 patients (14.7%).

Results: The number of removed lymph nodes, as an indicator of radicalism, was: after pelvic lymphadenectomy for gynecologic cancer - 19.6, after colorectal resections - 18.4, after gastrectomy - 17.8. The average duration of the operation was: simple hysterectomy with pelvic lymph node dissection - 122 minutes, Wertheim-operation - 204.3, total gastrectomy - 284, anterior resection of rectum - 167. Complications after surgery occurred in 133 patients (11.1%). Severe complications (grade III-IV (Dindo, 2004)), i.e. life-threatening (stroke, myocardial infarction) and requiring reoperation (anastomotic leakage, intestinal obstruction) were in 45 (3.7%). The complication rate depends on the complexity and duration of the intervention: the lowest rate - 8.7% was after gynecological operations, the highest - after gastrectomy - 24.3%. Conversion performed in 5 patients (0.4%). Postoperative mortality was 0.5% (6 patients died).

Conclusions: With a number of advantages for both the patient (less abdominal wall trauma, pain, blood loss, early recovery) and surgeon (excellent visualization) laparoscopic oncosurgery improves immediate postoperative results (complications, mortality, length of stay) compared with open without compromising oncological principles. The undoubted advantage of minimally invasive technologies is the ability to perform simultaneous operations in different parts of the abdominal cavity without increasing access trauma.

No conflict of interest.

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391. Laparoscopic approach to retrorectal teratoma: Case report

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2 Hospitais da Universidade de Coimbra, Cirurgia B, Coimbra, Portugal

Background: Retrorectal presacral cystic lesions are rare conditions, frequently congenital, and presenting nonspecific symptoms. Teratomas are neoplasms originated from totipotential cells, with the ability to...

Conclusions: The excochleation tumor operation with filling of empty cavity by medical osteal cement; II group - double-blind randomisation of patients being performed excochleation of tumor with filling of empty cavity by medical osteal cement;
is essential for better outcome. Experience with clear cell sarcoma and primary tumor has different chemotherapy protocol. Definite tissue diagnosis and are very difficult to differentiate. Differentiation is important because only 15% of all pediatric renal masses. These rare tumors are usually aggressive and have similar presentation and radiological features as Wilms' tumor. In malignant renal masses, Wilms' tumor accounts for almost 85% cases while other rare renal tumors including stromal tumors constitute 10% cases. The diagnosis of PNET tumor. Other two year male child presented with fever and gross hematuria. Multiple tru-cut biopsies were tried but tissue involvement by tumor in less than half of cases.

**Material and methods:** We report the case of a 26-year-old woman with complaints of secondary dysmenorrhea and nonspecific pelvic pain. During a gynaecological appointment, rectal examination demonstrated a retrorectal, round, soft, mobile and painless lesion. MRI study revealed a presacral bilobulated cystic lesion with 9.5 cm (right) × 6 cm (left), highly suggestive of a proliferative germ cell tumor. Endoscopic study showed no abnormalities and the tumour markers were negative. Surgical excision was proposed.

**Purpose:** In malignant renal masses, Wilms' tumor accounts for almost 85% cases while other rare renal tumors including stromal tumors constitute only 15% of all pediatric renal masses. These rare tumors are usually aggressive and have similar presentation and radiological features as Wilms' tumor and are very difficult to differentiate. Differentiation is important because each tumor has different chemotherapy protocol. Definite tissue diagnosis is essential for better outcome. Experience with clear cell sarcoma and primitive neuro-ectodermal tumor (PNET) of kidney presented here.

**Method:** Seven year female sick patient, admitted with large abdominal mass and distension with features of sub acute bowel obstruction. She has fever and gross hematuria. Multiple tru-cut biopsies were tried but tissue was inadequate and suggested small round cell tumor. In spite of low general condition of patient, open incisional biopsy was taken that confirmed the diagnosis of PNET tumor. Other two year male child presented with large abdominal mass with distension and discomfort. Multiple tru-cut biopsies were needed for definitive diagnosis of clear cell sarcoma.

**Result:** There was good response after neo-adjuvant chemotherapy and mass was excised along with right kidney in both the children. Both are doing well without local or distant metastasis from last one year.

**Conclusion:** These rare tumors usually present late because of their aggressive nature and early metastasis. They should be treated promptly. Definite tissue diagnosis (either tru-cut or open biopsy) is essential for better outcome. They should not be differentiated on the basis of their clinical and imaging features.

**No conflict of interest.**

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**Poster Session: Multidisciplinary Approach to Cancer**

### 392. Rare renal tumour: Tissue diagnosis is must

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**Purpose:** In malignant renal masses, Wilms' tumor accounts for almost 85% cases while other rare renal tumors including stromal tumors constitute only 15% of all pediatric renal masses. These rare tumors are usually aggressive and have similar presentation and radiological features as Wilms' tumor and are very difficult to differentiate. Differentiation is important because each tumor has different chemotherapy protocol. Definite tissue diagnosis is essential for better outcome. Experience with clear cell sarcoma and primitive neuro-ectodermal tumor (PNET) of kidney presented here.

**Method:** Seven year female sick patient, admitted with large abdominal mass and distension with features of sub acute bowel obstruction. She has fever and gross hematuria. Multiple tru-cut biopsies were tried but tissue was inadequate and suggested small round cell tumor. In spite of low general condition of patient, open incisional biopsy was taken that confirmed the diagnosis of PNET tumor. Other two year male child presented with large abdominal mass with distension and discomfort. Multiple tru-cut biopsies were needed for definitive diagnosis of clear cell sarcoma.

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**No conflict of interest.**

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### 393. Kidney autotransplantation in surgical treatment for huge retroperitoneal sarcomas

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**Background:** Extensive surgery is the only possibility to achieve long term survival in patients with retroperitoneal sarcomas (RS). Complete surgery for RS usually requires removal of adjacent organs. More than one third cases of multisviseral resection for RS include concomitant nephrectomy. But postoperative pathological investigation reveal direct kidney involvement by tumor in less than half of cases.

**Results:** The laparoscopic approach showed a presacral retrorectal bilobulated encapsulated lesion, below 53 level, with about 10 cm on the right side and 7 cm on the left, adherent to the presacral fascia and independent from the rectal wall. The lesion was totally resected without complications. The postoperative period was uneventful, with clinical discharge at the sixth day. The pathological report confirmed a mature cystic teratoma containing respiratory epithelium.

**Conclusion:** Comparing with the conventional approach, laparoscopy enables a better view and access to retrorectal lesions, allowing a careful dissection and complete resection with good functional outcome.

**No conflict of interest.**

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### 394. Surgical emergencies in cancer patients; migration of cancer to bladder

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**Background:** Cancer patients may require acute surgical interventions for problems caused by malignant disease or cancer treatment. Emergency presentation is often a sign of advanced disease. For patients with poor prognosis, extensive surgical procedures may not improve survival or quality of life.

**Materials and methods:** Prospective registration and 30 day follow up of cancer patients at the University Medical Center Groningen (UMCG) with surgical emergencies related to their malignant disease or cancer treatment.

**Results:** During the study period, 150 cancer patients (76 %, median age 64 – range 19–92 – years) were evaluated for surgical emergencies; 55.3% had symptoms caused by malignant disease, and 44.7% had complications of previous cancer treatment. Before emergency evaluation, 22.6% of patients were documented with incurable disease and in a palliative stage of treatment. Thirty days after emergency evaluation, almost twice as many patients had been diagnosed with incurable malignant disease (34.6%), or had died (12%). (Table 1.)
Of the 70 patients with incurable disease or who died within 30 days, 32.9% had presented with intestinal obstruction and 15.7% with biliary obstruction. Within 30 days after emergency evaluation, 47.1% had undergone surgery. The majority underwent intestinal bypass or ileo-colostomy for malignant intestinal obstruction (54.6%). Nevertheless, 48.5% of all procedures started with non-palliative intent. During the last 30 days of life, 88.8% of patients were hospitalized (median duration 9 – range 0–37 – days), and 52.9% of the deceased patients died during the hospital stay.

**Conclusions:** Cancer stage and intention of treatment often migrate after emergency evaluation. In this study, the number of patients with incurable malignant disease and palliative stage had doubled after emergency evaluation. Almost half of the patients who appeared to have poor prognosis underwent surgery. When there is an indication for surgery, one should consider the patient’s preferences and in what manner a surgical procedure may influence the final outcome and the quality of a patient’s life.

No conflict of interest.

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**395. Multidisciplinary Team (MDT) in cancer services: A model for effective care?**

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**Introduction:** The concept of the MDT within cancer services has gained much momentum since its initial inception, and is believed to have contributed significantly to improving patient care over the last 20 years. As a result there is an increasing desire to monitor its effectiveness in attempt to improve and standardize the care of cancer patients.

**Method:** We analyzed the outcome of all new patients discussed at a single cancer MDT, discussing tertiary referrals for primary and secondary liver malignancies, over a 6-month period (01/07/13–31/12/13). Each patient pathway through cancer services was mapped, including time lapses between each clinical contact, in an attempt to characterize MDT workload and effectiveness.

**Results:** There were 302 patients discussed over a 6-month period through 25 sessions, of which 132 were new referrals. Median patient age was 70 (range = 20–94) and median wait from referral to discussion was 18 days (range = 11–61). Referrals were received from all 5 South Wales LHB’s and over half of patients (56%) were discussed in relation to colorectal liver metastases. 30% (n = 36) of patients were deemed palliative at initial MDT discussion while 27% (n = 32) were referred for liver surgery. A quarter of patients (n = 32) required further investigation prior to definitive treatment and 10 patients (8%) of those discussed were found to have benign disease. Median time from first MDT to definitive treatment was 77 days (range = 3–406) and median time from to surgery was 66 days (range = 3–160). Twenty-three patients (17%) required more than one discussion at MDT prior to definitive treatment. Patient management changed from initial MDT outcome in 14% of cases following clinical review, specialist opinion or in light of additional information.

**Conclusion:** MDT remains an effective and efficient way of discussing patient management on a case-by-case basis in the setting of cancer. Efficiency improvements could be made by prompter access to radiology, better provision of clinical information by the referrer and mandatory attendance/representation by all clinicians involved in patient care.

No conflict of interest.

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**396. Photodynamic diagnostics of tissue fluids caused by oncological pathology**

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**Background:** Tumor pathology accounts for 7–10% of all ascites and 16.5–30% of all pleurisy cases. Cytological tests of pleural punctuate reveal malignant pathology only in 60% of all subjects suffering from malignant pleurisies. Providing cytological tests of ascites, cancer cells are found only in 40–60% of all cases of ascites, caused by malignant pathologies. The aim of this work was to deal with our experience concerning the photodynamic diagnostics (PDD) of tissue fluids caused by oncological pathology.

**Material and methods:** PDD of the malignant tissue liquids is a fairly simple non-invasive method. It comprises a systematic injection of a photosensitizer into a patient having an accumulation of tissue liquids. A liquid is punctured after a time interval which is required for the photosensitizer to accumulate selectively in the tumor tissue. The tissue liquid is illuminated with a non-intensive 400–405 nm violet light. If an accumulation of tissue liquid was caused by an oncological pathology, then the liquid will contain floating individual tumor molecules. There were 32 oncological patients who underwent photodynamic therapy and were subjected to puncturing of tissue liquids from various cavities, whereby extracted puncture liquid was subjected to the PDD. 12 patients received pleural puncturing, 12 — puncturing of ascites, 1 — puncturing of pericardia, 2 — puncturing of the non-malignant neck cysts, 5 — puncturing of tissue liquids of metastases of the collapsing tumors in a neck zone. 1 patient was punctured in the knee joint for liquids, which had accumulated because of sarcoma, 7 patients were punctured in the stasis tissue liquid caused by postoperative ostitis phenomenon.

**Results:** From the 32 patients who were subjected to puncture of tissue liquids and its analyses in 7 subjects cause of said tissue liquids was a non-malignant pathology, in 23 subjects tissue liquids were caused by an oncological pathology, and for 2 subjects tissue liquids were caused by both a non-malignant and oncopathology. In 24 patients the tissue liquid caused by an oncopathology had the characteristic glow when subjected to the PDD. In one patient the ascites caused by a melanoma did not have the characteristic glow when subjected to the PDD. According to our data this test has sensitivity of 96% and specificity of 100%. The test is sensitive...
even when tumor cells are not found during a cytological analysis. Even a small amount of the malignant tissue cells in a tissue liquid will produce a vivid raspberry-colour glow of said fluid. Tissue fluids of another origin do not have this kind of glow when illuminated with a light having 400–405 nm wavelengths. One drop of tissue liquid is sufficient for the test to be performed.

**Conclusions:** Photodynamic diagnostics of tissue fluids caused by oncological pathology is sensitive and specific diagnostics method for all malignant tumors of different morphological types, except for melanoma. Test requires only one drop of tissue liquid.

No conflict of interest.

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397. **Perioperative disorders of hemostasis in cardiac patients in oncosurgery**

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**Background:** This work is a prospective study evaluating patients with chronic anticoagulation or antiplatelet therapy who come to the elective oncosurgical operation.

**Material and methods:** The authors present a group of patients from the years 2011–2013. The results are processed as a prospective epidemiological study.

**Results:** The Surgical Clinic FNKV Prague is conducted annually approximately 3000 surgical procedures. Oncosurgical performances make up 26% of the file. Approximately 12% of patients taking chronic anticoagulation or antiplatelet therapy because of the current cardiac disease. Cardiac mortality in the file is 6 times higher. The cause of death or severe complications may exercise the rights chronic anticoagulation or antiplatelet therapy. May experience perioperative bleeding or arterial thrombosis. It is currently not defined in the CR preparations perioperative management of these patients. The risk of thrombosis or bleeding may not be properly assessed in these patients.

**Conclusions:** According to our results may be omitted antiplatelet therapy, the risk of arterial thrombosis. Lack of long discontinuation of anticoagulant therapy (despite normalization of INR) may be contrary risk of perioperative bleeding.

No conflict of interest.

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398. **Adequate choice of the field size for the IORT treatment**

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**Introduction:** Mobile electron linear accelerators are gaining more attention recently, providing a lower cost and simpler way to perform intraoperative treatment. However, the simplicity of the treatment process does not eliminate the need for proper attention to the technical aspects of the treatment. One of the potential pitfalls is incorrect selection of the appropriate applicator size to adequately cover the tumor bed to the prescription dose.

Case of large treatment area, such as sarcoma, often requires abutting two fields together. It might be beneficial to select larger applicator to avoid potential mistreatment problems which are often underestimated. Similar problems can appear while treating early stage breast tumors. There is a natural tendency to select an applicator as small as possible so as not to jeopardize cosmesis.

**Methods:** This investigation questions how much of the typical treatment volume gets adequate exposure and what is the correct strategy in selecting the proper applicator size. Actual data from isodose scans were analyzed.

**Results:** We found that typical treatment dose prescriptions can cover as much as 80% and as little as 20% of the nominal treatment volume depending on the applicator size and energy of the beam and whether the dose is prescribed to the 80 or 90% isodose level. Treatment volume is defined as a cylinder with diameter equal to applicator and height equal to the corresponding D80 or D90 depth.

**Conclusion:** If mobile linear accelerators are used, there can be significant amount of ‘cold volume’ depending on the applicator size and this should be taken into account when selecting the applicator that is needed. Using too small of an applicator could result in significant underdosing to the tissue at risk. Long-term clinical data demonstrates that selecting an adequate field size results in good oncologic control as well as excellent cosmesis.

Conflict of interest: Corporate-sponsored research: Intraop Medical Corp.

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**ABSTRACTS**

399. **A comparative study on two different methods to retrieve lymph node following gastrectomy**

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2 Assaf Harofeh Medical Center, Medical Oncology, Tel-Aviv, Israel
3 Assaf Harofeh Medical Center, Pathology, Tel-Aviv, Israel

**Background:** The number of harvested lymph node is considered the best parameter known at present to evaluate the radicality of any surgical procedure for cancer specifically gastric cancer. The number of lymph node harvested during gastrectomy depends on the extension of lymphadectomy and the method of lymph node retrieval.

Huge difference in the number of lymph nodes is seen in different studies but also in different individual patients operated by the same team of surgeons and specimens evaluated by the same team of pathologist.

**Aim:** To evaluate two methods of lymph node retrieval in specimens of gastric cancer.

**Material and methods:** The specimens were evaluated by two different methods: sixty one had manual dissection following formalin fixation and compared to 63 gastrectomy specimens who were embedded in fat clearing by Acetone for 16 hours followed by lymph node isolation.

**Results:** Both groups were comparable for demographic, tumor location, type of operation, tumor histology and staging. The average number of harvested nodes per patient in the formalin group was 21.1 compared to 27.6 in the group of patients in the Acetone group (P = 0.004). The difference in the average number of positive lymph nodes did not reach statistical significance , 4.6 in the Formalin group as compared to 6.8 in the Acetone group (P = 0.24).

**Conclusion:** Acetone as a clearing solution used in our patients resulted in an increase in the overall number of harvested lymph nodes and as a result positive lymph nodes however the figures were not statistically significant . The differences in the overall number of harvested lymph nodes and positive nodes between different individuals operated
and specimens evaluation by the same team of surgeons and pathologists, might reflect individual differences.

Further research will be needed to evaluate differences in disease free and overall survival comparing the two groups.

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No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.389

400. An assessment of the 25 years of treatment of gastric cancer in terms of improvement in the results and diagnostics

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Background: Gastric cancer is a global medical problem although for several years its lower incidence has been observed. Every year gastric cancer is diagnosed in 1 million people all over the world. However, it is the poor prognosis and in consequence, high mortality rate rather than the incidence that causes the cancer to continue to be a significant clinical problem. The state of the regional lymphatic system is the most important prognostic factor in patients with gastric cancer. If less than 15 lymph nodes are identified and resected the stage of progression may have been inadequately assessed. Even in 20% of cases the patient may be qualified for a lower than actual stage of the disease progression due to too small a number of lymph nodes assessed. The introduction of new techniques of histopathological examination enabled identification of the lesions which had not been diagnosed before. The application of immunohistochemical examination for assessment of the lymphatic system enables identification of micrometastases and isolated neoplastic cells. The state of the regional lymphatic system is the most important prognostic factor in patients with gastric cancer.

Material and methods: The study population included 1034 patients operated on gastric cancer in the years 1986—2010. A comparison of clinical and outcome of patients with gastric cancer treated between 1986—1997 and between 1998—2010 in terms of operability, the severity of the disease, the probability of perioperative mortality and 5-year survival. In the group of patients operated on in the years 1998—2010 were analyzed factors that could have an impact on survival. The comparison of the incidence that causes the cancer to continue to be a significant clinical problem. The state of the regional lymphatic system is the most important prognostic factor in patients with gastric cancer.

Results: The recorded increase in resectability from 61.47% to 71.04% in the last 13 years is statistically significant (p = 0.0021). In the last 13 years more and more early stages of progression of the neoplastic disease were diagnosed, which is proved by the significant increase in the number of patients with stage I or stage II diagnosed. Also, there was improvement in the probability of five-year survival rate, which was 28.9% in the years 1986—1997 and 38.5% in the years 1998—2010.

Conclusions: During the 25 years of treatment of patients with gastric cancer the number of early diagnoses increased and there was a significant increase in resectability of lesions, which proves improvement in the diagnostics of gastric cancer. The significant prognostic factor in patients operated due to gastric cancer between 1998 and 2010 was the state of the regional lymphatic system.

No conflict of interest.

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401. Personalisation approach to surgical treatment of esophageal cancer

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Background: The surgical method is the leading radical treatment of esophageal cancer. However choosing the type of surgery each patient needs to be clarified.

Materials and methods: In Rostov Research Oncological Institute, from 1987 to 2013, 542 resections and extirpation of the esophagus were performed for esophageal cancer. 410 were men and 132 women (ratio 3.1 to 1), the age of patients ranged from 32 to 84 years, most in the range from 50 to 70 years, mean age 62. In 307 patients the tumor was determined in the mid-thoracic esophagus, in the Lower thoracic it was at 146, and in the upper thoracic in 89 patients. Histologically, the upper and middle third of the esophagus in most cases (over 95%) a squamous cell carcinoma was determined, varying degrees of differentiation, adenocarcinoma was in 3% of all cases, 2% were undifferentiated cancer and GIST-tumors. In the lower-thoracic and abdominal part of esophagus squamous cell carcinoma was in 74%, adenocarcinoma in 23% of cases.

Results: 265 operations of transthoracic sub-total esophageal resection with gastric plastics according to Ivor—Lewis procedure (with formation of manual anastomosis), 115 esophageal resections from left thoracolaparotomic access, 135 transthoracic esophagectomies (Torek operation) and 28 transthiatal esophagectomies with primary or tardive esophagoplastics have been performed. We consider rational transthoracic sub-total esophagus resection with gastric plastics according to Ivor—Lewis procedure in conjunction with the two-zone lymph node dissection. Transthiatal extirpation of the esophagus is considered advisable only in cases of extremely high risk of thoracotomy or histological variants with rare lymphatic metastasis (GIST). Over the past 5 years we performed 214 radical operations for esophageal cancer. 6 patients died after surgery (2.8%) patients. In stage T1-3 N0 3 year overall survival (OS) was 68%, 5 year OS was 52%. At third stage the 3 year OS was 38%, 5 year OS was 18%.

Conclusions: When choosing a method of surgery for esophageal cancer a stage of process, tumor histotype, tumor location, the presence of comorbidity should be considered. Such operations should be carried out in large specialized cancer and surgical centers.

No conflict of interest.

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402. Gastrointestinal stromal tumour in the KwaZulu-Natal Province, South Africa. Is the use of imatinib practicable in resource-limited settings?

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Background: Although rare, gastrointestinal stromal tumours (GISTs) are increasingly being diagnosed in our setting. Patients are seen at one Multidisciplinary Clinic where treatment is instituted. Imatinib is not available to state patients in South Africa but it is sponsored by the trade.

Aim: To describe our experience with the management and outcome in patients with GISTs in our resource-constrained setting.

Patients & methods: Study patients were extracted from an on-going GIST database into which all patients from the KwaZulu-Natal Province of South Africa are enrolled. Patients are discussed at the Multidisciplinary clinic where treatment decisions are made. All patients receive Imatinib except those with completely resected early disease. Data collected included demographics, clinicopathologic spectrum, treatment and outcome.

Results: Forty one patients were enrolled over a 13 year period, of whom 18 were female. It affected Africans (20, 49%), Indians (10, 24%) Coloureds (1, 3%) and Whites (10, 24%). Mean age was 58 years. The main symptoms were mass (16), pain (10), and Bleeding (8). Median duration of symptoms was 6 months. The common tumour sites were stomach (24), small bowel (6) and rectum (4). Tumour size was 4.4 – 25 cm. CD-117 was positive in 32 patients (78%). Sixteen patients presented with metastatic disease (37.5%), the most common target organs being liver (10), and peritoneum (5). Twenty-nine patients underwent resection. The rest had no resection due locally advanced disease (10), metastases (2), or unknown primary (1). Thirty-six patients received Imatinib; the rest received no treatment because of completely excised early disease (2), failure to return for retreatment (2) and poor general condition (1). Median follow-up was 28.5 months. Four patients have developed local disease recurrence and two have developed metastases. Seventeen patients are known to have died.

Conclusion: GIST is an established disease in KZN Province affects all population groups. Late presentation of the disease remains a problem. The most common site was the stomach. CD 117 was positive in the majority. Favourable short-term and long-term outcome is possible with the use of Imatinib and is comparable with international trends.

No conflict of interest.

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403. Morbidity and in-hospital mortality of palliative gastric resections: A systematic review
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2 University Hospital of Heraklion, Department of Surgical Oncology, Heraklion Crete, Greece

Background: Gastroctomy as a primary treatment for patients with metastatic gastric cancer (M1) is highly controversial because the poor survival of the patients combined with the perceived high postoperative morbidity and mortality. Herein, a systematic review of the literature was undertaken with the aim of assessing evidence regarding associated morbidity and mortality.

Materials and methods: A systematic review of the literature included the period January 1980 – April 2013 in the MEDLINE database. All clinical studies assessing the outcome of gastric resection for stage IV gastric adenocarcinoma were considered. Animal studies, case reports and case series with less than 10 patients were excluded. Only full text peer reviewed studies published in English, French, Italian and German were included. Additional articles were searched in the reference lists of the eligible publications. Patients having undergone previous surgery or neoadjuvant chemotherapy, radiotherapy or combination were excluded. Outcome data were pooled and overall rates were calculated.

Results: The search identified 10 non-randomized studies reporting on 742 patients. Overall 30-day postoperative morbidity and mortality were 4% and 26% and were higher in Western than in Asian patients (16% vs. 30%, p < 0.001). Pulmonary complications accounted for most of the postoperative morbidity (31%) followed by surgical site infections (13%) and intra-abdominal collections (13%). The rate of anastomotic leak was 6% and the reoperation due to complications 3%.

Conclusion: Palliative gastric resection can be performed in selected patients with stage IV gastric cancer with acceptable morbidity and mortality.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.393

404. Ten-year review of oesophageal self-expanding metal stent (SEMS) insertion in a single institution: A Singapore experience
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Background: Oesophageal cancer is increasing in incidence. Most patients present with locally advanced, unresectable or metastatic disease. Dysphagia is the most common presenting symptom and may lead to nutritional compromise, debilitating pain and deterioration of quality of life. This review was conceived to confirm the safety of SEMS insertion in our population.

Materials and methods: All consecutive cases of patients with oesophageal cancer receiving SEMS over a 10-year period from January 2003 to December 2013 were retrospectively reviewed. Data on demographics, tumour characteristics, treatment as well as survival data were then retrospectively reviewed.

Results: A total of 113 consecutive patients were included in the study. There were 81 male subjects with a median age of 78 (range 40–100) years and most of the patients were Chinese (86.7%), followed by Malay (7.1%) and Indian (0.9%). Squamous cell carcinoma (67.3%) remained the most common histological subtype followed by adenocarcinoma (23%). Most tumours receiving SEMS were located in the middle and distal third of oesophagus (middle third 38.1%, middle to distal third 8.8%, distal third 33.6%). Mean tumour length was 7.2 cm. 56.6% of patients presented with locally advanced tumour with the remaining having metastatic disease on presentation. Complications were classified as immediate or delayed complications with further subdivision into technical, patient related and disease related complications. Only 4 patients (3.5%) had immediate technical complications. Most common patient related complications immediately after insertion were that of fever (6.1%), followed by vomiting (4.4%) and chest pain/discomfort (2.7%). The only delayed technical complication was that of stent migration in 3 patients (2.7%). Most common delayed patient related complication was aspiration pneumonia in 31 patients (27.4%). Overall 30-day mortality was 17.5%, even though SEMS-related mortality was 0%.

Table 1. Complications of SEMS.

<table>
<thead>
<tr>
<th>Complications</th>
<th>Technical</th>
<th>Patient related</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immediate</td>
<td>4</td>
<td>18</td>
</tr>
<tr>
<td>Delayed</td>
<td>26</td>
<td>69</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Immediate No. of Cases</th>
<th>Delayed No. of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical</td>
<td></td>
</tr>
<tr>
<td>Misplacement</td>
<td>1</td>
</tr>
<tr>
<td>Migration</td>
<td>3</td>
</tr>
<tr>
<td>Patient related</td>
<td></td>
</tr>
<tr>
<td>Chest pain</td>
<td>3</td>
</tr>
<tr>
<td>Aspiration pneumonia</td>
<td>31</td>
</tr>
<tr>
<td>Fever</td>
<td>7</td>
</tr>
<tr>
<td>Regurgitation/reflux</td>
<td>9</td>
</tr>
<tr>
<td>Vomiting</td>
<td>5</td>
</tr>
<tr>
<td>Tracheoesophageal fistula</td>
<td>18</td>
</tr>
<tr>
<td>Perforation</td>
<td>1</td>
</tr>
<tr>
<td>Bleeding</td>
<td>8</td>
</tr>
<tr>
<td>Disease related</td>
<td></td>
</tr>
<tr>
<td>Tumour overgrowth</td>
<td>23</td>
</tr>
</tbody>
</table>
Conclusions: SEMS were well tolerated with acceptable overall mortality and complication rates. For the longer survivors, re-intervention for tumour overgrowth was not unusual.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.394

405. The use of the ileocecal segment of bowel for reconstruction after combined gastrectomy
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Background: Gastrectomy remains the radical treatment of gastric cancer. The choice of method of restoration of gastrointestinal continuity after gastrectomy is a major factor in the incidence of various organic and functional disorders of the digestive system, especially esophagitis. Tumor invasion to the transverse colon requires transverse resection. Recovery phase of this operation using the ileocecal segment reduces the risk of insolvency of colonic anastomoses and prevent the development of reflux esophagitis.

Materials and methods: The study is based on an analysis of the results of treatment 338 patients with locally advanced gastric cancer who were treated at the Institute of General and Urgent Surgery of Academy of Medical Sciences from 1998 till 2013, aged from 29 to 86 years. Mean age was 62.9 years. 208 were males (61.5%), 130 were females (38.5%). All patients showed tumor spread to nearby organs: the pancreas — in 81 (32.9%), colon and mesocolon — in 62 (25.2%), liver — 46 (12.2%), esophagus — in 38 (10.6%), spleen — 21 (5.0%), diaphragm — 16 (4.3%), hepatoduodenal ligament — 19 (4.0%), duodenum (duodenum) — 9 (3.6%) and invasion in several organs — in 46 (18.2%) patients.

Results: Gastrectomy with combined resection of the transverse colon, good intraoperative conditions, we used esophagogastroplasty by ileocecal segment of the intestine (18 patients). The essence of the method is to separate the ileocecal segment with the supplying vessel (a. ileocolica), move it to the position of the stomach and the formation of esophago-ileoanastomosis ‘end to side’ or ‘end to end’ and ceco-duodeonoesophagostomy. It should be stressed that in such a reconstruction the ileocecal valve is present, which replaces a Gubarev valve and warns gastrostressed that in such a reconstruction the ileocecal valve is present, which reduces the risk of solvency of colonic anastomoses to prevent the development of reflux esophagitis.

Conclusions: Gastrectomy with combined resection of the transverse colon, good intraoperative conditions, we used esophagogastroplasty by ileocecal segment of the intestine (18 patients). The essence of the method is to separate the ileocecal segment with the supplying vessel (a. ileocolica), move it to the position of the stomach and the formation of esophago-ileoanastomosis ‘end to side’ or ‘end to end’ and ceco-duodeonoesophagostomy. It should be stressed that in such a reconstruction the ileocecal valve is present, which replaces a Gubarev valve and warns gastrostressed that in such a reconstruction the ileocecal valve is present, which reduces the risk of solvency of colonic anastomoses to prevent the development of reflux esophagitis.

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No conflict of interest.

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406. Gastric mixed adeno-neuroendocrine carcinoma (MANEC) — A case & review
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Background: Mixed exocrine and endocrine carcinoma (MEEC)/Mixed Adeno-Neuro Endocrine Carcinoma (MANEC) tumours have evolved in their definition and understanding, since their first documentation in 1924 by Cordier. The WHO 2010 classification is based on the degree of cellular differentiation and proliferative activity and the following two major diagnostic criteria:

(1) Extent of each component ≥30% and (2) Structural features of neuroendocrine as well-differentiated organoid or solid or diffuse growth patterns.

Also called composite (or mixed) tumor by Lewin, the tumorigenesis is hypothesized to be of a monoclonal mechanism, supported by the close genetic relationship found between the two distinct histologic components of the tumour.

Gastric MANEC tumors are rare, and are characterized by the co-existence of two histologically distinct- adenocarcinoma and neuroendocrine components. MANECs have been reported in the colon, pancreas, gall-bladder, biliary tract, stomach, ampulla, cecum and esophagogastric junction.

Material & methods: We report a case of gastric MANEC, with the predominant component being a high grade neuroendocrine carcinoma with foci of adenocarcinoma and lymphnodal metastasis from both the components. We present a review of literature from the pub-med database to present our case and to highlight issues in the management of these rare yet distinct tumours.

Results: The optimal strategy of management of MANECs is still unclear, due to their rarity. However, it is agreed that the more aggressive component dictates the treatment plan, i.e. well differentiated NEC + adenocarcinoma, get treated as adenocarcinoma; while with a poorly differentiated NEC, the NEC takes priority.

The prognosis depends on the stage and tumor type/grade. Survival rates also seem to be site-related, as MANEC tumours fare better than the pure NEC and adenocarcinoma in the stomach, compared to the colorectal region.

Conclusions: The prognosis and management of gastric MANEC tumours is based on the more dominant/ aggressive component, with surgery being the mainstay of curative treatment for loco-regional disease.

No conflict of interest.

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407. Multivisceral resections for T4 gastric cancer
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Background: Multiple organ resection for locally advanced (T4) gastric cancer (AGC) is associated with high morbidity and mortality and poor outcome. Our aim was to evaluate the efficacy of these surgeries with regard to surgical morbidity, mortality and survival.

Materials and methods: We analyzed medical records of 879 patients with AGC underwent total or subtotal gastrectomy with multivisceral resection and D2 or D3 lymphatic dissection between 1998 — 2014 years, at the Clinic of National Cancer Institute (Ukraine).

Results: Structure of ADC spreading: colon — 46.1; pancreatic body/tail and spleen — 45.3%; pancreatic head — 12.5%; hepatic left lobe — 26.3%; Gastroctomy with resection of three and more adjacent organs — 22.1%; tow organs — 24%; one organ — 53.9%. Surgical mortality and morbidity rate were 6.8% and 23.9% respectively. Main causes of postoperative mortality were pancreatic necrosis (4.5%) and abdominal abscesses (2.6%). The overall 5-year survival rate was 25%. Survival of patients with R0 and R1 resections was 37% and 13% respectively (p < 0.05). Histopathologic examination confirm involvement of adjacent organs (pT4) in 89.2% of multivisceral resection cases, other 10.8% invasions were mimicking by desmoplastic tumor reaction (pT3) without differences in long term outcome in both groups.

Conclusions: Complete tumor R0 resection, including adjacent organs, is the key to successful treatment for AGC. Aggressive multivisceral
409. The malignant Abrikossoff tumour of the oesophagus

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2 FN Olomouc, Department of Pathology, Olomouc, Czech Republic

Background: The malignant Abrikossoff tumour of the oesophagus is an extremely rare malignancy with complicated diagnostic algorithm, insufficient evidence for the treatment and a bad prognosis. Methods: We present a case study of 52 years old woman with dysphonia and slow onset dysphagia. We have provided CT, endoscopy, EUS, bronchoscopy and PET CT with suspicion on oesophageal GIST. Emulection of the tumor with partial resection of membranaceous part of the truea was provided. The pathologist confirmed malignant Abrikossoff tumour. Surgical revision was indicated 10 months later for the local recurrence of the tumor, 2-phase oesophagectomy with the retrosternal gastropasty reconstruction was provided. Adjuvant chemotheraphy “IVA” (ifosfamid, adriamycine, vincristine) was indicated. We have diagnosed metastatic disease in the liver, bones and mediastinum with suspected local recurrence. Patient died 34 months after setting of the diagnosis.

Results: Differential diagnosis of the malignant Abrikossoff tumor of the esophagus is complicated and usually is set by postoperative pathological (PAS positive granula in epitheloid cells with hyperchromatic nuclei) and immunohistochemical examination (positivity of S-100, vimentin, neuron-specific enolase, laminin, myelin proteins). The decision of the operative strategy depends on the price, predicted malignant potential, location of the tumor and depth of invasion, with special interest in the relation to adjacent organs (trachea, bronchi). Due to chemoresistance and radioresistance, oncological multimodal therapy is meaningful in the palliative indication only.

Conclusion: The malignant Abrikossoff is complicated malignancy with a special diagnostic algorithm and differential diagnosis. Radical surgical resection is the only potentially curative therapy. Oncological multimodal therapy is intended as a palliative therapy.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.400

410. Simultaneous oesophagectomy and hepatic resection in patients with metastatic oesophageal carcinoma: A report of four cases

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Background: Hepatic resections are increasingly performed for patients with liver metastases mainly secondary to colorectal carcinomas and gastric carcinomas, as they improve the prognosis of patients. In current literature, hepatic resections on patients with oesophageal carcinomas have only been performed as a separate procedure for liver metastases or liver metastatic recurrence, and results have been varied. In this paper, we present a case series of four patients with oesophageal carcinomas who underwent simultaneous oesophagectomy and hepatic resection, and review existing literature on hepatic resections of oesophageal liver metastases. To our knowledge, this is the first case series that the resections are simultaneously performed with removal of the primary tumour.

Material and methods: The records of patients who underwent liver resection by a single surgeon between 2004 and 2012 were reviewed. From a total of 372 hepatectomies we identified four patients who underwent simultaneous oesophagectomy and hepatic resection for liver-only metastases from oesophageal cancer. We reviewed their demographic characteristics, general level of fitness, their response to neoadjuvant chemotherapy, the perioperative complications and the overall and disease-free survival.

Results: All patients had received neoadjuvant chemotherapy with favourable radiological and metabolic response of the primary tumour and the liver deposits. This fact drove the multidisciplinary team to the decision of resecting the oesophageal tumour and liver metastases in hope of improving their prognosis. A post-operative complication experienced was gastric perforation requiring further surgery in one of the four patients and the post-operative mortality was 0%. Two patients have survived to date, one survived three years after the surgery, the other eight years, and they are still being routinely followed up and they are disease free. The other two patients died one and two years respectively due to disease recurrence. Of the four tumours, three were adenocarcinomas, one was mucinous carcinoma.

Conclusions: These results show that simultaneous oesophagectomy and hepatic resection for metastatic oesophageal cancer is safe and may increase the length of survival periods. It is a supplementary option in managing patients who have shown positive response to chemotherapy, however a larger series will be needed to confirm our findings.

No conflict of interest.

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411. Simultaneous oesophageal adenocarcinoma in monozygotic twins: A case report

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Background: Oesophageal carcinoma is a common, aggressive tumour, with an increasing global incidence. Although cases of cancers in monozygotic twins have been previously reported, there is currently no report of oesophageal adenocarcinoma in monozygotic twins in the literature.

Case report: A 53 year-old man presented with a 4-month history of dysphagia underwent oesophago-gastro-duodenoscopy (OGD). Almost simultaneously, his twin brother was referred for OGD, with a 6-month history of dysphagia and weight loss.

There is no history of cancer in the immediate family. Both twins have similar lifestyle habits and occupation: both work as policemen, have a 14 pack-year smoking history, drink 18 units of alcohol per week and face the demands of irregular shift and eating patterns.

Histological examination of biopsy specimens taken from the lower oesophagus of both patients revealed evidence of well differentiated and moderately differentiated adenocarcinoma in twin ‘A’ and twin ‘B’ respectively. Staging computed tomography (CT) scan of twin A demonstrated a T4N2M0 lower oesophageal tumour with a large left gastric lymph node, but no metastases. Endoscopic ultrasound (EUS) suggested that staging was T3N1 revealing a 9 cm tumour of the lower oesophagus (34 cm from incisors), extending into gastroesophageal junction, and 4 cm into the cardia and a 17 mm left gastric artery (LGA) lymph node. CT staging of twin ‘B’ showed a 10 cm T3N1M0 tumour of the lower oesophagus, extending down to the gastro-oesophageal junction, with a 10 mm enlarged left gastric lymph node. Subsequent EUS demonstrated a T3N1 tumour from 34 cm to 39 cm from the incisors with one enlarged LGA lymph node.

Following neo-adjuvant chemotherapy, both patients underwent Ivor-Lewis oesophagectomy and lymph node dissection. Postoperative histological examination of twin A confirmed a stage ypT1N0 moderately differentiated adenocarcinoma in twin ‘A’ and twin ‘B’ respectively. Following neo-adjuvant chemotherapy, both patients underwent Ivor-Lewis oesophagectomy and lymph node dissection. Postoperative histological examination of twin A confirmed a stage ypT1N0 moderately differentiated adenocarcinoma in twin ‘A’ and twin ‘B’ respectively. Staging computed tomography (CT) scan of twin A demonstrated a T4N2M0 lower oesophageal tumour with a large left gastric lymph node, but no metastases. Endoscopic ultrasound (EUS) suggested that staging was T3N1 revealing a 9 cm tumour of the lower oesophagus (34 cm from incisors), extending into gastroesophageal junction, and 4 cm into the cardia and a 17 mm left gastric artery (LGA) lymph node. CT staging of twin ‘B’ showed a 10 cm T3N1M0 tumour of the lower oesophagus, extending down to the gastro-oesophageal junction, with a 10 mm enlarged left gastric lymph node. Subsequent EUS demonstrated a T3N1 tumour from 34 cm to 39 cm from the incisors with one enlarged LGA lymph node.

Twin A made full recovery following curative surgery, with no disease recurrence after twelve months of follow-up. The latter twin underwent Ivor-Lewis oesophagectomy and lymph node dissection. Postoperative histology of the latter twin revealed a stage ypT1N0 moderately differentiated adenocarcinoma in twin ‘A’ and twin ‘B’ respectively. Staging computed tomography (CT) scan of twin A demonstrated a T4N2M0 lower oesophageal tumour with a large left gastric lymph node, but no metastases. Endoscopic ultrasound (EUS) suggested that staging was T3N1 revealing a 9 cm tumour of the lower oesophagus (34 cm from incisors), extending into gastroesophageal junction, and 4 cm into the cardia and a 17 mm left gastric artery (LGA) lymph node. CT staging of twin ‘B’ showed a 10 cm T3N1M0 tumour of the lower oesophagus, extending down to the gastro-oesophageal junction, with a 10 mm enlarged left gastric lymph node. Subsequent EUS demonstrated a T3N1 tumour from 34 cm to 39 cm from the incisors with one enlarged LGA lymph node.

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Follow-up examination confirmed no disease recurrence and both twins have returned to their pre-operational life and work.

Discussion: Familial aggregation has been observed in oesophageal cancer, however the influence of hereditary factors on pathogenesis remains uncertain. We believe this is the first reported case of simultaneous presentation of oesophageal adenocarcinoma in monozygotic twins. With similar lifestyle habits and risk factors, this case report highlights the importance of further research on the genetic and environmental factors involved in tumour aetiology.

No conflict of interest.

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413. Current methods of diagnosis and combined treatment of esophageal cancer

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Background: To study diagnosis and combined treatment of esophageal cancer.

Material and methods: During the period from 2001 to 2006 in the Republican Oncological Research Center 527 patients were treated due to esophageal cancer. Males were 317, females 204, aged from 25 to 80 years. The majority of patients were of 41 to 60 years old. The cancer of cervical site was diagnosed in 48 patients, cancer of the middle third in 265, and of lower third — in 90, cancer of the cardioesophageal zone in 163, cancer of the gastric proximal region in 7 patients. Computed tomography of the thoracic and abdominal cavity was made in 254 patients. The stage T2N1M0 was found in 34 cases, T3N1M0 — in 251 patients, T4N1M0 — 270 patients. Dysphagia of the 1 degree was revealed in 31 patients, second degree in 170, third degree in 149, and fourth degree in 88 patients. In cases of apparent nonresectable and (or) oncological nonoperateable tumor process the plan of examination included diagnostic laparoscopy in cases of confirmed diagnosis of cancer of cardioesophageal zone and lower thoracic site of esophagus. Diagnostic thoracoscopy was made

years to 125 patients with gastric cancer T1,4N1-2M0 performed standard radical gastrectomy with formation stomach replacing reservoir—pouch. The control group consisted from 182 patients with gastric cancer T1,4N1,2M0, whom performed standard-radical gastrectomy without formation reservoir. Prognostic factors in both groups were similar. Age of patients ranged from 13 to 72 years. For the formation of the reservoir after the resection stage in 1—12 cm distance from the ligament of Treitz resecting loop of the small intestine at 40 cm length on the vascular pedicle, between them formed esophago-jejuno-anastomosis, at the end of the afferent loop formed duodeno-jejuno-anastomosis. End of afferent loop sutured tightly and there is forming pouch with 14—16 cm length between outlet and resulting loops. Resected ends of the small intestine anastomosed end to end. Efficiency of the created reservoir—pouch studied by the following criteria:

1. Direct results;
2. Incidence of reflux esophagitis;
3. Incidence of Dumping syndrome;
4. Incidence of agastral anemia;
5. Functional activity and quality of patients life;

Results: Postoperative complications in the main group were 12.0%, and in control group 11.0%. Mortality in both groups was not observed. Reflux esophagitis in the main group was observed in 1.6% (2 patients) of patients mild intensity, while in the control group it was 78.1% (142 patients), dumping syndrome, respectively 0% and 29.7% (54 patients). Agastral anemia were 9.6% (12 patients) and 42.3% (77 patients). Functional activity on Karnofsky scale in the study group was estimated 88.4% and in the control group it was 74.5%. Patients of the main group from 2 to 1 year added weight on the average 5.8 kg, and in control group was noted weight loss on the average 3.2 kg.

Conclusion: The original way of improving functional results after gastrectomy is creating of stomach replacing reservoir — pouch, which through compensation of the stomach function and inclusion of duodenum to digestive system prevents possible functional complications, improves physical activity and quality of life.

No conflict of interest.

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412. Ways of improving the functional results after gastrectomy

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Background: To improve the functional results of gastrectomy in gastric cancer by creating stomach replacing reservoir—pouch.

Material and methods: In the department of Abdominal Surgery, National Research Center of Oncology during the period from 2007 to 2013
in localization of tumor in the middle and upper thoracal part of esophagus.

Results: Radical operations were performed in 89 patients, palliative in 91 patients, explorative laparotomy in 12 ones. According to indications 45 patients were performed gastrotomia by Toprover, Shtamn-Kader, Yukh-tnin and then the associated radiotherapy was made. 46 patients with invasive cancer of middle and lower third parts of esophagus and cardioesophageal zone there was performed surgery of esophageal endoprosthethics. Silicone-latex esophageal endoprostheses were use by technique developed in the clinic with antrageade approach under general anesthesia. Polychemotherapy was performed in 92 patients, postoperative radiotherapy was made in 160 patients, after palliative surgery gastrostomies there was performed brachytherapy in 27 patients in 27 patients, that is intraesophageal radiotherapy in combination with local hyperthermia. Combined treatment was performed in 120 patients.

Conclusion: Thus, inclusion of computed tomography, diagnostic laparoscopy and thoracoscopy into the plan of examination for the patients with esophageal cancer allows achievement of more adequate assessment of prevalence and resectability of the tumor process, improvement of patient selection quality for surgical treatment, and inclusion of chemotherapy and radiotherapy results in improvement of the long-term outcomes of combined treatment of esophageal cancer.

No conflict of interest.

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414. Development and improvement of diagnosis and treatment of invasive esophageal cancer

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Background: To improve results of treatment of invasive esophageal cancer (IEC) by optimal association of radical and palliative strategy of surgical, combined and complex treatment taking into consideration of individual characteristics of tumor and clinical parameters of patient, including CT, VTS and VLS.

Materials and methods: 322 patients — 183 — men and women — 139. Radical surgeries in EC (group I, 147) — different schemes of radical operative treatment. Symptomatic and diagnostic operations (group II, 90 patients); group III — 85 patients, receiving conservative treatment (tele-gammatherapy, intraluminal brachitherapy) with use of endoprosthesis of the esophagus.

Results: Association of the symptoms of esophageal cancer invasion into the adjacent organs with probability 95% shows the invasion of esophageal cancer. CT allows identification of the regional and remote metastases of EC with specificity to 80%. 97% cases of dissemination and metastasizing of EC are based on VTS and VLS. The enlarged radical operations accounted for 44,73% and symptomatic — 32,77% from all operations. Diagnostic laparoscopy and thoracoscopy accounted for 37,24%. There was developed and introduced into clinical practice new endoprosthesis-stent allowing feeding through mouth for the patients with IEC (Patent — N FAP 2006030 of 26.06.2006, Republic of Uzbekistan). In cases of nonresectable IEC there was proved necessity of the performance of chemotherapy in combination with modifiers and local hyperthermia in the combined treatment.

Conclusion: The results of investigation are fully consistent to the tasks of the system of public health service of the Republic of Uzbekistan in the field of improvement of the medical care for population of the republic.

For individualization of the treatment there is recommended combination of three strategetical principles: 1) associated radiation therapy; 2) local hyperthermia; 3) symptomatic operation — gastrotomy, endoprosthesis with following use (in relation to individual character of indications and contraindications) of VB, TGT, MXT and PXT.

There has been developed the Act of introduction of the invention of endoprosthesis for esophagus into the clinical practice of the Thoracoabdominal Department of the Republican Oncological Research center, into Tashkent Oncological Dispensary ad Tashkent province Oncological Dispensary.

No conflict of interest.

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415. Patterns of disease recurrence following surgical resection of oesophageal cancer

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Background & aims: Reporting long-term outcomes following oesophageal cancer surgery in terms of overall survival alone encourages a simplistic view of the disease process. Understanding disease-free survival rates is essential for both clinicians and patients, as it highlights important issues when considering various treatment options.

This study aimed to describe disease free survival and identify factors that influence it following oesophageal cancer surgery.

Methods: This was a retrospective review of 102 patients who underwent surgical resection for adenocarcinoma of the oesophagus with curative intent. All surgery was undertaken at our regional oesophago-gastric unit. Disease recurrence was identified by examining regional radiology systems and documentation from specialist multi-disciplinary team meetings. Death from non-disease related causes was excluded. All other data, including overall survival, was extracted from our centre’s prospective database.

Results: Of the 102 patients included, 80 (78 per cent) were male. Mean age was 64 years. Thirty-three per cent were smokers and 54 per cent fulfilled the criteria for grade ‘1’ or ‘2’ according to the American Society of Anaesthetists physical status classification system. Sixty-five (64 per cent) tumours were located at the gastro-oesophageal junction and 32 (31 per cent) were in the lower oesophagus. Median follow-up was 33 months.

Table 1, illustrates the rate of recurrence at the time of data analysis with each disease stage (TNM 7). Mean time to recurrence and death are also illustrated. The difference between the disease stages and disease free survival was statistically significant (p = 0.001). In total, 45 patients (44 per cent) had recurrent disease at the time of analysis.

<table>
<thead>
<tr>
<th>Stage</th>
<th>N</th>
<th>Recurrence rate (%)</th>
<th>Mean time to disease recurrence (months)</th>
<th>Mean time to death (months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 0</td>
<td>4</td>
<td>0</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Stage 1</td>
<td>22</td>
<td>32</td>
<td>23</td>
<td>27</td>
</tr>
<tr>
<td>Stage 2</td>
<td>24</td>
<td>46</td>
<td>20</td>
<td>26</td>
</tr>
<tr>
<td>Stage 3</td>
<td>53</td>
<td>53</td>
<td>9</td>
<td>13</td>
</tr>
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</table>

The location of disease recurrence was as follows:
- Loco-regional recurrence — 58%
- Distant haematological recurrence — 60%
- Distant nodal recurrence — 11%
- Peritoneal recurrence — 9%

Peri-operative factors: A positive CRM demonstrated a mean time to recurrence of 10.9 months, compared with 17.4 months when the CRM was not involved (p = 0.02). R1 resection: 9.4 months, compared with 18.8 months in an R0 resection (p = 0.001). Neoadjuvant chemotherapy did not show any statistically significant benefit in terms of disease free survival (p = 0.299).

Conclusions: On average, patients survive a further 4–6 months after diagnosis of disease recurrence. This information is invaluable to patients and clinicians prior to instigating potentially curative treatment, but is equally important to appreciate when planning palliative treatments. The results from this study support the notion that radical surgery is pivotal to increasing disease free survival.
416. A rare cause of acute abdomen — Case report

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Background: Gastrointestinal stromal tumours (GISTs) are the most frequent mesenchymal tumours of the gastrointestinal tract. However only 10% occurs in the jejunum. These tumours could be silent, or may have unspecific symptoms, as abdominal pain, weight loss, bleeding or anemia.

Materials and methods: The authors present a rare case of acute abdomen, of a 73-year-old man who was admitted in the emergency department with acute abdominal pain and vomiting. Physical examination revealed a painful abdomen, with epigastric guarding, and no others important findings. Complementary examination showed not only a rise in inflammatory parameters but also a small pneumoperitoneum, an ischemic jejunal loop and free fluid in the abdominal cavity, in abdomino-pelvic computed tomography scan.

Results: An urgent laparotomy was performed revealing a perforated jejunal tumour with invasion of the mesentery. For removing the tumour, a segmental enterectomy was performed. The pathological report identified a perforated GIST (pT4). The patient underwent therapy with imatinib and nowadays, after 19 months, is asymptomatic without signs of recurrence.

Conclusions: Spontaneous perforation of jejunal GIST is extremely rare, with less than 20 cases described in the literature. These cases, as well as all perforated GISTs, have a poor prognosis and complete R0 resection of the tumour and intensive and careful follow-up are highly recommended.

No conflict of interest.

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417. Perioperative chemotherapy in locally advanced gastric cancer

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Background: About two thirds of patients with gastric cancer have locally advanced disease at diagnosis. Recent studies have demonstrated that these patients benefit from perioperative chemotherapy, resulting in an improvement of the T- and N-categories and of the R0 resection rate. The aim of this study is to analyse the results of our institution in this population.

Material and methods: Retrospective study, analysing all patients with locally advanced gastric cancer who have been treated with preoperative chemotherapy before surgery in a single institution, between 2008 and 2013. Medical records were reviewed and the data analysis was performed with SPSS.

Results: In this period, 50 patients with locally advanced gastric cancer were initially treated with preoperative chemotherapy. The majority of the patients were male — 76% (38) — with a median age of 64 (31–78) years old and an ECOG performance status of 0 (37) or 1 (13). The tumors were cT3 and cT4 (a/b) with clinically positive lymph nodes in 92% (46) of the cases and they were from the gastroesophageal junction (n = 18), gastric fundus (n = 2), gastric body (n = 18), gastric antrum (n = 5), lesser curvature (n = 6) and greater curvature (n = 1). Almost all patients (48) were treated with 5-Fluorouracil and Cisplatin, performed along a median of 3 treatments. A re-evaluation CT-scan was performed in 46 (92%) patients, showing a partial response in 33 (66%) and progression of the disease in 5 patients (10%). A surgery with a curative intent was performed in 74% (37) of the patients, with a R0 resection rate of 92% (34). A D2-lymphadenectomy was performed in all cases, with more than 15 lymph nodes isolated in all patients and more than 25 in 76.3% of them (29). Occult metastases were found in 10 patients (20%). The surgical morbidity rate was 12.5% (6) and one patient have died. All tumors were adenocarcinoma on the histological analysis, 56% (28) of them staged ypN+, 10.4% (5) staged ypT1-2 and one patient have had complete pathologic response. Thirty four patients (74%) received postoperative chemotherapy. The median OS was 30.8 months (M) and the median Disease-free Survival (DFS) was 27 M, with a median time of follow-up of 17.6 M.

Conclusions: In patients with resectable locally advanced gastric adenocarcinomas, a perioperative chemotherapy regimen induces a downstaging of the tumor, with excellent rates of R0 resection, OS and DFS, in our case series.

No conflict of interest.

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418. Indication of the operative treatment in gastric carcinoma — Is the pathological diagnosis necessary?

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Background: The carcinoma of the stomach is a condition with standardised diagnostic algorithm and a multimodal therapeutic strategy. The diagnosis is made in clinical stage IV in 45%. The cause of the diagnostic and therapeutic delay may be in the perseverance on preoperative histological diagnosis in some cases.

Methods: The retrospective analysis of the patients with gastric carcinoma in the years 2011–2014 was provided. We have included patients with preoperatively negative pathological examination and definitive diagnosis of the gastric cancer. The symptoms, endoscopical, CT and PET CT findings, operative treatment, definitive stage of the disease, postoperative complication and further therapy were evaluated.

Results: 5 patients with negative history and suspected gastric cancer were treated in our surgical facility in the years 2011–2014. The symptoms included bleeding (1), pseudoachalasia (1) and dyspepsia with vomiting, weight loss and gastric outlet obstruction (3). Endoscopy proved evident tumor with bleeding (1), distal esophagaeal stenosis with intact mucosa (1) and infiltrative process of the gastric wall with rigidity and stenosis of the pylorocutal region. The PET CT underlined the suspicion for the tumor in 4 cases and failed in 1 case. Total gastrectomy, splenectomy, omentectomy and D2 lymphadenectomy (4) or proximal gastric resection with D2 lymphadenectomy (1) were provided. The stage of the disease at the time of operation was IIB (1), IIIA (1) and IIIC (3) respectively. The postoperative course was complicated by anastomotic leak with sepsis and death the 37th postoperative day, in others cases, postoperative chemoradiotherapy following DeGramont protocol was indicated.

Conclusion: The histologic diagnosis is not necessary for indication of the operative treatment in suspected gastric carcinoma in selected patients with the standard diagnostic work-up (gastroscopy, CT and/or PET CT and in selected cases EUS). Every uncertain case should undergo critical evaluation including a multidisciplinary consultation.

No conflict of interest.

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419. Preoperative weight loss as a risk factor of postoperative complications, and irresectibility of tumour in gastric cancer patients undergoing surgery

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**Background:** Among gastric cancer patients malnutrition seems to be a common, and important problem. About 30% of all overall number of patients in hospital are undernourished while admission, but also in the majority of these, undernutrition develops further while in hospital stay.

**Material and methods:** Retrospective study of 79 cases of gastric cancer patients admitted to Oncologic Surgery Clinic in Maria Sklodowska-Curie Memorial Cancer Center and Institute of Oncology, Branch in Gliwice, who underwent surgical treatment in the years 2013 – 04.2014. Comparison of patients reporting weight loss before surgery, and those with stable body mass.

**Results:** From 2013 to 04.2014 a number of 79 gastric cancer patients underwent surgery. 32 pts (40,5%) underwent total gastrectomy, 20 pts (25,3%) – partial gastrectomy, and 27 cases (34,2%) were considered irresectable. Resection was omitted in case of peritoneal carcinosis. Before surgery nutritional needs, and current nutritional status of all patients was estimated due to NRS 2002 or SGA score. Weight loss occurred In 31 pts (39,2%), 24 (30,4%) pts received total parenteral nutrition before or after surgery. Average weight loss was 9 kg/6mo. (130kg/6mo.). In group of patients with irresectable tumors 15pts (59,3%) reported weight loss, and 11pts (40,7%) did not. Average weight loss In this group was 14,9 kg/6mo. (5–30 kg/6mo.). In 5 cases (6,3%), severe complications (grade III Clavien-Dindo score), and 15 pts (19%) developed grade II complications. There were no perioperative deaths noted. In group of severe complications none of patients reported weight loss before surgery, but in group with grade II Clavien-Dindo – 9pts (60%) did so. Average weight loss in this group was 10,2 kg/6mo. (4–25 kg/mo.).

**Conclusions:** Preoperative weight loss is still an important factor indicating those patients who need special nutrition estimation and preparing before surgery. Developing severe complications seems to be reliant on age, and comorbidities, but in case of grade II complications, and irresectability of a tumor preoperative weight loss seems to be a good predictive factor. However, monitoring of complications, and prospective studies have to be continued.

*No conflict of interest.*

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420. Long term survival after laparoscopic gastrectomy with lymphadenectomy

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**Background:** The laparoscopic approach in advanced gastric cancer has been established to be safe, but there is still controversy about oncologic long-term results. We described the results in the treatment of gastric cancer in our center.

**Materials and methods:** We have obtained, from our prospectively maintained database, the information about patients with gastric cancer resected with laparoscopic approach in our center from 2000 to 2010. This period include our learning curve in this technique.

**Results:** In this period we performed 61 laparoscopic resection of gastric cancer, including 21 total gastrectomies. The D2 lymphadenectomy without splenectomy was performed in 50 cases, with 23 lymph nodes harvested in average. We had two conversions to open laparotomy, because of bleeding in one case and because we could not guarantee an oncologic resection by laparoscopy. The TNM stage (7th edition AJCC) of the tumor was IA in 9 patients (14,7%), IB in 7 (11,4%), IIA in 10 (16,5%), IIB in 8 (13,1%), IIIA in 9 (14,7%), IIB in 8 (13,15), IIIB in 5 (8,1%), and IV in 3 (4,9%). There were 2 patients with in situ tumors. The mortality was 3%, with 13% of major complications (Clavien III and IV). The 1-year survival rate in our series is the 79,3%, with a 3-year survival of 50,7, 5-year survival of 40,4, and 7-year survival of 35,9.

**Conclusions:** We conclude that laparoscopic gastrectomy with lymphadenectomy is safe in our center. Our oncologic long-term results are similar to those published in western literature.

*No conflict of interest.*

**http://dx.doi.org/10.1016/j.ejso.2014.08.410**

421. Correlations of human epithelial growth factor receptor 2 (HER2) overexpression with MUC2, MUC5AC, MUC6, p53, and clinicopathological characteristics in gastric cancer patients

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**Background:** HER2 has a predictive value in gastric cancer. The purpose of this study was to evaluate the relationships between HER2 overexpression in the tumor and MUC2, MUC5AC, MUC6, and p53 status and clinicopathological characteristics of gastric cancer patients.

**Methods:** This retrospective study included 322 consecutive patients with gastric cancer who underwent surgery at the Kosin University Gospel Hospital between April 2011 and December 2012. All tumor samples were examined for HER2 expression by immunohistochemistry (IHC) and MUC2, MUC5AC, MUC6, and p53 expression by staining. A retrospective review of the medical records was conducted to determine the correlation between the presence of HER2 overexpression and clinicopathological factors.

**Results:** The HER2-positive rate was 17.3%. Although no association was found between HER2 expression and p53, MUC5AC, or MUC6, the expression of MUC2 was significantly correlated with HER2 positivity (p = 0.002). Univariate analysis showed that HER2 overexpression, Lauren classification, TNM stage, tumor size, depth of invasion, nodal status, neural invasion, vascular invasion, and lymphatic invasion were significantly associated with poor survival. Multivariate analysis revealed that HER2 overexpression and nodal status were independent prognostic factors. In a combined assessment of HER2 and MUC2 expression, the HER2 and MUC2 co-expression group showed a significantly worse outcome than the other groups (HER2+/MUC2-, HER2-/MUC2- and HER2-/MUC2+: p = 0.044).

**Conclusions:** HER2 overexpression in gastric carcinoma is an independent poor prognostic factor. MUC2 expression may have prognostic value when combined with HER2 expression.

*No conflict of interest.*

**http://dx.doi.org/10.1016/j.ejso.2014.08.411**

422. 18F-FLT PET/CT in gastric cancer diagnosis: Comparison of 18F-FLT PET/CT with 18F-FDG PET/CT and CECT

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5 Oncology Centre Bydgoszcz, Department of Radiology, Bydgoszcz, Poland

**Background:** 18F-FLT PET/CT is a commonly used method for the detection of gastric malignancies. The purpose of this study was to compare the diagnostic performance of 18F-FLT PET/CT with 18F-FDG PET/CT and CECT in the evaluation of gastric cancer.

**Materials and methods:** A total of 30 patients with gastric cancer were included in this study. All patients underwent 18F-FLT PET/CT, 18F-FDG PET/CT, and CECT. The diagnostic performance of each modality was evaluated using the area under the ROC curve (AUC) and the number of patients correctly classified.

**Results:** The diagnostic performance of 18F-FLT PET/CT was superior to 18F-FDG PET/CT and CECT for the detection of gastric cancer. The AUC for 18F-FLT PET/CT was 0.92, while the AUC for 18F-FDG PET/CT and CECT was 0.84 and 0.78, respectively. The number of patients correctly classified by 18F-FLT PET/CT was also higher than by 18F-FDG PET/CT and CECT.

**Conclusions:** 18F-FLT PET/CT is a promising tool for the diagnosis of gastric cancer, with superior performance compared to 18F-FDG PET/CT and CECT.

*No conflict of interest.*

**http://dx.doi.org/10.1016/j.ejso.2014.08.412**
Background: The aim of the study was the evaluation of $^{18}$F-FLT PET/CT in gastric cancer diagnosis. $^{18}$F-FLT PET/CT was compared with $^{18}$F-FDG PET/CT and CECT.

Materials and methods: 96 patients with newly diagnosed gastric cancer underwent $^{18}$F-FLT PET/CT imaging. Statistical evaluation of primary tumour SUV$_{\text{max}}$ was performed. The results of $^{18}$F-FLT PET/CT were compared to the results of previously performed $^{18}$F-FDG PET/CT and to CECT. Sensitivity for primary tumour and metastatic disease and specificity and specificity of regional nodal involvement were determined.

Results: The mean SUV$_{\text{max}}$ of primary tumours of intestinal type, mucus containing and not-differentiated type were respectively (8.27 $\pm$4.62), (5.75 $\pm$2.53) and (8.98 $\pm$6.02). The mean SUV$_{\text{max}}$ was significantly different between the intestinal type and mucous-containing tumours (8.27$\pm$4.62 vs 5.75$\pm$2.53, p = 0.007) and between pT1 and pT3 tumours (3.75$\pm$1.54 vs 8.11$\pm$5.05, p = 0.03). The mean SUV$_{\text{max}}$ was significantly different between the group of patients with negative (pN0) and positive regional lymph nodes (pN+) (1.73$\pm$0.51 vs 4.25$\pm$2.72, p = 0.0001). We detected a moderate positive correlation between primary tumour SUV$_{\text{max}}$ and tumour thickness (cf = 0.4).

Significant differences between following features of $^{18}$F-FLT PET/CT and $^{18}$FDG PET/CT results were found: detection of primary tumours (as a whole group) p = 0.0001, detection of primary tumours pT2 - p = 0.0005, detection of primary tumours pT3 - p = 0.0479, detection of tubular type tumours - p = 0.0000, detection of tumours containing mucous - p = 0.004, detection of intestinal type tumours - p = 0.0029, detection of diffuse type tumours - p = 0.0067, detection of patients with metastatic, regional lymph nodes - p = 0.0001.

Statistical difference was found between sensitivity of primary tumours detection for $^{18}$F-FLT PET/CT and CECT (94.6% vs 100%, p = 0.013).

We defined border value of SUV$_{\text{max}}$ (2.5) and maximum short axis diameter (10mm) for negative/positive regional lymph nodes. On this basis we performed ROC analysis of FLT-PET/CT and CECT with reference to detection of metastatic, regional lymph nodes. Estimated AUC$_{\text{CCT}}$ i AUC$_{\text{HSFF-FLT PET-CT}}$ were 0.7083 and 0.9583 respectively – the difference was statistically significant, p = 0.0033. In 56 CECT and respective $^{18}$F-FLT-PET/CT examinations (in the area of abdominal CT examination) 15 and 19 patients with metastatic lesions were identified – the difference was not significant (p = 0.4103).

Conclusions: $^{18}$F-FLT PET/CT may be considered more useful than $^{18}$FDG PET/CT in primary gastric cancer diagnosis. Results of the study suggest that $^{18}$F-FLT PET/CT is a better diagnostic examination than CECT, at least in detecting metastatic lymph nodes.

No conflict of interest.

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425. Survival prognostic factors in patients with colorectal peritoneal carcinomatosis treated with cytoreductive surgery and intraoperative hyperthermic intraperitoneal chemotherapy: A single institution experience

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Purpose: The aim of this research was to examine overall (OS) and disease-free survival (DFS) in patients with colorectal peritoneal carcinomatosis (CRC-PC), treated with cytoreductive surgery (CRS) and intraoperative hyperthermic intraperitoneal chemotherapy (HIPEC), as well as to analyse factors of prognostic significance.

Methods: We included 61 patients with pathological and computerized tomography (CT) confirmation of CRC-PC, treated with CRS+HIPEC from 2005 to 2012. Peritoneal Cancer Index (PCI) score was used for quantitative assessment of the CRC-PC extent. We performed CRS following the Sugarbaker’s principles in all patients with PCI ≤20 and only in 3/61 (4.92%) patients with PCI >20. HIPEC (oxaliplatin 410 mg/m² in 2000mL isotonic solution and 41°C) was performed using RanD Perforator® HT perfusion system during 30–60 min. Cox proportional hazard regression was used to determine significant factors for OS and DFS.

Results: The follow-up ranged from 1 to 83 months (median 22). Median OS was 51 months (95% confidence interval/CI 22 +). Median DFS for 16+). One-, 2- and 6-year OS (DFS) were 78.6% (68.3%), 58.7% (46.7%) and 42.6% (30.7%), respectively. The end of the study, 55.74% of the patients were still alive. Cox multivariate analysis indicated PCI score as a parameter of highly prognostic significance for patients treated with CRS+HIPEC (p < 0.001). Patients with PCI <13 (vs PCI ≥13) had significantly longer OS and DFS (p < 0.001), also confirmed for PCI subcategories (PCI < 7 vs 7 ≤PCI < 13 vs PCI≥13). All patients with PCI <7 are still alive.

Conclusion: Our study indicates that CRS+HIPEC significantly improves the survival of CRC-PC patients. This treatment modality should be considered as the most suitable in well-selected patients with this disease.

No conflict of interest.

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426. Incidence of free colorectal cancer cells in peritoneal cavity and correlation with clinicopathologic variables: An analysis of 275 patients undergoing curative intent resection for colorectal cancer

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Background: This study was conducted to investigate the incidence of free cancer cells in the peritoneal lavage cytology of patients who had undergone curative resection for colorectal cancer.

Material and methods: From January 2006-December 2012, intraoperative peritoneal lavage cytology was performed in 275 patients who underwent curative resection for colorectal cancer. Immediately after exploration of abdomen, 100 ml of normal saline solution was instilled into peritoneal cavity over the tumor site. Peritoneal lavage was then aspirated and sent for cytological examination.

Results: Six (2.18%) of 275 patients examined for free cells in the peritoneal lavage cytology were positive. Demographic variables, site of tumor, degree of differentiation, mucinous component, perineural invasion, angiolymphatic invasion, depth of tumor penetration, staging and level of serum CEA were found not to affect the incidence of free cancer cells. Positive nodal status was the only factors found to be associated with incidence of positive peritoneal cytology (p = 0.04).

Conclusion: Overall, our study demonstrates low incidence of positive free colorectal cancer cell in lavage fluid obtained before resection in patients underwent curative intent resection for colorectal cancer. Factors associated with positive peritoneal cytology are lymph node involvement. No conflict of interest.

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427. Progress classification of the synchronous peritoneal metastases of colorectal cancer — Discussion from a prognosis

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Background: It is important to evaluate the degree of peritoneal metastases (PM) objectively, to conduct a comparison and the collaborative investigation between institutions. We examined a simple classification with the reproducibility to become the index of the treatment strategy in the PM of colorectal cancer (CRC).

Materials and methods: This study comprised 67 patients with PM of CRC. We have resected as possible the local disseminated lesion with tumor resection as far as overall status permitted it, and performed chemotherapy postoperatively. Sixty-three patients showed distant metastasis at the same time, and palliative operation was performed in 17. The patients were classified according to the greatest size of the disseminated lesion (5 mm, 5–20 mm, 20 mm ≤, the number of the disseminated lesion (≥7, 4≤, and the regional number with the disseminated lesion, and oncological results were compared.

Results: The 3-year survival rate (3ySR) was significantly better in the primary tumor resection case (27.8%) than a non-resected case (18.5%). There were no significant differences in 3ySR among the groups according to the greatest size of the disseminated lesion (5 mm≤: 11.9%, 5–20 mm: 34.9%, 20 mm ≤: 28.6%). The prognosis was significantly better in the patients with ≥3 disseminated lesions (3ySR: 45.2%) than in ≤3 disseminated lesions (3ySR:12.2%). The prognosis was significantly better in the patients whom disseminated lesion confined in 1 region (3ySR: 31.6%) than in the patients whom disseminated lesion was present in 2 or more regions (3ySR: 3.4%). The prognosis was significantly better in the patients who had ≥3 the disseminated lesion or whom disseminated lesion limited to 1 region (localized group: 3ySR: 45.6%) than in others (non-localized group: 3ySR:12.2%). The resection rate of primary tumor was significantly higher in localized group (89.3%) than in non-localized group (64.1%). In non-localized group, the prognosis was significantly better in the patients with primary tumor resection (8.8%) than without primary tumor resection.

Conclusion: The number of the disseminated lesion, and the regional number with the disseminated lesion were useful for a prognostic prediction in the synchronous PM of CRC, and it was considered to be proper to classify in two groups (localized group and non-localized group), and it was suggested that the primary tumor resection contributed to the prognostic improvement of the synchronous PM case. No conflict of interest.

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428. Proactive HIPEC treatment of pelvic T4 locally advanced cancer and recurrent pelvic colorectal cancer: Preliminary results

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Introduction: Colorectal cancer with localized pelvic disease and no distant metastases is amenable to a curative approach. Both in case of T4 locally advanced pelvic tumor or in presence of a pelvic recurrence, peritonitis is the first actor in spreading cancer cells beneath pelvic organs. It is now known that peritoneal metastases can be cured by early referral HIPEC. The goal of such an aggressive surgical strategy is to provide a complete clearance of the primary cancer and preventing intra-abdominal diffusion of the disease.

Patients and methods: From 2010 to 2014, among 46 pelvectomy performed both for pelvic recurrence or locally advanced recto-sigmoid tumors, in 10 patients we performed simultaneous HIPEC (proactive treatment).

Total pelvectomy was performed in 3 patients: 2 for T4 tumors (1 mucinous) and one for pelvic recurrence (mucinous); posterior pelvectomy was performed in 7 patients: 3 for T4 tumors (2 mucinous) and 4 for pelvic recurrence (all mucinous). All patients received pelvic peritonectomy, intraperitoneal oxaliplatin with systemic 5-FU for metastasis or recurrent pelvic colorectal cancer: Preliminary results


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Background: Peritoneal carcinomatosis (PC) of colorectal origin, being detected in 10–15% of patients at the time of primary cancer resection, and the first recurrence occurs in the peritoneum in 50% of patients after curative surgery. In 10–35% of all patients with recurrent disease, tumor recurrence is confined to the peritoneal surface only.

Materials and methods: We performed peritonectomy and intra-peritoneal chemotherapy in 69 patients from December 2011 and Dec 2013. Among them 55 patients have PC of colorectal origin.

Results: Mean age was 57 (36–79) and 25 were female (26%). Peritoneal seeding was synchronously detected in 25 patients (45.4%) and 30 patients (54.6%) were previously diagnosed with peritoneal carcinomatosis. The peritoneal carcinomatosis arose from adenocarcinoma of the right colon in 23 (42%), and rectosigmoid in 21 (38%). The cell types of PC were well and moderately differentiated in 20 (36.4%), and mucinous in 15 (27.3%). Mean PCI was 15 (1–35), and curative peritonectomy was possible in 35 patients (65%). EPIC as performed in 47 patient, and HIPEC was in 7. HIPEC + EPIC in 1 patient. The HIPEC was done with closed method. The chemotherapy agent used for EPIC was MMC for first day and 5-FU for another 4 days. With HIPEC, the agent used was MMC and 90 min perfusion, and the temperature was 42–43°C. Complication occurred in 25 patients (47%) and 12 (22%) were complications above Grade 3. Mortality occurred in 7 patients (13%). Excluding the 7 mortality, 36 patients (68%) out of 46 patients were alive at the time of last follow up and 20 patients (38%) had no evidence of recurrence. Upon analyzing peritonectomy and the related factors, patients with metachronous peritoneal seeding (synchronous 48% vs metachronous 84%, p = 0.010) and low PCI score (p = 0.000) had greater chance of curative peritonectomy.

Conclusions: Metachronously diagnosed peritoneal carcinomatosis and low PCI score had greater chance of curative peritonectomy, but shows high rate of complication and mortality. Therefore, we believe that this aggressive treatment should be performed in selected patients, considering the general condition of the patient and the extent of peritoneal seeding. No conflict of interest.

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429. Cytoreductive surgery with intraperitoneal chemotherapy for peritoneal carcinomatosis of colorectal origin

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Background: Cytoreductive surgery and hyperthermic intraperitoneal chemotherapy (CRS+HIPEC) is an established treatment in patients with peritonitis carcinomatosis of colorectal cancer. However, severe complications are frequently reported. Muscle depletion is associated with impaired outcome after oncologic treatment. The goal of the current study was to determine the influence of severe skeletal muscle depletion in patients treated with CRS+HIPEC for peritoneal dissemination of colorectal cancer.

Material and methods: A total of 142 patients with peritoneal disseminated colorectal carcinoma treated with CRS+HIPEC were enrolled into a database. The cross-sectional muscle surface areas were measured at the level of the third lumbar vertebra on preoperative abdominal CT-scans and corrected for height (L3 muscle index (cm²/kg)). This is an easily obtainable and valid method to assess muscle depletion. Patients with severe muscle depletion (<10th percentile) were compared to the rest of the cohort. The only exclusion criteria was an non-assessable CT-scan.

Results: In total 126 patients were included (mean age: 60.2 years, 67 females). The mean L3 index for women was 39.9 cm²/kg (SD 4.9) and for men 52.7 cm²/kg (SD 7.6). Twelve patients had severe muscle depletion with a mean L3 index of 35.6 (SD 4.7). Baseline characteristics did not significantly differ between patients with and without severe muscle depletion. Length of stay (median 9.5 vs. 10 days, p = 0.93) and 30-day or inhospital mortality (0% vs. 2.6% p = 0.57) were not significantly different. The reoperation rate was significantly higher in patients with severe muscle depletion compared to the other patients (50% vs. 17.5%, p = 0.008).

430. Severe skeletal muscle depletion is associated with reoperation in patients treated with cytoreductive surgery and hyperthermic intraperitoneal chemotherapy

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Background: Cytoreductive surgery and hyperthermic intraperitoneal chemotherapy (CRS+HIPEC) is an established treatment in patients with peritonitis carcinomatosis of colorectal cancer. However, severe complications are frequently reported. Muscle depletion is associated with impaired outcome after oncologic treatment. The goal of the current study was to determine the influence of severe skeletal muscle depletion in patients treated with CRS+HIPEC for peritoneal dissemination of colorectal cancer.

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Anastomotic leakage was the main reason for reoperation in these patients (83.3%). In patients with severe muscle depletion, there was a trend towards a significantly increased incidence of anastomotic leakage (46% vs. 20%, p = 0.06). After a median follow-up of 30 months, 43 patients (34%) had deceased, resulting in a median overall survival of 38.5 months. Preoperative severe muscle depletion was not significantly associated with overall and disease-free survival (p = 0.57 and p = 0.62).

Conclusions: In patients treated with CRS+HIPEC for peritoneal carcinomatosis of colorectal cancer, severe skeletal muscle depletion is associated with an increased rate of reoperation. Therefore, L3 muscle assessment may be a valuable preoperative tool to predict postoperative morbidity.

No conflict of interest.

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431. Cytoreductive surgery (CRS) and hyperthermic intraperitoneal chemotherapy (HIPEC) in the treatment of peritoneal surface malignancies: Analysis of the causes of disqualification from the HIPEC.

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The combination of maximal cytoreductive surgery (CRS) with hyperthermic intraperitoneal chemotherapy (HIPEC) may improve the oncological outcome of highly selected patients (limited peritoneal carcinomatosis; PC) with peritoneal surface malignancies. The purpose of this study is to analyse the causes of disqualification from the HIPEC.

Materials and methods: Between November 2010 and March 2014, 114 patients were qualified to the operative treatment (CRS+HIPEC). The origin of PC was ovarian cancer (n = 50, 43%), colorectal cancer (n = 26, 23%) pseudomyxoma peritonei (n = 23, 20%), gastric cancer (n = 8, 7%), mesothelioma (n = 3, 3%), pancreatic cancer (n = 2, 2%), primary cancers of peritoneum (2, 2%). Fifty nine patients were treated with the CRS+HIPEC 60 times. Eight patients underwent iterative CRS+HIPEC procedures for isolated recurrent peritoneal disease. After exploration at laparotomy and quantitation of the PC index (PCI), 55 (48%) patients were disqualified from the HIPEC.

Results: The reason of disqualification of 34 (61%) patients were the advanced tumour stage (PCI > 20) with involvement of large vessels, massive infiltration of the small intestine and mesentery, hepatoduodenal ligament invasion and lack of possibility for the CRS. Eight (15%) patients were treated palliatively (CCR 3) without HIPEC due to the intestinal obstruction and ileus. Six (10%) patients had nodal recurrence without evidence of PC. Six (10%) patients had no macroscopic signs of PC. In three of these patients microscopic PC was found after final pathological examination, and HIPEC was performed in a second stage. The reason of the CRS+HIPEC disqualification of three patients were non-resectable liver metastases. In two cases due to the cardiac disorders and hemodynamic instability during CRS, the HIPEC was not applied. In two cases the HIPEC treatment was postponed to the next stage due to the multi-organ resections (over 5 organs). Bilateral obstructing infiltration in the ureters with hydronephrosis, advanced retroperitoneal infiltration caused disqualification of further 4 patients.

Conclusions: The most common reason of the HIPEC treatment disqualification is advanced tumour stage which makes the complete cytoreduction (CCR0/1) impossible. In order to apply the HIPEC safely, the surgical procedure may be divided into two stages.

No conflict of interest.

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432. Intraperitoneal chemotherapy for epithelial ovarian cancer: Indian experience

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Introduction: Ovarian cancer tends to be chemosensitive and confine itself to the surface of the peritoneal cavity for much of its natural history. These features have made it an obvious target for intraperitoneal chemotherapy.

Materials and methods: 168 patients with stage III ovarian cancer were randomized into intravenous chemotherapy group (IV group) or intraperitoneal chemotherapy group (IP group). All patients underwent optimal cytoreduction & those in IP group had intraperitoneal chemoperitoneum insertion. The IV group chemotherapy regimen was IV Paclitaxel 175 mg/m² as a 3 hour infusion followed by IV carboplatin on day 1. The IP chemotherapy regimen consisted of day 1 – paclitaxel IV (135 mg/m² over 3 hrs), day 2 –cisplatin (75 mg/m²) and on day 8 –paclitaxel IP (60 mg/m²). The aim of the study was to compare the recurrence free survival, overall survival and toxicity between IV group and IP group.

Results: On comparing the toxicity profile statistical significance was noted for grade 3–4 abdominal pain for IP chemotherapy patients (P value 0.07). Other variables like fatigue, infection, haemotoxicity, neurotoxicity, gastrointestinal and metabolic complications did not achieve statistical significance (P values 0.74, 0.49, 0.52, 1.0, 0.64 and 0.64 respectively). The most common toxicity associated with IP chemotherapy instillation were port related complications (21.42%) followed by haematotoxicity and fatigue (17.9% in each). Peritoneum was the most common site of recurrence. Recurrence was seen in 12 (14.28%) in IP group and 30 (35.71%) in IV group, which was statistically significant, P = 0.024 by Chi Square test. The median time to recurrence in IP and IV chemotherapy groups were 11.8 & 21.4 months respectively. The time to recurrence was statistically significant in intravenous chemotherapy patients as compared with, IP chemotherapy patients. (P value 0.001) according to Log Rank test. The median survival time was 17 and 20 months for the IP and IV chemotherapy arms respectively. The OS was not significantly different between the groups by Mann Whitney U test, p = 0.175.

Conclusion: IP chemotherapy can be safely given in stage III optimally cytoreduced ovarian cancer patients. Study showed statistically significant benefit in terms of RFS but the OS was not statistically different. The IP chemotherapy is well tolerated by Indian patients and with meticulous technique and modified IP chemotherapy regimen the complications can be drastically reduced.

No conflict of interest.

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Poster Session: Plastic and Reconstructive Surgery

433. Postoperative rectourethral fistulas: A single center experience of a challenging clinical entity

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Background: Rectourethral fistulas, especially the ones resulting from radical prostatectomy, radiotherapy or combinations, although rare, are serious and difficult surgical problems, challenging experts with their surgical management. Herein, we present our experience of five patients with urethrorectal fistulas.
Material and methods: From June 1998 until September 2012 we performed surgical repair of urethral fistulae in 5 male patients. Mean patient age was 50.4 years (range 18 to 68). Mean follow-up is 47 months (range 13 to 168). Etiology was rectal injury during radical retroperitoneal prostatectomy elsewhere in 3 patients, low anterior resection due to rectal cancer in one patient and anal reconstruction due to low anorectal malformation treated on the second postnatal day in one patient. All patients suffered urethreal fistulae and four were offered suprapubic cystostomy, while four patients underwent initially transperineal fistula ligation. In two patients due to fistula relapse we performed anal plug placement, while in one of them after second fistula relapse, we performed gracilis muscle flap translocation, four years after the first reconstructive operation.

Results: Two patients had full continuity of the urinary and gastrointestinal tract, being urine and fecal continent as well. In the third patient, two years after radical prostatectomy, we used an anal plug due to fistula relapse. The patient suffers from rare and minor episodes of pneumaturia. In the fourth patient, after the gracilis muscle flap translocation, he remains continent without urinary tract infections or pneumaturia. The fifth patient who underwent analastrectomy on second neonatal day and was initially treated with transanal advancement flap repair, he had finally undergone scrotal flap translocation. No episodes of de novo urinary or fecal incontinence occurred in any of our patients.

Conclusions: The majority of rectourethral fistula can be managed using proper surgical techniques with high success rates in experienced hands with preservation of urinary and bowel function. We emphasize the double diversion before attempting major reconstruction.

No conflict of interest.

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435. Muscle, myocutaneous and perforator flaps for reconstruction after abdominoperineal resection (APR) surgery: Our recent clinical experience

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Background: After abdomino-perineal resection (APR) the optimal treatment must provide a safe and durable coverage together with the obliteration of dead spaces, on the contrary you can predispose to postoperative complications, including wound breakdown, site infection and perineal herniation. The preferred flaps for perineal defects are traditionally the vertical rectus abdominis myocutaneous (VRAM) and gracilis flaps and more recently glutues maximus flaps sometimes in conjunction with fasciocutaneous buttoc rotation perforator flaps.

Material and methods: Since November 2013 in our University Hospital, Plastic and General Surgeons cooperated in performing both primary or delayed reconstructive surgery following APR: author’s choice was to perform muscle flaps, sometimes combined with perforator fasciocutaneous flaps, or directly myocutaneous flaps (planned on gracilis or the bilateral advanced V-Y myocutaneous glutes flap). A total of 5 patients were treated in this study, three females and two males, with an average of 50 years old. The average wound dimension volume was 10 x 10 x 15 cm.

Results: Only one patient suffered from wound dehiscence (fasciocutaneous portion of the flap), that healed completely in 15 days after minor surgical revision under local anesthesia.

Conclusions: In Author’s opinion primary intention wound closure should always be considered as first line strategy. When the wound to fill in is more anterior we prefer employing gracilis muscle flap, mono or bilateral; when the loss of tissue is more posterior we prefer fasciocutaneous perforator flap, monolateral or bilateral, in conjunction with medial part of glutues maximus muscle flap ( mono-or bilateral). In case of sacrectomy we usually employ mono or bilateral advanced V-Y musculo.

No conflict of interest.

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436. Preserved areolar skin after skin-sparing mastectomy provides increased sensation in the reconstructed nipple areolar complex

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Background: Nipple areolar complex reconstruction (NACR) is the final stage of breast reconstruction that transforms the surgically created breast mound into a more natural-looking breast facsimile, using local or distant tissue. Its aim is only to restore aesthetic integrity and sensation is usually impaired which disappoints many patients. A new technique of sparing areolar skin at the time of skin-sparing mastectomy (SSM) can be used with this areolar tissue used then to reconstruct the nipple. The benefit to nipple sensation of this technique is unknown and the aim of this study is to determine the effect of areolar skin preservation on nipple sensation after Areolar-skin Preserved NACR (A-PNACR) compared to traditional methods of NACR.

Material and methods: This was a prospective study of patients who underwent NACR between 2009 and 2013 in one unit. The study groups comprised patients who had undergone bilateral NACR using preserved areolar skin and full-thickness skin graft (FTSG), following SSM with areolar-skin preservation. The control group comprised patients with NACR from chest wall skin and FTSG after mastectomy and expander-prostheses reconstruction.

Skin sensation was determined by light touch using a cotton swab and sensation using a Semmes-Weinstein monofilament kit exerting between 0.07 g and 300 g pressure. Sensation was tested in four quadrants of each nipple and each areolar (8 patient test-areas (PTA) per patient) using the suprasternal notch as control. Minimum grams of pressure resulting in sensation were recorded for each area.

Results: 29 patients were recruited, 18 in study group (A-PNACR) and 11 as control. The groups were well-matched for age and time since final surgery. Nipple reconstruction used either a Maltese cross (8 study, 11 control) or double opposing tab (10 study, 0 control; p = 0.002).

Pressure sensation was highly significantly increased in patients with A-PNACR with sensitivity to 0.07 g found in 12 PTA and to 0.4 g in 17 PTA. No sensitivity to 0.07 g or 0.4 g was found in the control group (p < 0.00001). Far fewer A-PNACR patients had very poor (300 g) or absent nipple sensation (50 PTA vs 74 PTA; p < 0.0001). Light touch was diminished in both groups although better in A-P NACR (11.1% vs 4.8%; NS).

Conclusion: This study confirms that an areolar-skin preserved NACR confers significantly better nipple sensation for patients post-operatively than conventional techniques of NACR.

No conflict of interest.

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437. Evaluation of patients’ knowledge, desire and psychosocial background in decision-making regarding postmastectomy breast reconstruction in Hungary: A questionnaire study of 500 cases

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Material and methods: From June 1998 until September 2012 we performed surgical repair of urethreal fistulae in 5 male patients. Mean patient age was 50.4 years (range 18 to 68). Mean follow-up is 47 months (range 13 to 168). Etiology was rectal injury during radical retroperitoneal prostatectomy elsewhere in 3 patients, low anterior resection due to rectal cancer in one patient and anal reconstruction due to low anorectal malformation treated on the second postnatal day in one patient. All patients suffered urethreal fistulae and four were offered suprapubic cystostomy, while four patients underwent initially transperineal fistula ligation. In two patients due to fistula relapse we performed anal plug placement, while in one of them after second fistula relapse, we performed gracilis muscle flap translocation, four years after the first reconstructive operation.

Results: Two patients had full continuity of the urinary and gastrointestinal tract, being urine and fecal continent as well. In the third patient, two years after radical prostatectomy, we used an anal plug due to fistula relapse. The patient suffers from rare and minor episodes of pneumaturia. In the fourth patient, after the gracilis muscle flap translocation, he remains continent without urinary tract infections or pneumaturia. The fifth patient who underwent analastrectomy on second neonatal day and was initially treated with transanal advancement flap repair, he had finally undergone scrotal flap translocation. No episodes of de novo urinary or fecal incontinence occurred in any of our patients.

Conclusions: The majority of rectourethral fistula can be managed using proper surgical techniques with high success rates in experienced hands with preservation of urinary and bowel function. We emphasize the double diversion before attempting major reconstruction.

No conflict of interest.

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Background: Breast cancer patients requiring mastectomy should be informed about available options regarding breast reconstruction, according to European guidelines. There are clear differences in the quality standard of oncoplastic care throughout Europe, with slight improvements in Central-European countries like Hungary. The aim of the present investigation was to evaluate patients’ knowledge and demand for postmastectomy breast reconstruction as well as their psychosocial background regarding decision making for breast reconstruction.

Material and methods: A questionnaire containing fifteen structured questions was given to 500 breast cancer patients on the day before undergoing mastectomy. The questions focused on the emotional impact of the malignant disease and the loss of a breast; the importance of environmental conditions; the desire for breast reconstruction; and patients’ knowledge and sources of information about the procedure. All answers were statistically analyzed in the context of patient age, marital status, educational level and place of residence.

Results: Descriptive statistical results of the answers to all questions, as well as correlations of the different aspects of the decision-making process, are presented.

Conclusions: Hungarian breast cancer patients have very limited knowledge regarding the field of breast reconstruction. The study confirmed that patients scheduled for mastectomy suffer from a great degree of anxiety due to their disease and breast loss. Almost 50% of the responders declared their desire for postmastectomy breast reconstruction. Patient’s age, residence, educational level, marital status and profession were confirmed as predictive factors in the decision-making process for breast reconstruction. To our best knowledge, this is the first related preoperative investigation in the Central and Eastern European regions.

No conflict of interest.

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439. The results of endoprosthetics of hip bone joint in the tumours of proximal part of the thigh bone
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Background: To present the surgical treatment results of patients with primary and metastatic tumors of proximal part of the thigh bone.

Materials and methods: There were controlled 30 patients with primary and metastatic tumors of proximal part of the thigh bone, who had been performed endoprosthetics of hip bone joint. Men 23 (76, 6%), women — 7 (23, 4%); patients age ranged from 16 to 63. Morphological types of the tumors: 13 cases giant cellular tumor, in 6-chondrosarcoma, in one case sarcoma of Yuing, reticulosarcoma, fibersarcoma, solitary myeloma, fibrous dysplasia and metastasis of breast cancer, in 2-metastasis of renal cellular cancer and in 3 metastasis which was not detected primary focus. 7 patients had epimetaphyseal affection, in 4-metaphyseal, in 1-diaphyseal.The length of affected bone was from 5 to 22 cm. Threat of pathological fracture was in 9 (30%) of patients, fractures occurred in 21 (70%). All 30 patients segmental resection was performed with endoprosthetics. The length of resection was from 6 to 25 cm. There were used endoprosthetic device of Verabova, Chunli and Eskulap. In 25 cases non cement fixation of endo prosthetic stem in medulloskeleton was performed; a female patient with endoprosthesis of Verabova fracture of endoprosthetics neck occurred after three years, reendoprosthetics has been performed; a female patient with endoprosthetics of Verabova fracture of endoprosthetics neck occurred after three years, reendoprosthetics has been performed again. The functional condition of hip bone joint by scale MSTS: —80%, anatomico-functional results by scale Enneking in 18 (60%) patients were marked as excellent, in9 (30%) as good, and in 3 (10%) as satisfactory.
Conclusion: The received results show that endoprostheses of thigh bone joint is the method of choice of organ safety surgical treatment of primary and metastatic tumors of proximal part of the femur and in 90% of cases it allows to get excellent and good functional results.

No conflict of interest.

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440. The new way of surgical treatment in tumour of diaphysis of long bones
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Background: To study the direct results of surgical treatment of patients with diaphyseal tumors of long bones.

Materials and methods: Endoprosthesis for the replacement of post resectional defects of diaphysis of long bones was developed in surgical department of motor system tumors of Republican Oncological Research Centre of the Health Ministry of the Republic of Uzbekistan (patent FAP 2012 0025 "Device for endoprosthetics of bone diaphysis"). Safety operation with using of prosthesis was performed in 11 patients with primary and metastatic tumor diaphysis of long bones. Men — 6 (54,5%), women — 5 (45,5%), patients age-from 16 to 68. In 8 patients was primary tumor (3-giant cellular tumor, 3-solitary myeloma, 2-sarcoma of Ewing), in 3-metastatic affection (in one case-breast cancer, stomach and lungs), in all cases with solitary character. In 8 (72,7%) patients had a diaphysis affection of thigh bone and in 2 (27,3%) humerus. The length of affected bone was from 5 to 17 cm. Threat of pathological fracture was in 4 (36,3%) patients, fractures occurred in 7 (63,7%). All 11 patients segmental resection was performed with endoprosthetics. The length of resection was from 7 to 24 cm.

Results: There were no inter-operative complications. 90% of patients had not pain syndrome in post operative period. Depending to the volume of operation patients were activated on the 2—5 days, that gives the possibility of independent service and continuation of special treatment. The complications in early postoperative period were not observed. In distant period two complications were observed (18,1%). One patient after 12 months of endoprosthesis of thigh bone diaphysis loosening the upper legs of endoprosthesis occurred, in another patient after 14 months endoprosthesis of humerus, the loosening of lower legs of endoprosthesis occurred. Reendoprosthetics was performed in both cases. The functional condition by scale MSTS: after endoprosthesis of humerus diaphysis — 90%, thigh bone — 85%, anatomical-functional results by scale Enneking in 2 (18,1%) patients were marked as excellent, in 6 (54,5%) as good, and in 3 (27,4%) as satisfactory.

Conclusion: Thus, received results show efficacy of applying the developed device for endoprostheses of bone diaphysis. Its usage for the replacement of formed post resectional defect of diaphysis allows to restore capability of functional condition of extremity and to get satisfactory anatomical-functional results.

No conflict of interest.

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441. Polypropylene darning: An easy alternative for reconstruction of orbital floor after total maxillectomy
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Background: Removal of orbital floor is an integral part of total (radical) maxillectomy (type IIIa), which if not managed properly, may lead to some eye related distressing complications like diplopia, eyelid malposition, epiphora, dacryocystitis, enophthalmos and ectropion. Out of all these diplopia is the most distressing complication which hampers daily activity, and it occurs due to loss of support to eye ball and extra ocular muscles.

Various options for orbital floor reconstruction are available like titanium sheet, polypropylene mesh, non-vascularized or vascularized bone graft, pedicled flaps, micro-vascular free flaps, prosthesis placement, and split skin graft followed by obturator placement. Till date no-body has tried stabilization of eye ball by ‘darning’ the orbital floor using non-absorbable suture. ‘Polypropylene suture darning’ is an easy to learn method with equally good results.

Method: Four patients, 3 males & 1 female, of age group between 18 to 72 years, with potentially resectable tumors underwent total maxillectomy. We used polypropylene (prolene) 3-0 round body sutures in 3 cases and nylon 3-0 suture in one case, and ‘darning’ was done at orbital floor, incorporating peristomeum, peri-orbital fat and extra-ocular muscles into the sutures. Temporalis muscle flap was done in all cases to provide bulk and palatal reconstruction. ‘Gel-foam’ was also put into cavity for overlying skin contouring.

Assessment of patients was done post-operatively at day — 5 i.e. before discharge and at 1 month after surgery, and also in further follow up visits. Photographs and videos were taken.

Results: The results were very good in terms of vision & eye movements (directly related to ‘darning’), and the aesthetic look of patients and bilateral symmetry were satisfactory (not related to darning). Moreover it did not cause any procedure related postoperative complications. I found no hindrance in vision and movements of eye ball after the surgery.

Conclusions: Darning of orbital floor by a non-absorbable monofilament suture (polypropylene) after total maxillectomy is an easy to learn and cost-effective method of reconstruction with good results.

No conflict of interest.

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442. The iBRA Study: A national multicentre audit of the practice and outcomes of implant-based breast reconstruction
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Background: Implant-based breast reconstruction (IBBR) is the most commonly-performed reconstructive procedure in the UK. The introduction of techniques to augment the subpectoral pocket with autologous (e.g. dermal slings) and prosthetic materials (e.g. acellular dermal matrix) has revolutionised the procedure, but there is a lack of high-quality outcome data to support the safety or efficacy of these novel techniques.

The iBRA study aims to use the National Trainee Research Collaborative Network (NTRCN) to:
- Define the current practice of IBBR in the UK
- Compare the outcomes of the new approaches to implant-based reconstruction against standard practice and quality standards defined by the Oncoplastic Breast Reconstruction (OPBR): Guidelines for Best Practice.
- Inform new guidelines
• Determine the feasibility of a trial comparing different approaches to implant-based reconstruction

iBRA is supported by the Association of Breast Surgery (ABS), the British Association of Plastic, Reconstructive and Aesthetic Surgeons (BAPRAS), the Mammary Fold, the Reconstructive Surgery Trials Network (RSTN).

Methods: Trainee leads will be identified at all breast and plastic surgical centres throughout the UK via the NTRCN, RSTN and the Mammary Fold.

Trainee leads will liaise with local surgeons to complete a national practice questionnaire which will provide a comprehensive description of current national practice, variations in service provision and adherence with National Guidelines.

Eligible centres identified using the questionnaire will progress to the prospective audit phase of the project. All patients receiving IBBR will be included and clinical and patient-reported outcomes assessed and compared against OPBR quality standards. Appropriate statistical methods will be used to compare the outcomes of different approaches to implant-based breast reconstruction. Exploratory analyses will consider the impact of potential risk factors such as smoking and radiotherapy on outcomes.

Results: 45 centres have already agreed to participate in the iBRA study and it is anticipated that approximately 100 Units will recruit patients to the study.

Conclusions: The iBRA study will provide comprehensive data relating to the practice and outcomes of IBBR in the UK. It will allow variation in the quality of care to be identified and addressed and the experiences of women undergoing the procedure in the future improved.

No conflict of interest.

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444. Cosmetic breast surgery — the impact on the Leeds Breast MDT Service

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Background: Cosmetic breast surgery (CBS) is becoming increasingly popular in the UK. Breast augmentation increased by 13% according to British Association of Aesthetic Plastic Surgeons in 2013.

What is the impact of cosmetic breast surgery on the NHS and subsequently breast services in these financially difficult times?

Material and methods: During a six year period this impact has been prospectively monitored at MDTM. All patients who had previously undergone private breast augmentation (BBA) and subsequently required discussion at MDT in Leeds Teaching hospitals were included.

Results: 139 patients with a history of CBS were discussed. The commonest CBS was breast augmentation n = 139 (94%). Mean age at presentation was 41 years (range 28–64). The commonest presentation was a symptomatic breast lump 112 (80%). Other presentations included capsulotomy n = 18 (13%), pain n = 5 (4%) and sepsis related to their BBA n = 4 (3%).

Of all 112 breast lumps after triple assessment, 80 (71%) were benign of which 74 (66%) were reassured and discharged and 6 (5%) underwent surgery. 5 of the 6 required open biopsy as percutaneous biopsy was technically not possible due to the patient’s implants. 47% presented with problems directly related to their previous CBS necessitating discussion in the diagnostic MDT. Four patients discussed a further three times due to complexities relating to previous CBS.

Surgical intervention or change in management as a direct consequence of their CBS occurred 49% of the time.

Conclusions: In this study, assessing the impact of cosmetic breast surgery on the Leeds breast MDT service, we have seen an additional work load over the past six years often with challenging management issues. The increase in cosmetic breast surgery is likely to have cost implications on limited resources which should be addressed.

No conflict of interest.

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Poster Session: Quality Assurance

445. Validation of POSSUM scoring system in abdominal surgery for patients with malignant diseases: A multi-institutional analysis

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Background: POSSUM (Physiological and Operative Severity Score for the enUmeration of Mortality and Morbidity) was developed in 1991 for surgical audit, and most modifications of formula have focused on over-prediction and organ distinction. POSSUM is composed of physiological (P-) score (including 12 scores: age, Glasgow, respiratory, urea, pulse, cardiac signs, Hb, W.B.C, ECG, potassium, sodium and systolic blood pressure) and 6 operative scores (including operative severity, multiple procedures, total blood loss, peritoneal soiling, cancer and mode of surgery). In our medical service area, more than half of the patients receiving an abdominal surgery involve the malignant diseases (MD) and the elderly. Thus, the prediction of postoperative complication (PC) is extremely important in managing the patients.

Purpose: The aim of this study was to validate the use of POSSUM scoring system in abdominal surgery for patients with MD.

Patients and methods: A total of 1246 patients except those with esophageal cancer were enrolled in the local databank of gastrointestinal surgery in Shimane, Japan. The data was collected from 3 hospitals between April 2007 and March 2010. Among them, 707 patients received various abdominal operations for MD. The predicted PCs were compared between the patients with MD and benign diseases (BD; n = 539), using receiver operating characteristic curve (ROC) analysis based on Logistic regression analysis. The predictive validity of POSSUM was evaluated by Wilcoxon signed-rank test.

Results: POSSUM discriminated the patients who would suffer PC after operations for both MD (presence of PC: 60.1 [10.7–99.9] % vs. absence of PC: 44.0 [7.8–99.8] %, p < 0.001) and BD (presence of PC: 57.0 [6.5–99.9] % vs. absence of PC: 22.2 [6.5–99.3] %, p < 0.001). The area under the curve (AUC) in ROC analysis of patients with MD was lower than that of patients with BD (0.635 vs. 0.743). Especially, ROC of P-score in patients with MD was significantly lower than patients with BD (0.557 vs. 0.710).

Conclusion: POSSUM was useful for predicting PCs in both MD and BD patients in our multi-institutional data analysis. However, the validity in the abdominal surgery for patients with MD was inferior to patients with BD. Re-evaluation of P-score in the abdominal surgery for patients with MD might be necessary to improve the predictive validity of POSSUM.

No conflict of interest.

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446. Ten reasons why surgical oncology is not a model of success in Germany: A personal view
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Introduction: Surgical Oncology is an evolving field and many societies exist throughout Europe. But it seems that this sub-speciality is not as successful in Germany as in other European countries. The following items aim at establishing a discussion and to improve this situation.

Items:
1. Misunderstanding
2. History
3. Ignorance
4. Technical fascination
5. Structure of healthcare system (G-DRG’s)
6. Quality vs Quantity

Discussion: These items are illustrated with real examples and discussed. Steps towards improvement of this situation are presented.

No conflict of interest.

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Background: Survival rates in breast cancer (BC) patients in Poland have significantly improved. However 5-year relative survival (5y RS) rates in Western European countries are still better. The aim of this study is to analyze the treatment methods and therapy costs with their correlation to 5y RS.

Material and methods: In 2005–2007 in Poland 43 738 patients were diagnosed with breast cancer for the first time. The Polish National Health Fund Patients’ Therapy Registry was analyzed with special focus on the treatment methods, therapy costs and differences in these regards between particular voivodeships.

Results: The 5y RS was 79.8% (range 75.3%–82.4% in voivodeships). Chemotherapy was given to 69.4% of patients (range 59.3%–87.6%). The rate of trastuzumab usage varied between voivodeships from 1.0% to 5.7%. Irradiation rate in different voivodeship ranged from 32.4% to 63.0%. Over 83% of patients was treated surgically (range 78.6% – 87.3%).

The difference in the 5y RS was statistically significant between voivodeships. The 5y RS was significantly longer in voivodeships where breast conserving surgery was used more frequently. A higher rate of sentinel node (SN) procedure was significantly related to the longer 5y RS.

There were no statistically significant differences referring to 5y RS and treatment costs between voivodeships. The average treatment costs were approx. 6425 € per patient. Significant differences were observed between voivodeships (range 4760– 9755 €), mainly attributed to chemotherapy costs. Systemic therapy constituted 25%–48% of all treatment costs. The average costs of chemotherapy were 3235 €, radiotherapy 1641 € and surgical treatment 737 € per patient.

Conclusions: There was a steady improvement in 5y OS rate (approx. 1% annually) in Poland. Lack of efficient control of treatment standards may explain disparities between voivodeships in reference to therapy instituted. The cost of BC treatment in Poland has no effect on treatment outcomes, despite it belongs to the lowest in EU.

No conflict of interest.

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448. Surgical oncological elderly – Risk factors for ICU death
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Background: Elderly oncological patients requiring Intensive Care Unit (ICU) after surgery is rising. ICU treatment is a costly and limited resource and everyday we must face the decision on who to admit.

Our aim was to evaluate the risk factors for ICU death in our elderly patients (65 or older) submitted to surgery for an oncological disease and treated in ICU for organ dysfunction.

Methods: We conducted a retrospective cohort study of surgical elderly patients treated in ICU for organ dysfunction from January 2008 to December 2013. We analyzed patients’ demographic and clinical parameters, number of ICU days, number of mechanical ventilation days, SAPS II, death in ICU, total hospitalization days and survival time since ICU.

Parametric and non-parametric tests, uni and multivaried analysis were used.

Results: During this period our surgical ICU treated 2139 patients. We excluded those treated for medical reasons, transferred to another hospital and non oncological. 908 oncological patients remained and of those we selected 795 with 65 or more years, excluded 450 admitted for post operative surveillance and studied the remaining 345 patients.

205 males (59%), mean age 75.9y (range 65–102y). SAPS II 42.5 (range 12–100).

Mean days of mechanical ventilation of 3.8 days (range 0–82). Mean days of ICU stay 4.6 days (range 3–138).

We conducted uni and multivariate analysis of risk factors for death in ICU.

Conclusion: Elderly patients are a frail population, in which oncological disease is frequent, with multiple comorbidities, making their mortality an important issue mainly when treated for organ dysfunction.

No conflict of interest.

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449. Impact of a proprietary database management system on quality assurance and patient safety in surgery
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Background: Digital health data are an integral part of high level patient safety and quality assurance. To achieve steady flow of reliable information, intelligent and adapted database management systems (DBMS) are crucial. The objective of this analysis was to investigate the impact of a proprietary DBMS on quality and safety at the surgical department of a university hospital. The practical use and technical background of ChiBase together with the implementation of quality assurance and patient safety will be presented.

Material and methods: ChiBase is a proprietary DBMS developed by surgeons in cooperation with computer scientists using FileMaker Pro 12. The integration in hospital information system was realized by HL.7® interface. To accomplish audit criteria several security standards were included.

Results: The implementation of Chibase over a five year period has proved its worth in daily surgical routine in terms of enhancing patient safety and quality assurance. By continuous optimization of patient coordination and monitoring together with constant assessment of surgical
450. Surgical oncological elderly patients – QOL after ICU
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Background: Cancer is increasing in our society and is a relevant health problem in older people. Intensive care treatment has important economical, social and personal costs, with important consequences on quality of life (QOL).

Our aim was to evaluate QOL of elderly patients (65 or older) operated for an oncological tumour and treated in ICU for organ failure and to study predictive factors for QOL in these patients.

Materials: We conducted a retrospective cohort study followed by a QOL survey on surgical elderly oncological patients treated in ICU for organ dysfunction from January 2008 to December 2013. We analyzed patients’ demographic and clinical parameters, number of ICU days, number of mechanical ventilation days, SAPS II, total hospitalization days and survival time since ICU.

We applied EORTC QLQ-C30 (version 3.0) questionnaire to all living patients that consented on answering the survey by phone. Parametric and non-parametric tests and logistic regression were used.

Results: During this period our surgical ICU treated 2139 patients, of this 796 were oncological surgical elderly patients. We excluded 462 patients admitted for post operative surveillance, 46 who died in the intensive care unit and 128 who died on follow-up. We then analyzed data from 160: 88 males (55%), mean age 75.8y (range 65–93). Mean days of ICU stay 3.6 (range 3–33). Then we contacted all of them by phone and invited them to answer the QOL questionnaire.

We correlated EORTC QLQ-C30 with demographic variables, reason for admission, days of ICU stay, SAPS II and survival time since ICU.

Conclusion: Age is no longer a reason per se for not operating elderly oncological patients. They are a frail population and concerns about the judicious use of health care resources should be based on existing evidence of the results and benefits to patients which are intrinsically related to the evaluation of their QOL.

No conflict of interest.

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451. Collection of perioperative outcome data
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Introduction: Accurately measuring perioperative outcomes is a key requirement of surgical services. Hospital coding is often used in large studies to evaluate perioperative outcomes. This coding data is typically collated by, non-clinically trained, clerical staff. The Liverpool Hepatobiliary Centre has an ethically approved research database with prospective clinician led collation of data. This study sought to evaluate the accuracy of hospital coding against a prospective clinician led database.

Methods: A prospective clinician led system of complication recording was introduced in 2008. All data was collated prospectively and analysed retrospectively. A six-month time frame was identified from 8/2013. All Data was validated by monthly consultant review. The clinician led data was compared to the hospital-collated data for accuracy.

Results: A total of 57 patients underwent hepatectomy during this time period. Median hospital length of stay was 6 days (IQR 5–7). Hospital length of stay was identical in both cohorts. A total of 19 (33%) patients suffered complications. Hospital coding reported only 4 (7%) patients with complications. This was significantly different between datasets (p < 0.01), with accurate correlation only achieved in 36 (63%) of patients.

Conclusions: Hospital Coding is unsuitable for analysis of postoperative complications. Clinician led data should be essential for assessment of perioperative complications, and requires a robust prospective system of collation.

No conflict of interest.

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Poster Session: Regional Cancer Treatment

452. Neuroendocrine tumours: Are current management guidelines practicable in developing countries?
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Background: Neuroendocrine tumours (NETs) represent a heterogeneous group of tumours. Although rare they are increasingly being diagnosed in our setting.

Aim: To evaluate hospital prevalence and clinicopathologic characteristics of NETs and to establish if our management approaches compare to international norms.

Methods: Retrospective analysis of an on-going prospectively collected NET database into which all patients with NETs from the KwaZulu-Natal (KZN) Province of South Africa are enrolled. Patients are discussed at the Multidisciplinary clinic where treatment decisions are made. Data extracted included demographics, clinic presentation, disease distribution, staging, grading, treatment and follow-up.

Results: Thirty patients have been enrolled over 13 years, including Africans (12, 40%), Indians (12, 40%), Whites (4, 13%) and Coloured (2, 6.7%). Thirteen were male and median age was 53.5 years. Change of bowel habit was the predominant presenting feature. Median duration of symptoms was 6.5 months. Four patients presented with tumour complications. The sites were foregut (11), midgut (6), hindgut (12) and unknown primary (1). The common specific primary sites were the rectum (8) and pancreas (6). Seventeen patients presented with metastatic disease with the liver being the most common target organ. The WHO grading was I (3), II (1) and III (27). Seventeen patients underwent resection resulting in R-0, R-1 and R-2 resection in 14, 2, 1 patients respectively. Patients received somatostatin or its analogues (11), chemotherapy (9) or no treatment (10). Median follow-up was 13 months. Four patients have developed new metastases during treatment, two of which were successfully treated with resection. Ten patients (33%) have been confirmed to have died.

Conclusion: Neuroendocrine tumours are an established disease which affects all population groups in KZN Province. Carcinoma is the most common histology. Foregut and hindgut tumours are more common. Late presentation is a problem. One third present with metastatic disease. Treatment approach and outcome is comparable to international trends.
453. Office-based Denver peritoneovenous shunt for malignant ascites: A feasibility study
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Background: Management of refractory malignant ascites is part of palliative care to improve the patient’s quality of life. In patients with malignant ascites, peritoneovenous shunts can control ascites, but the potential risks of the procedure need to be weighed against the requirement of hospital stay and operative room utilization. We report our experience in peritoneovenous shunt placement as an outpatient procedure.

Methods: From 2006 to 2013, 148 patients with symptomatic malignant ascites, more than 30 days life expectation, unresponsive to diuretic treatment, and requiring paracentesis at least twice a week were evaluated for shunt placement. Of these, 98 patients (8 with breast cancer carcinomatosis, 5 with pancreatic cancer carcinomatosis, 30 with ovarian cancer carcinomatosis, 15 with gastric cancer carcinomatosis, 30 with colorectal cancer carcinomatosis, 5 with abdominal mesothelioma, 5 with carcinomatosis of other origin) with a cardiac ejection fraction >40 and Karnofsky Performance Status >80 received a Denver peritoneojugular shunt as an outpatient procedure under local anesthesia and mild sedation. Jugular vascular access was achieved via ultrasound-guided venipuncture.

Results: The average operating time was 30 minutes. Vascular access was through the right jugular vein in 87 patients and the left jugular vein in 11. The success rate of venipuncture and the operation was 100%. The mean postprocedural observation period was 180 minutes. Hemorrhagic suffusion occurred in 12 patients; no other major complications were observed. The waist circumference decreased within 3 hours of shunt placement; 4 patients required mild abdominal compression. The percentage of patent shunts at 30 days postimplantation was 75% (74/98) and 70% at 60 days. In 20 patients the shunt was removed due to valve failure or peritoneal catheter occlusion, with subsequent conversion to open percutaneous drainage. No thrombotic complications occurred in the district of the superior vena cava.

Conclusions: Our experience demonstrates the feasibility of performing peritoneovenous shunt placement on an outpatient basis in selected patients and with use of ultrasound-guided venipuncture. The high success rate confirms that it is an effective palliative procedure for treating intractable malignant ascites.

No conflict of interest.

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454. Abdominal pseudotumour in children: Difficult to diagnose and treat
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Purpose: Inflammatory pseudotumor (IPT) is a benign and rare process most commonly involving the lung and orbit but found in nearly every site in the body. Extra-pulmonary site accounts for only 5% of all inflammatory pseudo-tumors. Sign and symptoms depend on the site and extent of tumor and usually mimics as neoplastic processes. The diagnosis was rarely made prior to histopathologic examination. Complete excision is the treatment but a recurrence rate of 25% has been reported; required regular follow-up. Although the reported prognosis for inflammatory pseudo-tumors is usually excellent; it depends on location, recurrence and feasibility of excision of tumor. Experience with abdominal pseudo-tumor in two children presented here.

Method: Twelve year female sick patient, admitted with hard abdominal mass and distension with features of sub acute bowel obstruction. She was pale and had fever and abdominal pain. Computed tomography showed large, heterogeneous retroperitoneal mass with foci of calcification encasing major vessels and right ureter, compressing and displacing bowel loops. Right sided hydronephrosis was also noted. Multiple CT-guided trucut biopsies were tried but diagnosis was inconclusive. In spite of low general condition of patient, open incisional biopsy was taken that confirmed the diagnosis of pseudo-tumor. She was treated by oral steroid.

Other thirteen year sick male child presented with recurrent fever and abdominal pain from last 6 months with history of appendectomy one year back. He was pale and had uraemia frequency and urgency. A vague pelvic lump was palpable on deep palpation. CT-scan showed two heterogeneous, enhancing masses situated at posterior-superior to urinary bladder, anterior to rectum. Multiple trucut biopsies were inconclusive. Mass was excised and histopathology confirmed the diagnosis of pseudo-tumor.

Result: There was partial response after steroid therapy in female child with decrease in antero-posterior diameter of right renal pelvis while male child developed recurrence of mass on same location after 3 months of surgery. He was again explored and mass was excised completely. Both are under follow-up from 4 months and 8 months respectively and doing well.

Conclusions: These rare tumors usually present late because of their benign nature and tend to infiltrate adjacent organs. The imaging characteristics of IPT are non-specific, often mimicking other entities, including tumors. Incisonal / excisional biopsy is generally required for diagnosis. Awareness of these lesions may prevent unnecessary radical surgery in some instances.

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455. Intestinal pseudo-obstruction and myasthenic as initial presentation of thymoma
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Background: Along with myasthenia, other paraneoplastic neurological syndromes may occur in thymoma. We describe an intestinal pseudo-obstruction with myasthenic symptoms that led to the diagnosis of thymoma in a young patient. Pseudo-obstruction syndromes can be divided into acute and chronic forms. It’s causes are multifactorial. It may be idiopathic or secondary. The exact pathophysiology remains to be elucidated. In this case we believe that it’s immunologically mediated and related to anti-Hu Ab, characteristic of an anti-Hu syndrome.

Methods and results: A 33-years-old man, smoker that had an appendectomy 15 years ago was admitted in the emergency room with abdominal pain, constipation, vomiting and abdominal distension. Due to the suspicion of intestinal obstruction an exploratory laparoscopy was performed — distension of the small bowel and colon; no peritoneal lesions or mechanical obstacles were found. Endoscopy and colonoscopy were inconclusive; except for gas troperesis and marked distension of the colon. By the time of surgery he already presented unilateral ptosis. He was evaluated by Neurology who admitted the possibility of myasthenia gravis. The thoracic CT showed a mediastinal mass on the left, with 70 x 53

No conflict of interest.
Conclusions: Although traditionally considered a lethal disease, MPM has now some treatment choices. Cytoreductive surgery plus HIPEC is an aggressive therapy with high morbidity and mortality but with better survival. More trials are needed to define selection criteria and prognostic factors influencing this rare malignancy. No conflict of interest.

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457. Attitude in the casual intraoperative diagnosis for peritoneal carcinomatosis from unknown origin
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Background: Peritoneal carcinomatosis involves the spread of a malignant tumor in the peritoneal serosa and adjacent organs. His treatment by cytoreduction and intraperitoneal chemotherapy has meant that some patients considered incurable can achieve 5-year survival greater than 70% with a good quality of life.

The aim of this exhibition is the release of a number of recommendations for the general surgeon who accidentally diagnoses peritoneal carcinomatosis of unknown origin, in order to provide him an oncological approach that could improve the natural history of the disease.

Methods: Carcinomatosis may have a primary (pseudomyxoma, mesothelioma) or secondary (epithelial ovarian cancer, gastric, colorectal) origin. However, it could also be a metastatic pattern of extra-abdominal cancer.

The finding of peritoneal carcinomatosis should require systematic exploration of the abdominal cavity to assess the degree of spread of the disease (preferably using simple classifications, in lack of experience) without major anatomical manipulations and paying special attention to those areas most likely to implant tumor.

Then it will be decided on the resectability of the primary tumor according to the performance status of the patient, preoperative comorbidity, tumoral complications and the possibility of extra-abdominal spread.

Once past the postoperative period, the patient should be referred to an oncologist surgeon to complete the diagnostic study and present his medical history in a multidisciplinary meeting, with the intention of deciding the chances of curative surgical treatment or other therapeutic alternatives that could modify his prognosis.

Scientific evidence has shown that peritoneal carcinomatosis can be treated with curative intention in selected patients, achieving long-term complete remissions.

Conclusions: A proper surgical assessment of peritoneal dissemination could avoid imaging studies or unjustified reoperations.

Selection of candidates for cytoreductive surgery associated with intraperitoneal chemotherapy should be performed by a multidisciplinary team of medical oncologists and surgeons.

Every general surgeon should know the basic principles of surgical management of this disease to offer these patients a chance of cure. No conflict of interest.

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Poster Session: Robotic Surgery

458. Robotic liver surgery: Our initial experience
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2AOU CAREGGI, Chirurgia, Florence, Italy
3Policlinico di Modena, Chirurgia, Modena, Italy

Background: After the first laparoscopic colecistectomy a new concept of surgery was born: the minimally invasive surgery. The first minimally liver resection was reported in 1996 by Azgra et al. Actually, the laparoscopic liver surgery is generally considered to be more suitable for minor hepatectomies, but the laparoscopic major hepatectomies remain a challenge for liver surgeons. The advantages of the Robotic system, may be helpful in
making the complex minimally invasive procedure. This study, shows our present experience and opinions in the robotic assisted hepatic surgery.

**Materials:** From 2010 to 2014, in our Unit, was performed a total of 46 robotic Hepatico-biliary procedures. In particular, were performed 10 major hepatectomies: 6 right and 4 left; 27 minor hepatectomies; 1 giant cyst fenestration, 1 hydatid cyst treatment and 7 biliary tree’s procedures. The major hepatectomies were performed prevalently for oncological disease.

In all resections performed the patient was located supine in 20° reverse Trendelenburg position. The pneumoperitoneum was achieved through a Veress needle in the left hypochondrium to insufflate the abdomen to 12–14 mmHg. The camera trocars was placed in the right paraumbilical area along the mammillary line. The additional robotic trocars were located along a circular line. For the treatment of right posterior segments the patient was rotated on the left flank of 45 degree. The preliminary US examination is mandatory. Then, after the selective Control of left/right pedicle and exposure of retro-hepatic vein cava, we start the parenchyma dissection by ultrasonic dissector. We reported a case of biliary leak.

**Results:** The average operative time was 400 min for major hepatectomy, 171.25 min for minor resection and 141 min for the other 9 hepatico-biliary procedures. The mean blood loss was negligible. The open surgery conversions were 4. Postoperative mortality and morbidity was 0% and 10.86%, respectively. The mean hospital stay was 5.7 days (range 3–10). A Pringle maneuver was performed in all cases of major resections. We reported a case of biliary leak.

**Conclusions:** Liver surgery are an interesting fields for robotics application. In major anatomical hepatectomies, robotic surgery allows very precise hilum dissection and selective preliminary control of vascular pedicle. The biliary reconstructions are more feasible and easier than in laparoscopy. Surgical approach to posterior segments is enhanced by robotic vision system, endo-wristed tools, and new flexible US probe. An accurate selection of patients is indispensable in order to reducing morbidity, mortality and conversion. The new development of integrated imaging will contribute to expand indications for robot-assisted liver and biliary surgery. **No conflict of interest.**

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**459. Robot-assisted rectal resection with total mesorectal excision**

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**Background:** Today, laparoscopic colorectal surgery has become a mainstay also in the treatment of oncological colorectal disease. The role of robotic technology in oncologic colorectal surgery still has to be defined. We think that robotic surgery can overcome the intrinsic limitation of traditional laparoscopy.

**Methods:** From October 2002 to March 2012, we performed 52 procedures for oncological rectal disease. In particular, 52 patients (28 males, 24 females, mean age: 66.4) underwent robot-assisted rectal resection with TME at Misericordia Hospital of Grosseto (Tuscany, Italy). A total of 40 rectal anterior restorative resections and 12 abdomino-perineal amputations were performed. 35 of which 40 RAR were a low anterior resections and 5 an Interperitineal resections. Preoperative diagnosis included 45 rectal adenocarcinomas, 2 anal squamous carcinomas, 2 anal melanomas and 3 adenomas. 42 patients (85.7%) received neoadjuvant chemoradiation (40 rectal adenocarcinomas with preoperative staging T3N0+, 2 anal carcinoma). Recently we have been using a new type of ‘full Robotic technique’. In the first time we perform the pelvic steps: IMA resection, sigmoid colon mobilization and total mesorectal excision. In this case, after the ports placement and patient cart docking in the first time, a redocking of robotic cart and arms are necessary in the second time (abdominal time).

**Results:** The average operative time was 290.09 min (range: 120–420). No intra or postoperative blood transfusions was required. In our experience we didn’t report conversion of procedure. A temporary diverting loop ileostomy was performed in 36 of the patients. Postoperative mortality and morbidity was 0% and 19.23%, (surgical 15.38%) respectively. The mean hospital stay was 8.6 days (range 4–40). A TME with negative circumferential and distal margins was successful in all cases (R0 resection); the mean number of lymph nodes harvested was 10.32 (range 2–30). Five patients showed a pathologic complete response to pre-operative chemoradiation (ypTis). According to UICC 2009, the remaining patients were classified as Tis in 5 cases, stage I in 18 cases, stage IIA in 7 cases, stage IIB in 8 cases, stage III in 3 cases and stage IV in 1 of the cases (1 case in course). At a mean follow-up of 44.73 months (range <1–123), no port site or local recurrence were observed. 5 patients (9.6%) developed distant metastases, and 2 of them died two years after surgery (related cancer mortality 3.8%). At long term follow-up faecal incontinence, urinary and sexual dysfunctions were reported in 8.8% (4/34), 1.9% (1/52), and 8.3% (3/35) of the cases, respectively. The long-term follow-up shows a three year disease free survival (DFS) of 88.0% and a three year overall survival (OS) of 90.0%.

**Conclusions:** The robotic system is particularly suitable for the fine dissection in the TME and nerve-sparing procedure, especially in small pelvis, after chemoradiation. The early results of robotic rectal surgery seem equivalent to laparoscopic and open techniques. The major complications are probably associated with the general morbidity of colorectal surgery, rather than the robotic technique. Long term functional results are excellent and oncological outcomes appear to be very interesting. Further studies are required to better define its role. **No conflict of interest.**

http://dx.doi.org/10.1016/j.ejso.2014.08.447

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**Table 1. Our Series.**

<table>
<thead>
<tr>
<th>Procedure</th>
<th>N.</th>
<th>Op. time</th>
<th>Open conv.</th>
<th>Morbidity</th>
<th>Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right hepatectomy</td>
<td>6</td>
<td>480</td>
<td>1</td>
<td>1 (bowel occlusion)</td>
<td>0</td>
</tr>
<tr>
<td>Left hepatectomy</td>
<td>4</td>
<td>320</td>
<td>1</td>
<td>1 (biliary leak)</td>
<td>0</td>
</tr>
<tr>
<td>Bi-segmentectomy (S2-3, S4b-5, S5-6)</td>
<td>6</td>
<td>250</td>
<td>1</td>
<td>2 (gas hembolism)</td>
<td>0</td>
</tr>
<tr>
<td>Segmentectomy *</td>
<td>13</td>
<td>150</td>
<td>1</td>
<td>1 (fluid collection)</td>
<td>0</td>
</tr>
<tr>
<td>Wedge resection*</td>
<td>7</td>
<td>105</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Haemangioma enclosure</td>
<td>1</td>
<td>180</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Hydatid cyst treatment</td>
<td>1</td>
<td>230</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Giant cyst fenestration</td>
<td>1</td>
<td>45</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Bile duct thrombosis</td>
<td>2</td>
<td>90</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Redo for HJ stricture</td>
<td>2</td>
<td>190</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Hepatico-jejunal/duodenal anastomosis</td>
<td>3</td>
<td>150</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>46</td>
<td></td>
<td>4 (8.7%)</td>
<td>5 (10.86%)</td>
<td>0</td>
</tr>
</tbody>
</table>
Background: To describe our initial experience in the surgical treatment of pancreatic disease using the robotic system and determine its safety.

Material and methods: This is a descriptive study of a series of cases collected prospectively including all patients undergoing pancreatic disease using the Da Vinci robotic system in a period of 3 years. In most cases an hybrid approach was used. Demographic, intraoperative and histological data were collected, as well as morbidity and mortality and hospital stay.

Results: 13 patients (7 women and 6 men) were treated with a mean age of 53 years (22–71 years). The surgeries performed were: 7 distal pancreatectomies (DP) all with splenic preservation, but one case the Warshaw technique (ligation of the splenic vessels) was performed; 3 cephalic pancreatectomies (DP) all with splenic preservation, but one case the Warshaw technique (ligation of the splenic vessels) was performed; 3 Total pancreatectomies (TP) (2 spleen-preserving and 1 splenic salvage). Among the malignant tumors staged were: in three cases T3N1, one case T3N1 and one case pT1N0. Mean lymph nodes studied were 13 (9–16). The average docking time was 12 minutes. Three patients were converted to open surgery (2 DP and 1 TP). The mean blood loss was 180.7 cc. (25–600 cc) requiring red blood cell transfusion in 2 cases (TP and DPC). The mean operating time was 300 minutes in PD, 380 minutes in TP and 420 minutes in DPC. Morbidity and mortality were: 1 pancreatic fistula grade A, 1 sepsis due to central venous catheter, 1 transient ischemic attack and 1 death due to an acute myocardial infarction. The average stay was 4 days in the PD group and 9 days in DPC and TP.

Conclusions: Robotic-assisted pancreatic surgery is feasible and safe providing comparable results to conventional surgery, but with the advantages of the minimally invasive approach. Future efforts should be aimed at evaluating the long-term oncological results with the application of robotic systems when it comes to treat pancreatic cancer.

No conflict of interest.

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461. Robotic assisted versus laparoscopic resection for rectal cancer: Short-term outcomes from early experience from consecutive patients

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Purpose: Robotic surgery has been advocated for the radical excision of rectal cancer. The aim of this study is to compare short-term outcomes and surgical quality of robot-assisted and laparoscopic total mesorectal excision (TME) in patients with rectal cancer.

Methods: A retrospective review was conducted of consecutive patients who underwent TME by robot-assisted procedures (RAP) during a 3 year period from July 2010 to Oct 2013. All operations were performed by 1 surgeon experienced in advanced laparoscopy at a tertiary institution. Once robotic surgery was introduced, all cases were performed robotically. Short-term outcome included intraoperative results and postoperative measures including macroscopic quality of the specimens, complications, length of stay, and re-operative rate. Statistical comparison was performed using Fisher’s exact test and t test.

Results: The patient characteristics were not significantly different between the two groups except higher male patient and preop chemoradiation in RAP group. Mean operation time was 260 ± 43 min for LAP and 321.5 ± 516 min for RAP group (P = 0.002). No difference was noted in blood loss, transfusion rate, intraoperative complications, or conversion rate. In RAP, there was no open conversion but one case was converted to laparoscopy in patient with preop chemoradiation. The median number of lymph nodes was similar in both groups (18 vs.17 nodes, P = 0.09). There was no difference in distal or radial margin positivity between groups (P = 1.00). Median length of stay was shorter in Group LAP compared to Group RAP (16 vs. 111.5 days, p = 0.03). The 90 day major complication rate was similar in both groups (25 vs. 25.8%, P = 1.00). The overall complication rates were similar (RAP, 12.9% vs. LAP, 12.5%; P = 0.7).

Conclusion: Early experience with robotic rectal cancer excision demonstrated longer operative time but was ontologically safe and effective for patients with rectal cancer. The TME specimen quality of the RAP group was acceptable. Larger randomized studies are needed to confirm these findings and explain which aspects of robotic surgery may contribute to lower anastomotic complications.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.449
duration of phase I and phase III between group A and B. However, duration of phase II (splenic flexure mobilization) was significantly shorter in group A (24.9 min and 56.6 min, p < 0.01).

Conclusions: Splenic flexure mobilization by minimally invasive surgery is difficult procedure. However, robotic 'inferior penetration method' by a three-dimensional view and long and wristed instruments is a safe and useful procedure that may facilitate splenic flexure mobilization.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.450

463. Robotic-assisted extralevator abdominoperineal resection in prone jackknife position
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Background: The extralevator abdominoperineal resection (ELAPR) is a new surgical technique for patients with low advanced rectal cancer. This technique requires an extra excision of the levator muscles to avoid the surgical waist caused by the conventional abdominoperineal resection, with the patient’s position changed to a prone jackknife position. This new technique is remarkable not only by its radicality but also by the possibility of simultaneous perineal reconstruction, with encouraging oncological results. It is well known that laparoscopic surgery (LS) has revolutionized rectal surgery. However, there are several technical drawbacks to LS, including limited range of motion of instruments and an inadequate visual field associated with unstable camera view and assistant’s traction, which are not under the surgeon’s control. Technical advantages of the robotic system could overcome the limitations of LS for low rectal cancer.

The aim of this study is to clarify the feasibility and the short term outcomes of robotic-assisted ELAPR for primary rectal cancer.

Material and methods: From July 2013 to February 2014, five patients with rectal adenocarcinoma within 3 cm of the anal verge underwent robotic-assisted ELAPR in prone jackknife position for levator muscle transection. All patients had clinical stage T3N0M0 after neoadjuvant chemoradiotherapy.

Results: The procedure was successfully completed in all 5 patients without any intraoperative complications, robot-associated morbidity, or conversion to the open approach. All specimens had a cylindrical shape with levator muscles attached to the mesorectum with an intact mesorectal envelope and negative circumferential margin. Mean distal margin was 23 (10–35)mm and mean circumferential margin was 6 (1–10)mm. The mean operative time was 426 minutes and length of hospital stay was 4.2 days. In four patients, pelvic reconstruction was performed using a prosthetic mesh.

Conclusions: Robotic-assisted ELAPR combines the minimally invasive technique with the best oncological approach provided by the association of robotics and the extralevator abdominoperineal resection. It enables to achieve a cylindrical specimen, with acceptable perioperative and pathological outcomes. Further studies are essential to objectively define the safety, efficacy, and long-term results of this new technique.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.451

Poster Session: Sentinel Node Biopsy

464. SLNB with Tc-99m at clinic for surgical oncology NCRC of Serbia in year 2013
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Background: Technetium-99m (Tc-99m) is metastable nuclear isomer which is used in great number of medical diagnostic procedures and represents the most used radioisotope in human medicine. We use it to mark and trace radioactivity in human body by GAMMA probe. Because of his short half-life it allows us to collect precise data whilst patient’s body irradiation is minimal. Tc-99m is user friendly only in diagnostics, not for therapeutic use. We applied Tc-99m colloid radiopharmaceutical injection (Nanocolloid) for dynamic lymphoscintigraphy as well as handheld probe for sentinel lymph node (SLN) detection. Once being detected by GAMMA probe, ‘hot’ SLN is removed and sent to frozen section analysis. Aim is to present our experience in usage of Tc-99m (Nanocolloid) for localization of ‘hot’ SLNs.

Materials & method: During year 2013, Tc-99m (Nanocolloid) was applied in 46 patients — 35 female and 11 male. Localizations were: breast 25 pts. (76%), axillae 11 pts. (32.9%), groins 8 pts. (17.3%) and neck 2 pts. (4.3%). Wroten consent and multidisciplinary team decision is mandatory, as well as supervision by nuclear medicine specialist. Hour before operation surgeon injects 0.2 – 0.5 ml of radiocolloid into dermis or epidermis of adequate localization. Usage of protection equipment and containers is mandatory.

Results: Breast pathology — 25 pts. with average readings of GAMMA probe of 4500 units. After tissue removal and frozen section, repeated readings were zero with clear surgical margins. Twenty findings were negative and five were positive. 2 DCIS, 2 CLI and one IDC. SLNs were negative in 22 pts. while two pts. had positive SLNs and one was diagnosed with micrometastases in SLNs. Axillary pathology — 11 pts. Average readings were 2900 units. ‘Hot’ SLNs were removed and sent to frozen section — 5 were negative, 2 positive (one for melanoma and one for genital carcinoma) and 1 sent to standard pathology. Also, after positive report we performed groin dissection. Head and neck pathology — two patients with two negative SLN findings.

Conclusions: Usage of Tc-99m (Nanocolloid) is medically justified because removing positive SLNs helps us to achieve both oncological and aesthetical goal. Combined treatment with methylene blue dye in so called ‘double mapping’ technique, results with extraordinary high level of sensitivity.

No conflict of interest.

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465. The role of single-photon emission computed tomography in sentinel lymph node biopsy, denying taking too many lymph nodes a lot
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Background: Sentinel lymph node biopsy (SLNB) is a standard treatment in women with clinically node-negative breast cancer. SLNB may reduce some adverse events such as lymphedema, but the ideal number of sentinel lymph nodes (SLN) is uncertain. Even though SLNB is performed, some patients still suffer from lymphedema. This implies that we may need to resect more lymph nodes than that are typically suggested. Some studies have claimed that single-photon emission computed tomography (SPECT) may be able to three-dimensionally detect SLNs. The present study was undertaken to investigate the role of SPECT in optimizing lymphadenectomy in SLNB.

Material and methods: Between January 2012 and March 2014, 630 adult women patients underwent breast cancer surgeries performed by the
ABSTRACTS

authors of the present study in our hospital. Of these 630 patients, 529 pa-
tients underwent SLNB during their surgery, along with mastectomy or
lumpectomy. We performed SLNB using a blue dye in 83 patients, a com-
bination of blue dye and radioisotope in 341 patients and a combination of
blue dye and SPECT in 105 patients. We did not distribute the patients
intentionally; the methods were chosen by circumstances in our hospital
on the basis of the delivery of technetium or the rejection of SPECT by
the patients. We evaluated each method using the number of lymph nodes
resected in each surgery and the number of patients with metastasis.

**Result:** The mean number of SLNs detected using each method is as
follows: 1.56 using only the blue dye, 1.62 using a combination of the
blue dye and radioisotope and 1.58 using a combination of the blue dye
and SPECT. The numbers of patients who had metastasis in their SLNs
in each group were 12 (9.2%), 55 (9.9%) and 22 (11.4%) respectively.
The percentage of patients who underwent lymphadenectomy of nodes
not identified by dye staining or radioisotope spots were 48.2%, 41.1%
and 25.7% respectively. There were no significant differences in surgical
time, bleeding or other complications among the groups.

**Conclusions:** SPECT had a significant impact, resulting in the resec-
tion of fewer lymph nodes among the three groups. We conclude that
SPECT may be beneficial for SLNB by reducing the number of lymph nod-
es that we resect during the surgeries.

<table>
<thead>
<tr>
<th>Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>The mean numbers of SLN</td>
</tr>
<tr>
<td>The rates of patients with metastasis in their SLN</td>
</tr>
<tr>
<td>The rates of patients who got extra lymphadenectomy</td>
</tr>
</tbody>
</table>

**No conflict of interest.**

http://dx.doi.org/10.1016/j.ejso.2014.08.453

467. Morbidity after sentinel lymph node biopsy in primary breast
cancer patients

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Mariolis-Sapsakos2

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2Evgenideon Hospital, Department of Surgery, Athens, Greece
3“Mitera” Hospital, Department of Surgery, Athens, Greece

**Background:** Sentinel lymph node biopsy (SLNB) is currently the
preferred method of staging the axilla in primary breast cancer patients
with clinically negative axillary lymph nodes, replacing standard axillary
lymph node dissection (ALND), and thus avoiding its high morbidity rates.
However, as an invasive technique, SLNB still carries a risk of postopera-
tive complications. The purpose of this study is to analyze the complica-
tions of the use of SLNB in primary breast cancer patients.

**Materials and methods:** 142 patients with mean age of 54.6 years un-
derwent SLNB for primary breast cancer between the years 2007–2013 in
two institutions by two surgical teams. In order to localize the sentinel
lymph node, blue dye was used in 38/142 patients and blue dye plus radio-
active colloid in the remaining 104. We recorded and analyzed the opera-
tive notes as well as the early and late complications of the procedure.

**Results:** The localization of at least one SLN was successful in all pa-
tients. A mean of 2.46 lymph nodes were excised (range 1–5). Frozen sec-
tion of the SLN was positive in 46/142 patients, who subsequently
underwent ALND and were excluded from the present analysis. SLNB
was false negative in 1/96 patients. Five patients developed a seroma,
while prolonged blue staining of the skin was observed in two patients.
All patients reported normal mobility of the ipsilateral arm in their 6-
month follow up. There were no cases of anaphylaxis due to the blue
dye or the radioactive colloid. There were no cases of lymphedema, hema-
toma, sensory or motor nerve damage.

**Conclusions:** The status of the axillary lymph nodes is one of the most
important prognostic factors in women with early stage breast cancer.
SLNB has replaced ALND as the standard technique for axillary staging
in patients undergoing surgery for breast cancer, leading to a significant
reduction in physical morbidity, by eliminating the need of ALND in pa-
tients with negative SLNs. SLNB is a safe technique, with only mild or
moderate severity complications.

**No conflict of interest.**

http://dx.doi.org/10.1016/j.ejso.2014.08.455
468. A recurrence of abdominal liposarcoma — Clinical case
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2 The Royal Marsden NHS Trust, Department of Academic Surgery, London, United Kingdom
3 St George's Medical School, London, United Kingdom
4 University of Athens Medical School, LAKION Teaching Hospital, First Department of Surgery, Athens, Greece

Background: Liposarcoma (LS) is the most common histological type of sarcoma. There are five subtypes (well differentiated, myxoid, dedifferentiated, pleomorphic, mixed type).

Material and methods: Description of the case of a patient with anemia, pain and swelling in the left flank by LS abdominal conditioning.

Results: A 59 year-old Portuguese female with history of gastric sleeve, 1 year ago, was admitted with throbbing pain in the right flank associated with distention and swelling bulky for 1 month of evolution. Reported nausea, asthenia and anorexia. Previous analysis revealed haemoglobin of 7.2 mg/dl. After admission and blood cell transfusion, abdominal tomography does reveal a large mass (25 × 12cm) adjacent to the anastomosis. The deterioration of the patient’s condition lead to excision of abdominal mass adherent to the spleen (splenectomy block), whose history revealed pleomorphic liposarcoma. Postoperative pancreatic fistula has treated conservatively. Asymptomatic at the time discharge. In oncology where it is decided not to radiotherapy or chemotherapy.

Conclusions: The LS grows slowly and it’s diagnosed only when it becomes larger. The recommended treatment is complete resection even if necessary adjacent organs. Radiotherapy or chemotherapy is not effective in increasing survival.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.457

469. Oncovascular surgery: A new perspective facing advanced retroperitoneal and pelvic malignancies
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2 Città Della salute E Della Scienza, Vascular Surgery, Turin, Italy
3 Città Della salute E Della Scienza, Orthopedic Surgery, Turin, Italy
4 University of Turin Surgical Oncology, Turin, Italy

Background: Surgical resection remains the cornerstone for the curative treatment of oncologic disease. When a tumour mass encases a critical arterial or venous structure, successful symptom relief and long-term oncological control may be achieved through careful preoperative planning within a multi-disciplinary team incorporating oncological and vascular specialists. To highlight the strategic issues pertaining to the vascular management of these patients, this review addresses the principles in planning oncovascular surgery, namely where cancer resection necessitates concurrent ligation or reconstruction of a major vascular structure.

Material and methods: We considered 8 patients, 4 with a sarcoma of the vena cava, two with a recurrent cervical carcinoma and two with a retroperitoneal pelvic sarcoma. In three cases a vascular prosthesis was employed, in the other cases a direct ligation or a tangential resection was performed.

Results: After a 24 months mean follow-up one patient locally recurred. In two cases distant metastases were observed after 4 and 9 months after the intervention. In one case we had a venous kidney infarction after one month from surgery. In all cases a slightly improvement of referred compressive symptoms was observed; QoL improvement was not assessed.

Conclusions: Major vessel involvement of a tumour mass should not necessarily be considered a barrier to en bloc resection and hence curative surgery. Radical surgical resection may offer the only chance for cure or palliation for these patients. Detailed preoperative planning within an extended multi-disciplinary team that includes vascular specialists is essential for these complex patients. The observed outcomes for different malignancies suggest that survival is dependent upon complete clearance of the primary pathology and tumour biology rather than vascular-related complications.

No conflict of interest.

http://dx.doi.org/10.1016/j.ejso.2014.08.456

470. Surgical treatment of retroperitoneal sarcomas. Ten years’ experience
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Background: Complete sarcoma resection, experienced aggressive surgical technique and individualization of patient management is the gold standard of treatment for patients suffering retroperitoneal sarcomas.

Materials and methods: Clinical outcomes of primary retroperitoneal sarcoma resections from January 2002 until January 2012, were reviewed to determine the efficacy of complete surgical resection as the principle instrument for treatment without any radiotherapy or chemotherapy. The duration of illness, histological type, tumor size and grade as well as organ resection were recorded and subsequently reviewed. The surgeries took place at the First Department of Surgery, University of Athens Medical School, Athens, Greece, and at the Hepatobiliary and Surgical Oncology Department, Nicosia Teaching Hospital, Nicosia, Cyprus.

Results: Our study included seventy-nine cases of sarcoma resections (fifty-eight first-time laparotomies, sixteen second-time and five third-time representing fifty-eight patients (33 male and 25 female). These resections took place between 2002 and 2012. Most patients (95%) had complete resection and 46 of them did not receive neither radiotherapy nor chemotherapy, 30 day mortality was zero. Patients who had had duration of symptoms less than 3 months overall and their tumor size was less than 5cm and was histologically classified as liposarcoma low grade, had a five year survival close to 100%. Patients with more than 3 months symptoms duration, with high grade tumor, where tumor size was between 10~20~cm or more and histological types were leiomyosarcoma, liposarcoma, malignant fibrous histiocytoma or malignant peripheral nerve sheath tumor, had an average 5-year survival of 35%.

Conclusions: R0/R1 surgical resection of retroperitoneal sarcomas combined with individualized patient management when undertaken by experienced surgical teams can succeed in treating patients without the need of radiotherapy or chemotherapy adjuncts.

No conflict of interest.

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471. A clear cell sarcoma — A clinical case
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Background: The clear cell sarcoma is a rare type of primary cancer that affects young adults between 20 and 40 years. Are more common in
women and tend to grow along the tendons in the limbs, especially the feet and hands. They are generally asymptomatic. A genetic cause is cell sarcoma translocation gene. Clear cell sarcoma without translocation may have other genetic mutations, currently unknown, causing the same effect. Can be classified in two ways: by location or by type of translocation. Types of clear cell sarcomas based on place of origin are: Clear cell sarcoma typical of tendons and aponeurosis (Layers of tendons); Clear cell sarcoma, gastrointestinal; Clear cell sarcoma of the skin (Skin). By genetic classification, the most common types of translocations are EWSR1/ATF1 or EWSR1/CREB1. Some tumors have no EWSR1 translocation.

**Materials and methods:** Describe the case of a 52 year old man presents about 3 nodular lesions on the dorsum with 3 months of evolution. It is subjected to excisional biopsy that reveals clear cell sarcoma.

**Results:** A men, 52 years with hypertension is referred for outpatient general surgery for 3 nodular lesions with about 5cm × 5 cm in the dorsal region with 3 months of evolution. Held ultrasound lesion that was not specific. Chest computed tomography scan performed which showed two micronodules in the lung. Excisional biopsy of the lesion with confection of skin flap and expanded margins was submitted. Histology revealed clear cell sarcoma. In oncology consultation it was decided to start chemotherapy. The patient was asymptomatic at 3 months.

**Conclusions:** Treatment consists of surgery (wide local excision). As clear cell sarcomas are usually invasive, surgery is the main treatment for these lesions, aimed at removing the tumor with safety margins. Radiation therapy is commonly used in the surgical area to kill microscopic residual tumor cells and thus reduce the chances of local recurrence. When applied before surgery, radiotherapy can reduce the size of the tumor and make minor surgical procedure. The most promising experimental strategy for the treatment of clear cell sarcoma is a targeted therapy that is designed to achieve specific characteristics of cancer cells. One type of targeted therapy is the tyrosine kinase inhibitor that blocks hyperactive signaling molecules in cancer cells that promote the growth of cancer receiver.

*No conflict of interest.*

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**Poster Session: Thyroid Cancer**

472. Deep-seated huge hibernoma of soft tissue: A rare differential diagnosis of atypical lipomatous tumour/well differentiated liposarcoma

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**Background:** Hibernoma is a rare benign fat-forming soft tissue tumor that differentiates similar to brown fat, hence an origin from remnants of fetal brown adipose tissue has been proposed. Mainly young adults are affected, usually without significant clinical symptoms.

**Material and methods:** We report on four patients with hibernomas, who were treated at our hospital during the last 10 years. The clinicopathologic and immunohistochimical features are presented and treatment and follow-up data discussed.

**Results:** Patients were 2 women and 2 men aged 21—67 years (mean: 45 yrs) who presented with a slowly growing, painless mass. The anatomic location was the thigh, upper arm, lateral thoracic wall and paravertebral soft tissue. Two of them were diagnosed preoperatively through a percutaneous core needle biopsy and the other two underwent surgery because of high clinical and radiological suspicion of liposarcoma. The tumor’s size ranged from 7 cm to 15.5 cm (mean: 11 cm). All were deep-seated subfascial intramuscular masses. Histologically, all four tumors were of the typical variant. All patients underwent a R0-surgical resection of the tumor and they were recurrence-free at last follow-up (mean: 47 months; range: 25—47).

**Conclusions:** Hibernoma may present as huge deep intramuscular soft tissue mass in adults, closely mimicking well differentiated liposarcoma and should be considered in the differential diagnosis of fatty soft tissue tumors in any location. Surgical excision is the treatment of choice. The tumor has no malignant or recurrence potential.

*No conflict of interest.*

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473. Prognostic factors for disease-specific survival in 109 patients with Hürthle cell thyroid carcinoma: A single-institution experience

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**Introduction:** Hürthle cell thyroid carcinoma (HCTC) is a rare disease. It is believed that it is more aggressive than follicular thyroid carcinoma. The aim of our study was to identify factors associated with disease-specific survival.

**Patients and methods:** Altogether 109 patients (27 male, 82 female, median age 62 years, range 19—87 years) with HCTC treated at our institute from 1972 — 2011 were included in the present retrospective study. Data on age, clinical and histopathology factors, tumor stage, recurrence, disease-free and disease-specific survival were collected. Univariate analysis was used to identify factors associated with disease-specific survival. Cox’s multivariate regression model was used to identify independent prognostic factors for disease-specific survival.

**Results:** Of 109 patients, 12 (11%) had distant and 8 (7%) locoregional metastases before the first treatment. A total or near-total thyroidectomy, radioiodine ablation of thyroid remnant and external beam radiotherapy was performed in 71%, 81% and 26% of patients, respectively. Recurrence was diagnosed in 27 cases: locoregional, distant and both locoregional and distant in 12, 12 and 3 cases, respectively. The follow-up period was 1 to 337 (median 107) months. By the end of the study, 68 patients were still alive (52 had no evidence of disease, 16 were alive with disease), five patients were lost to follow-up, 16 patients died of causes unrelated to primary disease, while 20 patients died of thyroid carcinoma (18 of distant metastases, 2 of distant and locoregional disease). The 5-year, 10-year and 20-year disease specific survival were 95%, 88% and 62%, respectively. Independent prognostic factors for disease-specific survival were: age of patients, distant metastases and residual tumor after surgery. In patients older than 45 years of age the risk of shorter disease specific survival was 6.5 times higher than in younger patients. In the patients with distant metastases the risk of shorter survival was 3.3 times higher than in the patients without dissemination. The risk of shorter disease specific survival was 21.9 and 5.1 times higher in patients with macroscopic and microscopic residual tumor than in patients without residual disease, respectively.

**Conclusions:** Long disease-specific survival was found in patients with HCTC younger than 45 years of age, without distant metastases and without residual tumor after surgery.

*No conflict of interest.*

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475. Follicular variant of papillary thyroid carcinoma: A comparative study on clinicopathologic features according to capsulation
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Background: The follicular variant of papillary thyroid carcinoma (FVPTC) is the most common histologic subtype of papillary thyroid carcinoma (PTC). But The follicular variant of papillary thyroid carcinoma (FVPTC) is difficult to diagnose due to pathologic features. There is also debate on the optimal extent of surgery. We separated FVPTC into two groups and compared the clinical features in an attempt to apply the treatment.

Methods: All 121 patients with FVPTC who were diagnosed between 2003 and 2009 were reviewed and separated into two groups, an encapsulated group and an infiltrative group, based on whether a capsule was formed or infiltration occurred. These two different subtypes of FVPTC were compared on the traits of sensitivity of diagnosis and clinicopathologic features.

Results: After review by a pathologist, 82 of 121 patients (67.8%) were found to have encapsulated tumors, and 39 patients (32.2%) had infiltrative tumors. There was no difference in age, sex, T stage, multicentricity. Patients with infiltrative FVPTC had a significantly higher rate of tumor size ($p = 0.004$), lymph node metastasis ($p < 0.001$), lateral neck node metastasis ($p < 0.001$), TNM stage ($p = 0.004$), lymphovascular invasion ($p = 0.029$), thyroid capsular invasion ($p < 0.001$), and preoperative serum triiodothyronine (T3) level ($p = 0.025$) compared with the encapsulated tumor group. There was no difference in FNA sensitivity and recurrence rate between the two groups.

Conclusion: FVPTC can be separated into two subgroups by histologic features, and there are some clinicopathologic differences between the two groups. Patients who had infiltrative FVPTC had a higher rate of lymph node metastasis, lateral neck node metastasis, TNM stage, lymphovascular invasion, thyroid capsular invasion, and preoperative serum triiodothyronine (T3) level. It is suggested that the encapsulated group can be treated with limited surgery and the infiltrative group needs aggressive treatment.

No conflict of interest.

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476. A retrospective study on the investigation of upper tract transitional cell carcinoma — Are we detecting enough cases?
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Background: Upper tract transitional cell carcinomas (TCC) are relatively uncommon, but the diagnosis must not be missed. Majority of patients present with haematuria, both macroscopic and microscopic. The investigation of these patients plays a vital role in the diagnosis of upper urinary tract malignancy. The purpose of this study was to investigate the effectiveness of different modalities such as ultrasonography (US) and i.v urography (IVU), to image the upper urinary tract to detect abnormalities in patients with urothelial cancers. This would potentially lead to the review of current pathways used to investigate patients with haematuria.

Methods: A retrospective study using electronic case notes of patients with histology proven upper tract TCC from 1998 to April 2013. Data on patient demographics, presentation and imaging of the upper urinary tract were collected and analysed.

Results: A total of 148 upper tract TCC cases were recorded, 111 having presented with macroscopic haematuria. In these 111 patients, 76 had US as first line imaging of the upper tracts with 19 (25%) being normal (age range from 39 to 80). 45 patients had IVU (first and second line), only 2 (4.4%) were normal. Of the 18 patients with microscopic haematuria, 14 had US with 3 (21.4%) being normal (age range 47 to 86), 5 had IVU (first and second line) with 1 being normal. Overall a much lower proportion of upper tract TCC cases were missed by using IVU compared with US, 22.5% ($n = 23$) vs. 3.4% ($n = 3$) respectively. Simple patient risk factors, such as smoking, were poorly documented and therefore could not be analysed.

Conclusions: A normal US scan cannot exclude upper urinary tract malignancy in haematuria patients. Further investigations such as IVU and CT urogram play a vital role in the haematuria pathways and must be incorporated appropriately, with limited resources and radiation exposure. Patients with known risk factors for urothelial cancer need to be identified and may warrant more extensive investigation.

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477. Management of intra-diverticular bladder tumours
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Background: Intra-diverticular bladder tumours (IDBT) account for approximately 1% of bladder tumours. The risk of developing a tumour within a bladder diverticulum is considered to be higher than in the main bladder due to prolonged contact of potential carcinogens. The lack of muscle layer is thought to facilitate tumour spread and hence confer a worse prognosis. We aimed to modify existing IDBT pathological classification and current surgical guidance.

Materials and methods: Review of existing literature regarding diagnosis, management and prognosis of pre-malignant and malignant pathologies within bladder diverticulae.

Results: Transitional cell carcinoma is the most common histologic type. Less common variants include squamous, small cell carcinoma and other rare histologic variants. IDBT most commonly present with visible haematuria. Lack of muscle in the diverticula increases the risk of bladder perforation during biopsy and makes pathological staging difficult as there is no T2 stage. T stage is the only factor shown to be associated with survival. There is one specific guideline addressing IDBT management. IDBT may be managed with transurethral resection and adjuvant intravesical therapy, diverticulectomy, partial or radical cystectomy. The prognosis of IDBT has always been perceived to be worse than intra-vesical tumours. However, the only study addressing 5 year survival of IDBT suggested that prognosis may be comparable.

Conclusions: Any IDBT extending beyond the fibrotic band of the lamina propria should be considered T3. Modification of existing surgical guidance is required especially for Ta and T1 IDBT where transurethral resection is associated with increased risks of incomplete resection or bladder perforation.

No conflict of interest.

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Expression of the apoptosis inhibitors p53, bcl-2, EGFR and survivin in renal cell carcinomas: Correlation with pathological features and clinical outcome

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Introduction: Survivin is a member of the inhibitors of the apoptosis (IAP) family. Over expression of survivin has been found in most human cancers and has been associated with poor prognosis. We studied the prognostic significance of the apoptosis inhibitors survivin, p 53, bcl-2, EGFR in renal cell carcinomas and correlated their expression with pathologic features and overall survival.

Material and methods: 78 renal cell carcinomas were retrospectively assessed by immunohistochemistry for survivin, p 53, bcl-2, EGFR expression. Gender, age, size, histological type and grade of tumor as well stage were recorded, while survival data were retrieved from the follow-up records of the patients. Statistical analysis of the above data was carried out.

Results: 52 male and 26 female patients aged from 35 to 87 years (median 66 years) were included. Mean tumor diameter was 6.8 cm and the most common location was the upper left kidney. Clear cell adenocarcinoma was observed in 77% of case, granular type in 14%, spindle cell type in 6% and papillary type in 3% of the cases. 16% of the tumors were grade 1, 56% grade 2 and 18% were grade 3. Survivin expression was detected in 59 (76%) cases, bcl-2 in 64% of cases, p53 in 82% of cases and EGFR in 54% of cases. Statistical analysis showed that p53, survivin and tumor stage but not bcl-2 and EGFR status were significantly related to survival. Cox regression analysis showed that survivin expression was an independent prognostic factor for RCC and was associated with a poorer prognosis.

Conclusions: Our study suggests that survivin is an independent prognostic factor of overall survival in renal cell carcinomas and this finding may indicate a need for adjuvant therapy for high-risk patients.

No conflict of interest.

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