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ESSO 36 Abstracts 2016

PROGRAMME DETAILS

36th Congress of the European Society of Surgical Oncology in partnership with the Polish Society of Surgical Oncology

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14 September 2016 11:30–12:40
Proffered Paper: Liver Cancer

1. Peri-hepatectomy induction of the transcription factor nuclear factor erythroid 2-related factor 2 (Nrf2): A promising novel way of enhancing liver regeneration

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Background: Post hepatectomy liver failure (PHLF) is a potentially fatal complication leading to an increase in post-operative mortality to up to 30%. Meticulous pre-operative work up with the use of techniques like portal vein embolization and a combination of resection and radiofrequency ablation (RFA) can help minimize the risk of PHLF. We sought to investigate the prospect of the transcription factor Nrf2 -which usually works as a master regulator of cyto-protection- as a potential enhancer of hepatic regeneration, thus improving post-operative recovery and decreasing the risk of PHLF.

Methods: A murine model was developed utilising C57BL/6J mice. Two-thirds partial hepatectomy was performed followed by culling the mice at 5 different time points (2, 24, 48, 72 and 168 hours). The liver tissue was collected at both the time of surgery and the time of cull. Pharmacological induction of Nrf2 was implemented by intra-peritoneal administration of CDDO-Me pre and post operatively. Nrf2 knockout mice were used as negative controls. Gross changes in the liver volume were assessed using standardized MRI hepatic volumetry. Protein expression of the proliferation marker Proliferating Cell Nuclear Antigen (PCNA) was semi-quantitatively assessed using Western Blots. Subsequent correlation to Nrf2 and its downstream protein product NQO1 was demonstrated with Western Blots. In-vivo bioluminescence imaging was used to confirm the activity of Nrf2.

Results: In-vivo bioluminescence imaging confirmed increased Nrf2 activity as early as 30 min post-operatively compared to sham operated mice. MRI hepatic volumetry showed a significant increase in the liver volume in the CDDO-Me treated mice compared to the non-treated mice 48 hours ($P = 0.017$) and 72 hours ($P = 0.0008$) post-operatively. A significant increase of the PCNA protein expression 48 hours post-operatively was demonstrated in the treatment group compared to the non-treated and knockout mice. The Nrf2 knockout mice showed decreased hepatic proliferation at 24 hours post-hepatectomy compared to the other 2 groups.

Conclusion: The transcription factor Nrf2 has a potential major role at the early stages of liver regeneration. Pharmacological or dietary induction of Nrf2 peri-hepatectomy could be a simple and effective way of decreasing the incidence of the occurrence of post-hepatectomy liver failure.

Conflict of interest: No conflict of interest.

<http://dx.doi.org/10.1016/j.ejso.2016.06.007>

2. The optimal cut-off value of the vascularity of intrahepatic cholangiocarcinoma based on prognostic differences

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Background: Hypervascular intrahepatic cholangiocarcinoma (ICC) has been reported to be associated with a good prognosis. However, the terms, “hypervascular ICC” and “hypovascular ICC,” have never been clearly defined. Previous reports have defined the vasculature of ICC ambiguously by comparing it to the vasculature to the non-cancerous areas. The aim of this study was to determine the best cut-off value for hypervascular and hypovascular ICC using vascularity on late arterial phase dynamic CT, based on the prognostic differences of patients in the two groups.

Methods: Seventy patients with mass-forming dominant ICC underwent hepatectomy between 2003 and 2013 were included in the subsequent analysis. Using the late arterial phase CT, we calculated the CT ratio as the CT value of the tumor divided by the CT value of the non-tumorous liver parenchyma. The optimal cut-off value for the CT-ratio was determined using p-values that were calculated using the log-rank test.

Results: The cumulative 5-year overall survival rate and median survival time were 43.3% and 44.3 months, respectively. The optimal cut-off value of the CT-ratio for dividing patients based on the greatest difference in overall survival (OS) was 0.85. The OS of patients with a CT-ratio of <0.85 ($n = 38$) was significantly worse than that of patients with a CT-ratio of >0.85 ($n = 32$) ($p = 0.00025$). The OS of the CT-ratio 0.85–1.0 group ($n = 11$) was comparable with that of the CT-ratio >1.0 ($n = 21$) group ($p = 0.6$) and significantly better than that of the CT-ratio <0.85 group ($p < 0.01$). The Cox proportional hazard analysis of all 70 patients identified that a CT-ratio of <0.85 ($p = 0.001$), a macroscopic periductal infiltration ($p < 0.01$), and a tumor not including bile ductular component ($p = 0.04$) were independent prognostic factors that were associated with OS. In the comparison of the histopathological and immunohistochemical features between the CT-ratio <0.85 and >0.85 groups, portal vein invasion ($p = 0.02$), intrahepatic metastasis ($p = 0.04$) and lymphatic invasion ($p = 0.02$) occurred significantly more frequently in the CT-ratio <0.85 group than in the CT-ratio >0.85 group. Moreover, the CT-ratio >0.85 group displayed significantly higher neural cell adhesion molecule reactivity (NCAM; hepatic progenitor cell and biliary marker, $p = 0.01$) and a lower S100P reactivity (large bile duct marker, $p < 0.01$) than those of the CT-ratio <0.85 group.

Conclusions: The prognosis of patients with a CT-ratio of between 0.85 and 1.0 was similar to that in patients with a CT-ratio of >1.0 and significantly better than in patients with a CT-ratio of <0.85 . These results suggest that a CT-ratio cut-off value of 0.85 well reflects the prognosis after surgery, and a CT-ratio of >0.85 may be correlated with bile ductular features, which are related to the origin of the tumor cells derived from hepatic progenitor cells.

Conflict of interest: No conflict of interest.

<http://dx.doi.org/10.1016/j.ejso.2016.06.008>

3. Prediction and prevention of liver failure after major liver resections for primary and metastatic liver cancer: The role of functional tests

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Background: Hepatic resection is the therapy of choice for malignant liver tumors. The concept of remnant liver volume (RLV) has been introduced and can be assessed with CT. However, inhomogeneous liver function distribution and a lack of correlation between morphologic hypertrophy and functional recovery fuelled the enthusiasm for functional imaging. The aim of this study was to evaluate the role of the preoperative hepatobiliary scintigraphy (HBS) and 13C-methacetin breath test in prediction of liver failure after major liver resections in patients with primary and metastatic liver cancer.

Materials and methods: The study includes two group of high-risk patients: main arm (n = 53) and control arm (n = 35). All patients were underwent liver resections for primary or metastatic liver malignancies. The patients of both groups have passed standard clinical and laboratory tests, the values of total bilirubin, albumin and prothrombin time showed no decrease in liver function. CT volumetry and 99mTc-technophyt HBS with 13C-methacetin breath test were performed in all test group patients. Patients with low FLR or/and compromised liver function were underwent staged liver resections or anatomical segmental resections. Liver function determined with HBS was compared with methacetin breath test by unified scale. The hepatic failure was observed by ISGLS criteria on postop day 5.

Results: A strong positive correlation (r 0.71) was found between preoperative liver function reserve (FLR) determined with HBS and 13C-methacetin breath test results in patients with primary and metastatic liver tumors. Receiver operating characteristic (ROC) curve analysis demonstrated high and good quality 13C-methacetin breath test and HBS for liver function reserve in predicting postoperative liver failure (AUC = 0.85 and 0.7 respectively). FLR function, measured by a combination of 13C-methacetin breath test and dynamic HBS (SE \geq 100%, SP \geq 67%, VP \geq 100%), was able to accurately predict actual postoperative remnant liver function. Comparison of the results by Bland-Altman showed no systematic differences, the average difference between measurements was -0.02. Postoperative liver failure occurred in eight patients of test group (15.1%), significantly decreased (p < 0.001) compared with control group (26%).

Conclusion: Preoperative 99mTc-technophyt hepatobiliary scintigraphy and 13C-methacetin breath test are a valuable techniques to estimate the risk of postoperative liver failure. They offer a unique combination of functional liver uptake and excretion with the ability to assess the preoperative liver function reserve and to estimate the remnant liver function preoperatively. Combination of FLR assessment, HBS and 13C-methacetin breath test seems to be a way to decrease the risk of postop liver failure after major liver resections.

Conflict of interest: No conflict of interest.

<http://dx.doi.org/10.1016/j.ejso.2016.06.009>

CE-IOUS has been proven to improve accuracy, and characterization of undetermined liver lesions, with a sensitivity of 80–91%. Nevertheless, no prospective study with validated methodology has been conducted with sulfur hexafluoride (SonoVue®), the main contrast agent available in Europe.

Material and methods: We conducted a single-arm bicentric phase 2 trial with the primary objective to assess clinical utility of CE-IOUS (NCT01880554). Decision of surgical procedure was collected before and after CE-IOUS. We considered that CE-IOUS had clinical utility if the surgical procedure decision was modified after use of CE-IOUS and justified (e.g. confirmation of malignancy in case of additional resection or absence of disease progression at follow-up in case of reduced surgery). We estimated that if clinical utility was observed for at least 5 out of 52 eligible and assessable patients, then clinical utility rate of CE-IOUS would be considered greater than 5% (Optimal 2-stage Simon's design). Secondary objectives included detection rate of liver metastases, characterisation rate for focal liver lesions, specific toxicity of SonoVue®, detection of missing mets. Contact imaging will be analysed by a software to characterize the intra-metastatic arterial flow with or without neoadjuvant chemotherapy and/or target therapies (Vuebox®).

Results: Among 68 patients included, 54 were assessable for clinical utility. 49 patients got preoperative chemotherapy. Median age was 64. 31 had synchronous CRLM. 22 patients underwent tumorectomies, 3 only ablations, 13 only anatomical resections, 15 combined ablations and resections and 1 a 2-stage procedure. Mortality was zero as morbidity due to sulfur hexafluoride. 38 patients had lesions of CASH (>grade 1) in their liver.

15 (27.8%) CRLM were discovered by IOUS only and 8 (14.8%) additional CRLM were by CE-IOUS. Main endpoint: Out of the first 52 eligible and assessable patients, 5 had a change in their surgery but justification could be achieved only in 4 (1 lesion was ablated without previous biopsy), leading to a 7.70% clinical utility rate (IC95%: [3.2, 18.6]). Main limits are in the sulfur hexafluoride use: median duration of examination was only 3 min 45 s. and the quality of the imaging depended on the quality of the preparation of the solution. Secondary endpoint will be available in September.

Conclusions: Although this we did not reach the predefined cut-off to conclude that CE (sulfur hexafluoride)-IOUS has clinical utility, this is the first trial that could prospectively demonstrate that CE-IOUS discovers roughly 15% of additional lesions in chemotherapy pretreated livers.

Conflict of interest: No conflict of interest.

<http://dx.doi.org/10.1016/j.ejso.2016.06.010>

4. Clinical decision making utility of contrast-enhanced intraoperative ultrasound (CE-IOUS) during hepatectomy for colorectal liver metastases (CRLM): The Uliis phase 2 study

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Backgrounds: Staging of CRLM is based on pre-operative CT and/or MRI, associated with IOUS, but is still insufficient as 50% of patients present relapse within 2 years. The recently use of contrast agents during

5. Synchronous liver metastasis and peritoneal carcinomatosis of colorectal cancer: A multicenter retrospective cohort study

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Background: The aim of the current study is to evaluate our experience in colorectal cancer patients with synchronous peritoneal and liver metastases treated with cytoreductive surgery (CRS) and hyperthermic intraperitoneal chemotherapy (HIPEC).

Methods: A prospectively maintained database of patients with PC of colorectal cancer treated with complete CRS + HIPEC, between April 2005 and July 2014, in two tertiary referral hospitals was retrospectively

analyzed. Patients with synchronous liver metastases (N = 18) were compared to patients without liver metastases (N = 276).

Results: In our cohort, liver metastases were significantly more present in patients with metachronous peritoneal metastases compared to patients with synchronous peritoneal metastases (67 versus 41%, respectively, $p = 0.03$). Patients with liver metastases showed a trend towards more extensive dissemination of PC (median number of affected regions: 4 versus 3, $p = 0.08$). Severe complications did not occur more in patients with synchronous liver metastases (44.4 versus 36.6%, $p = 0.50$). After a follow-up of 33.7 months, the overall median survival was 33.3 months, with a five year survival rate of 34%. Overall survival was not significantly different in patients with or without concomitant liver metastases (median overall survival: 32.1 versus 34.6 months, $p = 0.91$).

Conclusions: In carefully selected patients with peritoneal carcinomatosis and synchronous liver metastases, CRS + HIPEC is feasible and results in a similar survival compared to patients without liver metastases. This study justifies further exploration of combined treatment of hepatic and peritoneal metastases under careful and well-defined conditions.

Conflict of interest: No conflict of interest.

<http://dx.doi.org/10.1016/j.ejso.2016.06.011>

6. Two-stage hepatectomy for colorectal liver metastases: A major pathologic response to chemotherapy is associated with longer survival

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Background: The two-stage hepatectomy (TSH) of bilobar colorectal liver metastases (CRLM) is widely used and has shown encouraging survival results. The risk of drop-out after the first-stage remains high and associated with poor survival rates. Our objective was to evaluate the predictive factors of long-term survival, based on the pathologic response to an intensified pre-operative systemic chemotherapy.

Methods: Data from 899 patients treated for CRLM were collected prospectively between January 2003 and August 2013. We evaluated retrospectively the pathologic response to preoperative chemotherapy, its impact on the second-stage completion and on survival.

Results: Sixty-seven patients were eligible for the first-stage resection. Almost patients underwent an intensified chemotherapy in combination with a biotherapy in 38 cases. The Tumor Regression Grade (TRG), the modified-TRG and the Blazer grade were used to classify patients as responders (TRG and mTRG 1–3, Blazer 0–1) or non-responders (TRG and mTRG 4–5, Blazer 2) after the first stage. Responders in the three classifications (TRG: $p = 0.033$, mTRG: $p = 0.03$, Blazer: $p = 0.005$) were independent predictive factors for the second-stage completion. Triple chemotherapy was associated with responders (TRG and mTRG: 73.7% versus 26.3% $p < 0.0001$; Blazer: 84.2% versus 15.8% $p = 0.001$). Median overall survival in responders TRG and Blazer group were significantly higher (Blazer 0–1 42.9 months versus Blazer 2 20.1 months $p = 0.016$; TRG 1–3 42.9 months versus TRG 4–5 25.1 months $p = 0.04$).

Conclusion: Pathologic response to intensified chemotherapy is associated with a longer survival. Knowing this response before the first-stage resection may allow avoiding useless resections for patients who will not benefit from this strategy.

Conflict of interest: Other Substantive Relationships: Novartis, ethicon, Sanofi.

<http://dx.doi.org/10.1016/j.ejso.2016.06.012>

7. Neoadjuvant folfiri + bevacizumab in patients with resectable liver metastases from colo-rectal 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-fluorouracil. 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 $\leq -50\%$ 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.

Conflict of interest: No conflict of interest.

<http://dx.doi.org/10.1016/j.ejso.2016.06.013>

14 September 2016 11:30–12:30
Proffered Paper: Pancreatic Cancer

8. Targeted next generation DNA deep sequencing of fine needle aspiration cytological material of suspected pancreatic lesions, is of added value for diagnosis and therapy selection

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Introduction: Pancreatic surgery is known for its high morbidity and mortality. It is therefore of vital importance to have a clear indication for surgery. When differentiating between malignant and benign lesions of the pancreas, the value of conventional radiology and cytology is limited. An incorrect diagnosis could result in unnecessary pancreatic surgery. The aim of this study was to define the diagnostic value of molecular analysis of cytological biopsy material using targeted Next Generation Sequencing (NGS).

Material and methods: Patients with suspect pancreatic lesions underwent standard diagnostic evaluation, including fine needle aspiration (FNA). Treatment plans based on these data consisted of either neo-adjuvant therapy and resection, exploration with intended resection, follow-up, or palliation. Cytological specimens were analysed with Cancer Hotspot v2 (Ampliseq) and Ion Torrent Next Gen Sequencing, in which 50 genes were deep sequenced for the presence of pathogenic genetic variants. The clinical diagnosis was either changed or supported by the results of the NGS analysis. NGS results of resected lesions were compared to NGS results of FNA.

Results: A total of 22 patients were included. In 6 cases, NGS led to important additions to the treatment plan. In 3 patients, the preoperative diagnosis was uncertain so it was decided to wait for the final results of NGS analysis. For 2 patients, no mutations were detected. Instead, the patients were successfully treated for auto-immune pancreatitis. One patient, who underwent resection for pancreatic cancer in 2008, presented in 2015 with a lesion suspected for recurrence. However, NGS analysis indicated a second primary tumour. This led to a major change in treatment plan; instead of palliation a surgical resection was scheduled. In the other 16 cases, NGS supported the original treatment plan. The NGS analysis of the resected lesions was in concordance with the initial cytological NGS results in all cases.

Conclusion: Targeted NGS analysis of cytological biopsies is of added value in the diagnostic process. Application of NGS analysis led to major changes in treatment plan in 27% of the patients, and contributed to the diagnostic process in the other cases. Routine application of NGS analysis could optimize the selection of patients who are eligible for surgery, and unnecessary surgeries could be prevented.

Conflict of interest: No conflict of interest.

<http://dx.doi.org/10.1016/j.ejso.2016.06.014>

9. Plasma micro-RNA changes is a late event in pancreatic cancer

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Background: Pancreatic cancer (PDAC) patients have alterations in blood levels of certain micro-RNA:s (miRNA) at the time of diagnosis.

At the time of diagnosis, however, the majority of pancreatic cancer patients have a non-curable disease. Since early diagnosis holds the potential of improving the prognosis we measured plasma miRNA levels in samples withdrawn years before a definitive diagnosis.

Methods: We first measured miRNA levels in plasma from 23 PDAC patients and 23 age- and sex-matched controls. The levels of significantly altered miRNAs were tested in an early detection cohort using prediagnostic plasma samples from 67 PDAC patients and two age and sex matched controls per case. The early detection cohort consisted of samples from a biobank that have collected blood samples at routine health examinations since 1985.

Results: 52 miRNA were significantly altered at the time of diagnosis. None of the miRNAs were significantly altered in prediagnostic samples.

Conclusion: Although miRNA profiling can separate pancreatic cancer patients and healthy controls at the time of diagnosis, it is not a useful tool for early diagnosis. Changes in plasma miRNA seem to be a late event in the disease progression.

Conflict of interest: No conflict of interest.

<http://dx.doi.org/10.1016/j.ejso.2016.06.015>

10. Feasibility, safety, and oncologic validity of superior mesenteric artery first approach during open and laparoscopic pancreaticoduodenectomy

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Background: The retroperitoneal peripancreatic tissue, and particularly the tissue surrounding the superior mesenteric artery (SMA), are often invaded at the time of pancreaticoduodenectomy for pancreatic head tumor, resulting in R1 resection with dismal survival. It is important to remove "enbloc" the head of the pancreas and the retropancreatic tissue, anterior to the inferior vena cava and the left renal vein, and around the SMA, in order to increase the number of R0 resections and to extend the circumferential resection margins. The SMA-first approach, in which the SMA is dissected free during the early phase of operation, seems to be associated with decreased rates of positive resection margins in patients undergoing pancreaticoduodenectomy for periampullar tumor. Herein, we describe our initial experience with the SMA-first approach for open pancreaticoduodenectomy (OPD) and laparoscopic pancreaticoduodenectomy (LPD).

Material and methods: We used the SMA-first approach in 40 consecutive patients undergoing pancreaticoduodenectomy (July 2013–July 2015). Demographic, clinical-pathological, and postoperative outcomes data were retrospectively collected and compared between patients undergoing LPD (n = 16) and OPD (n = 24).

Results: Overall, major complications rates were 52% and 22%, with a trend in lower rates among LPD patients (37% and 12%, respectively), compared to OPD (72% and 29%, respectively), paralleling a shorter median length of stay among LPD patients, compared to OPD (17 vs 21 days). Rates of pancreatic ductal adenocarcinoma and of T3 tumors were higher among OPD patients (76% and 80%, respectively), compared

to LPD (32% and 38%, respectively), matching a significantly higher rate of vascular resection/reconstruction and a higher median number of retrieved lymph nodes among patients undergoing OPD (50% and 53 (from 27 to 71)), compared to LPD (0% and 23 (from 12 to 46); $p < .05$ for both comparisons). R0 resection was achieved in 38 (95%) patients.

Conclusions: this initial experience suggests that the SMA-first approach is safe, feasible, and oncologically sound both during OPD and during LPD, though larger series are needed to confirm these results.

Conflict of interest: No conflict of interest.

<http://dx.doi.org/10.1016/j.ejso.2016.06.016>

11. Intraoperative ultrasonography in pancreatic surgery: Staging and resection guidance

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Background: Intraoperative ultrasound examination (IOUS) is indispensable part of modern surgical interventions in tumors of hepatopancreatobiliary zone. In this study retrospective analysis of IOUS efficiency in surgical treatment of pancreatic tumors was provided.

Materials and methods: In the period from January 2013 till November 2015 in the National Cancer Institute IOUS was applied during 76 surgical interventions: for pancreatic head tumors – in 46 (60.5%) patients, for body/tail pancreatic tumors – in 20 (26.3%) patients, in 10 (13.2%) patients – for periampullary zone neoplasms. In IOUS we performed primary tumor assessment (localization, degree of tumor spreading to superior mesenteric vessels, hepatoduodenal ligament vessels, additional foci occurrence in pancreas), and liver metastases detection. Surgical interventions were performed: pancreatoduodenectomy in 52 (68.4%) patients, radical antegrade modal pancreateosplenectomy – in 14 (18.4%) patients.

Results: IOUS allowed determining additional tumor foci in pancreas in 2 (2.6%) patients, in 8 (10.5%) observations tumor invasion into portal or superior mesenteric vein was determined. In 21 (27.6%) patient additional hepatic neoplasms were detected (in half of cases – 11.8%, metastases). These findings resulted in change of surgical intervention extent in 23 (30.3%) patients: expansion to combined resections in 14 (18.4%) patients, reduction to symptomatic operations in 5 (6.6%) cases, organ-preserving operations were performed in 4 (5.3%) patients. Variant anatomy of hepatic arterial blood supply was determined in 41 (53.9%) patients that necessitated performance correction of resection stages for preservation of adequate hepatic blood supply.

Conclusions: IOUS is a highly-precise diagnostic method substantially influencing operation course in pancreatic tumors, enabling surgeon to provide adequate staging and permanent correction of operation course.

Conflict of interest: No conflict of interest.

<http://dx.doi.org/10.1016/j.ejso.2016.06.017>

12. The prognostic value of the lymph node ratio for resected pancreatic ductal carcinoma

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Background: Aim of this study was to evaluate the prognostic significance of the ratio of number of positive lymph nodes to total number of examined lymph nodes (lymph node ratio, LNR) for resected pancreatic ductal adenocarcinoma.

Material and methods: A total of 102 patients with pancreatic ductal carcinoma, who underwent R0 or R1 pancreatectomy from 2008 to 2014 were reviewed retrospectively. Clinicopathologic factors including number of positive lymph nodes (NP), number of examined lymph nodes (NE), LNR, and survival were analyzed by univariate and multivariate analyses. Furthermore, analyses using Akaike information criterion (AIC) and Harrell's concordance index (c-index) were performed to evaluate the prognostic value.

Results: Tumors were located mainly in the pancreatic head (68 patients, 67%). The median size of tumor was 3.3 cm (range 1.7–9.6) and 91 patients (89%) had lymph node metastasis. The median of NP, NE, and LNR was 4 (range 0–19), 32.5 (range 10–67), and 0.11 (range 0–0.69), respectively. Resection margin was negative (R0 resection) for 76 patients (75%) and postoperative chemotherapy was administered to 81 (79%) patients. Overall survival rates were 75%, 33%, and 20% at 1, 3, and 5 years, respectively. Univariate analysis revealed that NP (≥ 3), LNR (>0.11), CA19-9 level (>370), tumor size (>3 cm), R0 resection, postoperative chemotherapy significantly correlated ($p < 0.01$) with increased survival and a positive correlation was seen between NP and LNR ($r = 0.37$, $p < 0.01$). Multivariate analysis with LNR, CA19-9 level, tumor size, R0 resection and postoperative chemotherapy revealed that LNR (HR 2.47) and postoperative chemotherapy (HR 2.05) were independent factors for overall survival. Otherwise, multivariate analysis with NP, CA19-9 level, tumor size, R0 resection and postoperative chemotherapy revealed that NP (HR 2.26) and R0 resection (HR 1.96) were independent factors for overall survival. Both AIC and the c-index showed that the prognostic value of LNR (AIC: 534.62, c-index: 0.646) was higher than that of NP (AIC: 537.12, c-index: 0.634). LNR also had an independent impact on recurrence-free survival after surgery.

Conclusions: LNR is the most powerful tumor-related factor predicting overall and recurrence-free survival for resected pancreatic ductal carcinoma.

Conflict of interest: No conflict of interest.

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14. The EURECCA Pancreatic Cancer Project: An overview of the first data

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Background: International comparisons of hospital performances could provide clues to the most optimal and tailored treatment in cancer patients. EURECCA, acronym for European Registration of Cancer Care, is a platform aiming to (among others) improve cancer care by comparing European data. The aim of the present EURECCA study is to compare characteristics of patients with pancreatic cancer who underwent surgery.

Material and methods: National cancer registries, as well as specific pancreatic cancer audits/registries, were invited to participate in the EURECCA Pancreatic cancer project. The participating countries were requested to provide data on patients diagnosed in the year 2012 or 2013, on the following variables: pathological TNM stage, patient characteristics (age, gender), surgery (yes/no) and vital status. Bulgaria, Ukraine, Slovenia, Leiden (the Netherlands) and Catalonia (Spain) are currently participating in this project. More countries have been invited and agreed to participate in the project; additional data will be analysed for the conference. For the present analysis, only patients who underwent surgery were selected.

Results: Overall, 1551 patients are included: 79 from Leiden, 207 from Catalonia, 401 from Bulgaria, 48 from Slovenia and 816 from Ukraine. Median age and gender per registry, are presented in Table 1. Stage distribution of patients who received surgery was considerably different between the countries, which are also demonstrated in Table 1. Remarkably, Bulgaria and Ukraine performed more surgery in patient with stage III or IV than Catalonia and Leiden. At a median follow-up of 2 years, 40% of the patients from Leiden were still alive. At a median follow-up of 1 year, 8.5% of the patients in Bulgaria, 31% of the patients in Slovenia and 31% in Ukraine were still alive. There is no information available about follow-up from Catalonia.

Table 1
Median age and distribution of gender and stage of patients undergoing surgery for pancreatic cancer in 2013 by country.

	Bulgaria (n = 401)	Catalonia (n = 207)	Leiden (n = 79)	Slovenia (n = 48)	Ukraine (n = 816)
Age (median)	65	70	66	61	64
Gender male/female	54%/46%	56%/44%	47%/53%	58%/42%	54%/46%
Stage I	40 [10%]	14 [7%]	9 [11%]	7 [15%]	97 [12%]
Stage II	102 [25%]	130 [63%]	44 [56%]	25 [52%]	235 [30%]
Stage III	80 [20%]	5 [2%]	4 [5%]	2 [4%]	134 [17%]
Stage IV	163 [41%]	2 [1%]	8 [10%]	9 [19%]	190 [23%]
Stage unknown	16 [4%]	56 [27%]	14 [18%]	5 [10%]	60 [8%]

Conclusions: Data from these five international registries show a large variation in characteristics of surgically treated pancreatic cancer patients. Importantly, tumor stage distribution of patients undergoing surgical treatment differed among countries. Additional data of all participating countries is currently collected aiming to compare treatment strategies and outcome of pancreatic cancer patients in European countries.

Conflict of interest: No conflict of interest.

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14 September 2016 11:30–12:40

Proffered Paper: Minimally Invasive and Robotic Surgery

15. TAMIS for rectal tumors: Advancements of a new approach

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Background: Transanal minimally invasive surgery (TAMIS) allows transanal excision of rectal lesions by the means of a single access port and traditional laparoscopic instruments. This technique represents a promising treatment for rectal neoplasms since it guarantees precise dissection and reproducible approaches.

Materials and methods: From May 2010 to January 2016, we performed TAMIS excisions of rectal lesions in 58 patients using a SILS port. The pre-operative diagnosis was 29 tumours, 26 low and high grade displasias and 3 benign neoplasms.

Fourteen patients had a neoadjuvant treatment. Pneumorectum was established at a pressure of 15–20 mmHg with continuous insufflation, and full thickness resections of rectal neoplasm with ordinary laparoscopic instruments were performed with a conventional 5-mm 30° laparoscopic camera.

Results: The average operative time was 78 min. Five serious intraoperative complications occurred: one bleeding, 3 intraperitoneal perforation, 1 rectovaginal fistula (for a lesion in the anterior wall). The peritoneal infraction was closed by combined transanal and laparoscopic sutures in 1 patient; in 2 other patients transanal sutures only were used. In 1 patient a subsequent open laparotomy was necessary at postoperative day 2 and a Hartmann procedure was performed; a diverting colostomy was required in the patient with the rectovaginal fistula. Bleeding was successfully treated by cautery and sutures. Postoperative pathology confirmed benign rectal adenoma in 23 patients (15 low grade, 8 high grade) and 1 GIST, 1 lipoma and 1 mucinous adenoma. In 8 patients, no tumour (T0) could be detected: this occurred because of a

previous endoscopic resection in 4 cases and a complete response to neoadjuvant therapy in other 4 patients. This was diagnosed in 14 cases, a T1 cancer in 3 cases, a T2 cancer in 6 and a T3 cancer in 1 case.

Unclear resection margins were detected in 6 pts: thereafter 5 patients underwent radical surgery. One patient was unfit for radical surgery and at follow up she is alive and well. Patients were discharged after a median of 3 days. At a median follow-up of 40 (2–70) months, local recurrences occurred in 6 patients (5 cancer and one low grade dysplasia).

Conclusions: TAMIS shows several advantages compared to other transanal surgical procedures. Radical excision of rectal cancer can be safely performed, also for lesions downstaged by neoadjuvant treatment. Adequate treatment of benign lesions as well as perirectal tumor can be achieved. Standard instrumentations for laparoscopic surgery can be used and shorten learning curve and operating room set up.

Conflict of interest: No conflict of interest.

<http://dx.doi.org/10.1016/j.ejso.2016.06.021>

16. Robot-assisted Ivor Lewis esophagectomies with hand sewn anastomosis: Short-term outcome

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Background: For a few years ago, open esophagectomy was the preferred surgical approach in patients with esophageal cancer. In recent years, minimally invasive esophagectomy is becoming popular with less pulmonary complications and a shorter hospital stay. Nonetheless, thoracoscopically creating the intrathoracic anastomosis is very challenging. Use of robot could help this technical demanding part of the esophagectomy.

The aim of this study was to evaluate the short-term outcome after robot-assisted esophagectomy with a hand sewn intrathoracic anastomosis (RAMIE Ivor Lewis) in patients with esophageal cancer.

Material and methods: All data were prospectively collected into a SPSS-database. Patients that were treated with curative intent for esophageal cancer with RAMIE Ivor Lewis from January 2015 until March 2016 were included. The abdominal phase was performed laparoscopically and the thoracic phase was robot-assisted with a hand sewn anastomosis.

Results: In total 30 patients received RAMIE Ivor Lewis, with a male–female ratio of 29:1 and a median age of 65 year (range 36–83). Neoadjuvant chemoradiotherapy was given to 97% of the patients.

Conversion to an open thoracic or abdominal procedure was not necessary. Median operation-time was 363 min (range 290–450) with a median blood loss of 100 ml (range 50–200). Median postoperative ICU stay was 2 days (range 1–42) and median hospital stay was 11 days (range 8–54).

Cardiac complications were seen in 33% (mainly atrial fibrillation) and pneumonia was seen in 40%. One patient (3%) developed a chylothorax which was treated with dietary changes only. Twenty-three percent (7 patients) developed an anastomotic leakage of which 2 patients received a Video-Assisted Thoracoscopic Surgery (VATS). In hospital mortality was 0%.

A radical resection was achieved in 93% with a median number of lymph nodes of 21 (range 8–44).

Conclusion: Robot-assisted Ivor Lewis esophagectomy in patients with esophageal cancer is safe and effective on short-term. A hand sewn robot-assisted anastomosis is a feasible option with a low postoperative mortality.

Conflict of interest: No conflict of interest.

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17. Laparoscopic wedge resection for suspected large (≥ 5 cm) gastric gastrointestinal stromal tumors

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Background: Laparoscopic wedge resection (LWR) for small gastric gastrointestinal stromal tumors (GIST) is now widely accepted. However, its application for large gastric GISTs remains controversial. This study aims to evaluate the feasibility and safety of LWR for suspected large (≥ 5 cm) gastric GISTs.

Methods: This is a retrospective review of 82 consecutive patients who underwent attempted LWR for a suspected gastric GIST at a single institution between 2002 and 2015. The patients were stratified into large (≥ 5 cm) ($n = 23$) and small (< 5 cm) tumors ($n = 59$). The 23 patients who underwent LWR of large tumors were also compared to 36 consecutive patients who underwent open wedge resection (OWR) of large tumors.

Results: Comparison between the outcomes of patients who underwent LWR for large versus small tumors demonstrated that resection of large tumors was associated with a longer operating time [210(150–475) vs 140(60–415) min, $P < 0.001$]. There was no difference in other perioperative outcomes, and oncological outcomes such as frequency of close margins (≤ 1 mm) and recurrence-free survival. Comparison between patients who underwent LWR versus OWR for large tumors showed that LWR was associated with decreased median time to fluid diet [2(1–4) vs 3(1–6) days, $P < 0.001$], decreased median time to solid diet [3(1–9) vs 5(2–9) days, $P < 0.001$], shorter postoperative stay [4(2–72) vs 7.5(4–64) days, $P < 0.001$] but longer operating times [210(150–475) vs 105(50–245) min, $P < 0.001$]. There was no difference in oncological outcomes between LWR and OWR.

Conclusion: LWR for large gastric GIST (≥ 5 cm) is feasible and safe. It is associated with the same favorable short-term outcomes over OWR as LWR for small tumors without compromising on oncological outcomes.

Conflict of interest: No conflict of interest.

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18. A pilot study evaluating the overlay display method for image guidance in laparoscopic liver surgery

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Introduction: Despite reported benefits in terms of reduced morbidity and improved recovery, laparoscopic liver resection (LLR) has not been widely adopted. Image guidance systems that display a 3D model of the liver during surgery were introduced to alleviate some of the technical difficulties of LLR. Current systems however are cumbersome because they use two separate screens to display the laparoscopic site next to the 3D model and because they require users to manually align the 3D model with in-situ anatomy. To address this issue an image guidance system (SmartLiver) has been developed that displays information like a head-up display by directly overlaying the 3D model onto the laparoscopic screen. SmartLiver was evaluated in a clinical study, and for the first time in humans, the feasibility of employing image reconstruction technology to automatically align 3D model with patient anatomy, is demonstrated.

Methods: Patients undergoing LLR or staging laparoscopy were eligible for recruitment. SmartLiver has three key components: 1) a 3D liver model, 2) tracking of the laparoscope position and 3) alignment of 3D model and in-situ anatomy. The 3D model was constructed from a pre-operative CT scan. Changes in laparoscope position were determined by fitting it with infrared markers that were tracked by a 3D tracking camera positioned above the operating table. The 3D model was aligned manually and automatically. The latter was achieved by using triangulation with a 3D laparoscope at surgery matching the liver surface to the shape of the 3D model. The overlay accuracy of SmartLiver was measured by evaluating the discrepancy between anatomical landmarks as displayed on the 3D model in comparison to the laparoscopic video. At completion of the procedure, surgeons were asked to complete a usability survey.

Results: In total 6 patients undergoing LLR and 8 patients undergoing staging laparoscopy were recruited for the study. Due to technical or surgical issues, image overlay could not be achieved in 5 patients. Median accuracy for manual alignment was 11 ± 6 mm (standard deviation). In one patient an automatic alignment was successfully processed in the lab with data obtained during surgery. The overlay accuracy was 8 mm compared to 11 mm for the intraoperative, manual alignment carried out in the same patient. Surgeon feedback will be included in the full presentation.

Discussion: Intraoperative use of SmartLiver was found to be feasible. Its key advantage is the overlay display which facilitates intuitive interpretation of the anatomical situation. Accuracy is being improved but because SmartLiver is the first system of its kind, there is no comparative data in the literature. A new study is being carried out to assess if automatic alignment performed during surgery can improve accuracy and to test the usability of a simplified graphic user interface.

Conflict of interest: Board of Directors: Prof. Hawkes is a co-founder of IXICO Ltd.

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19. Tactile diagnostics in robotic surgery

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Background: Robotic surgery undergoes its wide acceptance achieved due to minimizing trauma to patients. However, currently robotic surgery lacks a tactile feedback, and it is an essential limiting factor for its further expansion.

The problem can be solved by utilization of Medical Tactile Endosurgical complex (MTEC). This complex measures and displays tactile properties of tissues during endoscopic surgeries in real time. It was developed in Lomonosov Moscow State University and officially admitted for clinical use in 2012.

Materials and method: MTEC palpation device performs tactile examinations via pressure sensors located in the operating head of the device under a soft membrane. Sensors wirelessly transmit measurement results to a computer in real time. Computer performs processing and output of tactile data to a standard monitor and to specialized tactile display from which data can be read simply via a finger. Processing includes automated analysis of registered tactile data aimed at the identification of heterogeneities which simplifies the identification of lesion boundaries.

The utilization of MTEC in endoscopic surgery was tested from January 2015 to December 2015 in hospital No. 31 (Moscow). Nine elective surgeries were performed with da Vinci™ robotic system (Intuitive Surgical, USA): 2 gastrectomies, 2 stomach resections, 2 resections of pancreas, 2 prostatectomies and 1 right hemicolectomy. Patients' ages were from 30 to 76.

During the surgeries an assistant performed tactile examination under the guidance of surgeon. Operating surgeon identified boundaries of pathological process using a tactile display, and assistant inspected the visualization of tactile data.

Results: MTEC was first tested on visually identifiable lesions in stomach and intestine (5 cases). In all cases it correctly localized boundaries of pathological processes. Then the method was applied to pancreas and prostate pathologies and also led to correct decisions in all cases, including a case in which the whole pancreas was involved in process and hence no boundaries were detectable.

Conclusion: Utilization of MTEC provides a tactile feedback in robotic surgery thus increasing its capabilities by correct identification of boundaries of a pathological process in the absence of sufficient visual data.

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Conflict of interest: No conflict of interest.

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20. A novel suction-drainage system to treat anastomotic leakage after totally minimally invasive esophagectomy with intrathoracic anastomosis (Ivor Lewis)

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Background: Worldwide either open or minimally invasive esophagectomy is the cornerstone of curative treatment for esophageal cancer. Anastomotic leakage is one of the most life threatening postoperative complications with an incidence of 20–30% and a mortality rate of 25–40%. Strategies to treat leakage are divers.

A novel therapy system to treat leakages is controlled suction-drainage via nasogastric route. This system is relatively cheap and both in hospital and ambulant setting employable.

The aim of this study was to evaluate the efficacy of controlled suction-drainage as treatment of anastomotic leakages after totally minimally invasive esophagectomy (tMIE) with intrathoracic anastomosis (IA).

Material and methods: All patients that were treated with curative intent for esophageal cancer with tMIE with IA were included. Anastomotic leakage was diagnosed with either a CT-scan or endoscopy and treated with endoluminaltube Thopaz suction-drainage system (20 cm H₂O suction), endoscopic stenting or clipping or a combination of these. VATS was used to drain thoracic empyema.

Results: From July 2013 until December 2015 97 tMIE's with IA were performed in a single tertiary referral centre. Male-female ratio was 84:13 with a median age of 67 (36–83).

Twenty-six patients (27%) developed an anastomotic leakage. Of these, 12% (N = 3) was treated with antibiotics only, 81% was treated using Thopaz drainage system. In 11 patients (42%) suction drainage only was enough to treat the dehiscence. The other 39% received endoscopic stenting or clipping after the drainage-period. Two patients (8%) received endoscopic treatment without suction drainage.

The median recovery period of the anastomotic leakage was 47 days (2–156).

Reoperation (VATS) to drain thoracic empyema was necessary 12 patients (46%). Two patients (8%) died as a consequence of the anastomotic leakage.

Conclusion: Controlled suction drainage is an effective treatment in the majority of patients with anastomotic leakages after tMIE with IA. Although anastomotic leakages occur, failure to rescue the patient is low.

Conflict of interest: No conflict of interest.

<http://dx.doi.org/10.1016/j.ejso.2016.06.026>

21. Total laparoscopic radical trachelectomy as a fertility sparing technique in early cervical cancer in a 'Buddy' operating institute: Demonstration of technique and review of outcomes

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Background: Radical trachelectomy is a valuable and oncologically safe fertility-preserving treatment for young women with early-stage cervical disease. Amputation of the cervix from the body of the uterus removes the focus of the cancer whilst maintaining child bearing potential. It has been an established technique for the small subset of patients with early disease and a desire to maintain fertility. The vaginal approach was first described by D'Argent in 1994 and since evolved into an abdominal procedure. The Laparoscopic Radical Trachelectomy (LRT) has the advantage of direct, enhanced and magnified vision, allowing detailed and intricate dissection to preserve uterine arteries and nerve fibres. It has been shown to reduce peri-operative morbidity and also bladder dysfunction. It however remains a complex procedure requiring adept laparoscopic skills. An established buddy system (two experienced laparoscopic surgeons) exists in our institution and we present our considerable experience in LRT.

Methods: 24 patients with Stage 1b cervical cancer were identified retrospectively. Each patient had clinical and radiological (MRI) evidence of early disease and were discussed at the hospital board multi-disciplinary meeting. Two experienced gynaecological oncologists from one tertiary referral institution performed a laparoscopic pelvic node dissection (PND), radical nerve sparing laparoscopic technique and insertion of a cervical suture followed by stump amputation with LiNA loop system. The suture acts to maintain cervical competence and prevent pre term delivery.

The vaginal radical trachelectomy cohort (VRT) represented those prior to adopting LRT, underwent a laparoscopic PND and radical vaginal dissection with vaginal suture placement.

Results: We present a video description of our laparoscopic technique and present results for surgical, oncological and reproductive outcomes over a 5-year period in a matched case control study.

There were 12 closely matched patients in terms of demographic and oncologic features in each arm. Operative time was significantly shorter in the VRT group (mean 158.1) versus LRT group (210.3) $p = 0.018$ – this represents a learning curve effect. Fewer intraoperative complications occurred in LRT group 2/12 (16%) [CI 95% 0.035–0.46] compared to vaginal. 4/12 (32%) [CI 95% 0.09–0.65]. Blood loss was significantly lower in LRT arm, (Mean 17.1 g/L vs 10 g/L $p = 0.02$) hospital stay was shorter in the laparoscopic group (mean 3 days VRT vs 2.5 LRT) a greater difference was not observed as this reflects our bladder care policy.

Discussion: We demonstrate our technique for LRT and show the considerable benefits of a 'Buddy' system for undertaking complex techniques. We demonstrate that this minimally invasive technique has benefits in safety, feasibility and improving outcomes in young women with fertility desires with early cervical cancer.

Conflict of interest: No conflict of interest.

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14 September 2016 11:30–12:40 Proffered Paper: Various Tumour Types I

22. Elevated platelet count is a negative predictive factor for pathologic tumor response and long-term oncologic outcome in locally advanced rectal cancer undergoing preoperative chemoradiation

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Background: Preoperative chemoradiation therapy (CRT) followed by radical surgery is standard of care in patients with locally advanced mid-distal rectal cancer (LARC). Pathological complete response in the primary tumor (ypCR) is observed in up to one-third of the cases. In this subset of patients favourable long-term oncologic outcome has been reported and organ preservation strategies are being explored. On the other hand, patients with non-responding tumors are unnecessarily exposed to CRT toxic effects. To date, no methods for predicting CRT response are available. Accumulating evidences indicate that elevated platelet count at the time of initial diagnosis is a negative prognostic and predictive factor in different types of tumor. The aim of this study was to investigate the significance of pre-treatment elevated platelet count in LARC patients undergoing preoperative CRT.

Material and methods: Data were retrieved from our Institutional prospective rectal cancer data-base. The pre-CRT platelet count cut-off for ypCR prediction was chosen in order to maximize the test sensibility. Cumulative probabilities of disease specific survival(DSS), disease-free survival(DFS), local recurrence free survival(LRFS), and distant metastasis free survival(DMFS) were estimated by Kaplan–Meier method, and differences assessed using the log-rank test. A P value <0.05 was considered statistically significant.

Results: Study population comprised 150 patients (99 men, 51 women; median age 65 years) with LARC (T3–4 or any N1–2) treated by preoperative CRT followed by surgery (95 low anterior resection, 22 abdominoperineal resection, and 33 full thickness local excision) at our Institution between 2001 and 2013. At pathology, ypCR in the primary tumor was observed in 46 (30.6%) cases. Median pre-CRT platelet count was 265,000/ μ l (range 70,000–599,000/ μ l). A pre-CRT platelet count

$>393,000/\mu$ l was identified as optimal cut-off in order to predict ypCR occurrence with 100% sensibility and negative predictive value. No-ypCR in the primary tumor was observed in 12/12 (100%) patients with pre-CRT platelet count $>393,000/\mu$ l compared to 92/138 (66.6%) in patients with pre-CRT platelet count $\leq 393,000/\mu$ l ($P = 0.018$). Survival analysis demonstrated that high pre-CRT platelet count is associated with unfavourable long-term oncologic outcome (Table).

pre-CRT	5-years DSS		5-years DFS		5-years LRFS		5-years DMFS	
Platelet count (%)	p	(%)	p	(%)	p	(%)	p	
$\leq 393,000/\mu$ l	88.3	0.008	72.5	0.072	83.1	0.703	79.6	0.060
$> 393,000/\mu$ l	62.9		43.7		79.5		49.2	

Conclusions: Our data indicate that elevated platelet count is a negative predictive factor in LARC patients treated by preoperative CRT. This could be of potential clinical value for personalized treatment and therapeutic intervention. To this end, in depth studies are needed to elucidate the molecular mechanisms underlying this phenomenon.

Conflict of interest: No conflict of interest.

<http://dx.doi.org/10.1016/j.ejso.2016.06.028>

23. Can a small polyp surprise a big surgeon? Assessment of the prevalence of malignancy and high grade dysplasia in small colorectal polyps (< 10 mm) among patients undergoing screening colonoscopy

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Background: Colonoscopy is a significant screening exam for colorectal cancer, providing early detection and potential treatment. The risk of malignancy of large polyps and benign nature of small polyps is generally accepted, however the management of polyps <10 mm in diameter including polypectomy technique is controversial and not standardized. The aim of the study is to assess the prevalence of malignancy and high grade dysplasia in small colorectal polyps (<10 mm) among patients undergoing screening colonoscopy.

Material and methods: We retrospectively analyzed database of 15,631 colonoscopy procedures performed between 2006 and 2011 in two reference endoscopy centers.

Results/Discussion: The study group included Females = 9476, Males = 6155. The average age of the study group was 54,37 years. In the database there were 4448 patients with polyps found during the procedure and 3943 had polypectomy. Among them we found 4245 small polyps: 3051 (71.87%) diminutive polyps (≤ 5 mm) and 1194 (28.13%) small polyps

(6–9 mm). 2 cases of malignancy were discovered in polyps <5 mm (0.07%) while malignancy was found in 68 patients with polyps altogether. 26 patients (0.6%) with polyps had high grade dysplasia (most commonly tubular adenoma with HGD), among them 16 cases of HGD were found in small polyps (6 in <5 mm polyps (0.2%) and 10 in 6–9 mm polyps (0.8%)).

Conclusions: Management of small colorectal polyps is still not standardized and there is no size-based strategy of treatment. Although malignancy is more often found in large polyps, small polyps require attentive approach and adequate removing technique. The cases of high grade dysplasia and malignancy found in polyps smaller than 5 mm can be of great importance to emphasize the necessity to develop a management strategy for small polyps.

Conflict of interest: No conflict of interest.

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24. Prospective study of robotic assisted rectal surgery for carcinoma rectum

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Background: Robotic surgical systems have dramatically changed minimally invasive surgery as they could potentially address limitations of laparoscopic rectal surgery. In spite of many evidences that are being published it is still in its infancy when it comes to its acceptancy in terms of safety, feasibility and oncological outcomes. This prospective observational study is conducted to evaluate the safety, feasibility, technique, and outcomes (operative, oncological short-term and post-operative) of robotic-assisted rectal surgery for carcinoma rectum in the Indian set up.

Materials and methods: This was a prospective observational study conducted between February 2014 and February 2016, including 35 patients, diagnosed of rectal carcinoma. All patients who were diagnosed of rectal carcinoma where evaluated and worked up for staging and metastatic survey. Patients underwent robotic rectal cancer surgery in form of either low anterior resection or abdominoperineal resection. Patients who were T3 and above or N+ received neo-adjuvant chemoradiation as protocol, reassessed after 6–8 weeks and then taken up for surgery.

Results: Out of 35 patients, 25 were male and 10 were female, aged between 34–80 years. All patients had adenocarcinoma rectum, with 11 having carcinoma in upper rectum, 4 in mid rectum and 20 in lower rectum. 28 patients had T3 lesion, 4 had T2 and 3 had T4 lesion. 26 out of 35 patients received neo-adjuvant chemoradiation before surgery. 28 patients had low anterior resection and 7 patients underwent abdomino-perineal resection. Average operative time including docking time and surgery time was 226.32 min (170–300 min), mean blood loss was 146.76 ml (120–200 ml), there was no conversion to open surgery in any case. Bowel sounds appeared on average on 3rd day, with patients requiring iv analgesics on a average for 3.7 days (2–5 days) and oral analgesics for 3.6 days (2–5 days). All margins were negative (proximal, distal, circumferential) in all patients, mesorectal grade was complete in 33 patients and near complete in 2. Mean number of lymph nodes harvested is 9.5 (2–32). 2 patients had anastomotic dehiscence after 1 month. Minor complications were noticed in 5 patients.

Conclusion: In conclusion, robotic rectal surgery has several benefits in the treatment of rectal cancer and should be part of the armamentarium of the experienced surgeon dealing with this disease. We conclude that the robotic-assisted rectal cancer surgery is safe and an oncologically feasible technique. However, large study group and long-term follow-up data are required to evaluate the recurrence and survival rates.

Conflict of interest: No conflict of interest.

<http://dx.doi.org/10.1016/j.ejso.2016.06.030>

25. The impact of postoperative enteral immunonutrition on postoperative complications and survival in gastric cancer patients

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Immunomodulating enteral nutrition in the perioperative period may reduce postoperative complications in cancer patients. Little is known if this effect translates to the better survival. The aim of study was to assess the impact of postoperative immunomodulating enteral nutrition on postoperative complications and survival of gastric cancer patients.

The group of 98 gastric cancer patients were randomly assigned for postoperative immunomodulating enteral nutrition n = 44 (Reconvan, Fresenius Kabi), or standard enteral nutrition n = 54 (Peptisorb, Nutricia). Postoperative complications, mortality, 6-months and 1-year survival were analyzed.

The overall postoperative morbidity did not differ between groups. The rate of pulmonary complications (excluding pneumonia) was significantly lower in immunomodulation group (0% vs 9.3%, p = 0.044), as well as 60-day mortality (0% vs 11.1%, p = 0.037). There was no difference in 6-months and 1 year survival between groups. This confirmed that postoperative immunomodulating enteral nutrition may reduce respiratory complications and postoperative mortality in comparison to standard enteral nutrition. Despite this effect, it did not improve 6 months and 1-year survival in immunomodulation group.

Probably the beneficial effect of immunomodulating enteral nutrition is too weak to be significant in such a number of patients.

Conflict of interest: No conflict of interest.

<http://dx.doi.org/10.1016/j.ejso.2016.06.031>

26. Hyperthermic intraperitoneal chemoperfusion in combined treatment of locally advanced and disseminated gastric cancer: Results of a single-centre study

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Background: Patients with locally advanced gastric cancer (GC) and/or peritoneal metastases have a poor prognosis despite systemic chemotherapy or palliative surgery. The aim of this retrospective comparative non-randomized study was to evaluate aggressive cytoreduction in combination with hyperthermic intraperitoneal chemoperfusion (HIPEC) as a novel treatment strategy for patients with intraperitoneal disseminated and locally advanced GC.

Material and methods: 59 GC patients with serosal invasion (n = 24), limited peritoneal metastases (n = 25), or disseminated peritoneal metastases and tense ascites (n = 10) underwent combination therapy with HIPEC. Three matched control groups undergoing standard therapies were retrospectively identified.

Results: Combination therapy for serosa-invasive GC reduced the level of metachronous peritoneal carcinomatosis from 75% in the surgical control subgroup to 33.3% (p = 0.004) and increased median survival from 13.3 months to 32.5 months (p = 0.0006). The median and 1-year survival rates for intraperitoneal disseminated GC patients undergoing therapy with the use of HIPEC were 12 months and 54.2% compared with 8.4 months and 20%, respectively (p = 0.004) for control subgroup patients (palliative chemotherapy). For patients with complete cytoreduction median survival

was 14 months, one patient (4%) alive more than 5 years. The symptomatic use of HIPEC in GC patients with diffuse peritoneal carcinomatosis complicated by symptomatic ascites does not significantly increase survival, it allows effective elimination of recurrent ascites. The independent prognostic factors in GC patients with peritoneal metastases undergoing combined treatment with HIPEC are the stage of peritoneal dissemination in compliance with the classification of the Japanese Gastric Cancer Association and the score of cytoreduction completeness.

Conclusions: HIPEC is an effective method of adjuvant therapy for gastric cancer with high risk of intraperitoneal progression. Cytoreduction followed by HIPEC improves survival in patients with limited peritoneal carcinomatosis of gastric origin.

Conflict of interest: No conflict of interest.

<http://dx.doi.org/10.1016/j.ejso.2016.06.032>

27. Retroperitoneal lymphadenopathy as a prognostic factor in cytoreductive surgery and hyperthermic intraperitoneal chemotherapy (CRS-HIPEC)

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Introduction: The optimal treatment of colorectal peritonitis carcinomatosis (PC) is surgical cytoreduction with hyperthermic intraperitoneal chemotherapy (CRS-HIPEC) followed by systemic chemotherapy. Because the retroperitoneal space is not opened retroperitoneal lymph node metastases won't be treated in CRS-HIPEC. From 2010 retroperitoneal lymphadenopathy (RPLP) is considered as a contraindication for CRS-HIPEC. The aim of this study is to investigate whether RPLP on a preoperative CT scan affects survival in patients with colorectal PC who had undergone CRS-HIPEC.

Methods: In this multicenter, retrospective cohort study 432 patients were studied. All patients had proven colorectal PC and had undergone CRS-HIPEC in the period from 2004 to 2014. The preoperative CT scan of the patient's was re-evaluated for the presence of RPLP. Primary outcome levels were cancer-specific survival (CSS) and disease-free survival (DFS). The influence of RPLP on CSS and DFS is analyzed using Kaplan Meier analysis, log rank test and Cox regression analysis. Differences in the groups were tested for significance using the chi-square test, where appropriate analysis of variance and Mann–Whitney U test was done.

Results: In 24 patients (5.6%) RPLP is seen on CT. After a median follow-up of 45 months was the one, two and five-year survival respectively 61%, 48% and 21% in the RPLP+ group and 66%, 39% and 20% in the RPLP– group. Median CSS and DFS were not significantly different between the RPLP+ and RPLP– group ($p = 0.751$ and $p = 0.783$). Multivariate analysis showed that the presence of RPLP had no influence on the risk of death or recurrence of disease (HR: 0.962, $p = 0.884$ and 0.925 , $p = 0.764$).

Conclusion: This study showed that the presence of RPLP had no influence on CSS and DFS in patients with colorectal PC which undergo CRS-HIPEC. RPLP on a pre-operative CT-scan should therefore not be considered as a contraindication for CRS-HIPEC.

Conflict of interest: No conflict of interest.

<http://dx.doi.org/10.1016/j.ejso.2016.06.033>

28. Role of neoadjuvant chemotherapy with cytoreductive surgery combined with hyperthermic intraperitoneal chemotherapy for treatment of primary ovarian cancer with peritoneal carcinomatosis

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Background: Hyperthermic intraperitoneal chemotherapy (HIPEC) is a strategy that combines maximal cytoreductive surgery with regional chemotherapy. The main problem is the optimal time point in the natural history of ovarian cancer (OC) for performance of surgical cytoreduction (CRS) together with HIPEC. Implementation of neoadjuvant chemotherapy may increase tumor respectability and simultaneously and allowing performance status to improve. The aim of the study was to examine if neoadjuvant setting together with CRS and HIPEC is an alternative option to treat this category of patients.

Materials and methods: Data from 60 primary ovarian cancer patients with peritoneal carcinomatosis treated at one institution between 2008 and 2014 were studied. The patients underwent 6 planned cycles of neoadjuvant chemotherapy based on platin and taxane drugs. After the therapy clinical response was investigated with CT-scan. In patients presenting downstaging of the disease a laparotomy with potential CRS + HIPEC was performed. Clinical, pathological data with follow-up were collected.

Results: Of 60 patients potentially eligible for this prospective study data regarding 58 cases were analyzed. After neoadjuvant treatment, progression of the disease was found on 5 patients; remaining 53 patients underwent surgical procedure. In 8 patients only debulking with R2 resection was performed. For remaining 45 patients surgical resection plus HIPEC was carried out. For HIPEC procedure, Cisplatin 100 mg/m² and Mitomycin C 20 mg/m² were administered. Toxicity of neoadjuvant chemotherapy was in majority grade 1–2 according to WHO classification. Major surgical complications rate was 13% consisting in the majority of cases in pleural effusion and abdominal fluid collections without intestinal fistulas. Mortality was null. Mean hospital stay was 11 days (8–23). Tumor volume was the only statistical significant factor related to survival. Of 45 patients treated by cytoreduction and HIPEC, 25 were alive at the end of follow-up (mean survival of 35 ± 20 months).

Conclusions: The results of this study indicate feasibility and safety of this protocol. The use of neoadjuvant chemotherapy is a useful tool to select patients who can potentially benefit from complete surgical cytoreduction and HIPEC. Such an aggressive multimodal treatment show acceptable morbidity and mortality with promising preliminary survival results.

Conflict of interest: No conflict of interest.

<http://dx.doi.org/10.1016/j.ejso.2016.06.034>

14 September 2016 14:00–15:30

Abstract Video Session

29. Oncoplastic lumpectomy with LICAP perforator flap reconstruction + SLNB**A. Zhygulin**

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The 44 years old female with B-cup breasts applied to our hospital for examination with complaints for a tumor about 3 cm in the left breast. Mammography, US with core biopsy, chest and abdomen CT and bone scintigraphy were performed. Metastases were not found. Pathology report: Poorly differentiated invasive ductal carcinoma of the left breast with strong estrogen and progesterone receptor expression and absence of Her2/neu, Ki67-40%.

Presurgery diagnosis: Invasive ductal carcinoma of the left breast cT2(3cm)N0M0G3, Ki67-40%, ER+++ , PR+++ , Her2/neu – negative, 2A stage.

After discussion the type of surgery with patient, she chose breast conservation. Due to the tumor and breast size ratio and young age of the patient, we offered the neoadjuvant chemotherapy.

Treatment plan:

1. Neoadjuvant chemotherapy: AC (4 cycles) + Taxol-weekly (12 cycles).
2. Oncoplastic lumpectomy with SLNB.
3. External beam radiotherapy to the left breast at a total dose of 50 Gy.
4. Tamoxifen for 5 years

During neoadjuvant chemotherapy we performed intraparenchymal marking of the tumor by titanium clip. We received partial response for the treatment. Before the surgery MRI of the breast was performed. We decided to do oncoplastic lumpectomy with LICAP-flap reconstruction + SLNB. We also used US for the measuring the tumor borders and for the marking of perforator vessels in the axillary region before the surgery. The surgery was performed according to the plan. Lateral contour approach for the breast was used. After subdermal tumor removing we had made X-ray control of the specimen and made sure that titanium clip was removed. Weight of specimen was 48 grams. We also colored and checked the surgical margins histopathologically during the surgery and made sure that margins were clear. We used LICAP flap from the axillary region with addition of the thoracica lateralis branch. The flap was mobilized, deepdermized and moved to the defect. Wound margins in the axillary region were widely mobilized, modified and closed.

Postsurgery diagnosis: Invasive ductal carcinoma of the left breast cT2(3cm)ypTis(2.5cm)G2N0(O/3sn)M0G3, Ki67-40%, R0, ER+++ , PR+++ , Her2/neu – negative, 2A stage.

We present photo of all stages of the treatment – initial view of the patient in standard positions with the borders of the tumor, presurgery markings and view in 1 month after surgery.

Conflict of interest: No conflict of interest.

<http://dx.doi.org/10.1016/j.ejso.2016.06.035>

30. Complete diaphragmatic peritonectomy in the treatment of advanced ovarian cancer**A.L. Komorowski¹, P. Blecharz², W. Szatkowski², M. Jasiowka²**¹Maria Curie Skłodowska Institute, Department of Surgical Oncology Cancer Centre, Krakow, Poland²Maria Curie Skłodowska Institute, Department of Gynecology Oncology Cancer Centre, Krakow, Poland

Background: Complete peritonectomy in advanced ovarian cancer is currently the treatment of choice for chemotherapy naive, selected patients. However, due to the circulation pattern of peritoneal fluid the majority of patients require extensive right diaphragmatic peritonectomy with partial diaphragmatic resection. Although the technique itself is relatively easy, it is not well known to the majority of surgical oncologists, who are usually called for this part of operation by the gynecology oncology team.

Methods: In our institution we have started an advanced ovarian cancer team comprising both gynecologic oncologists and surgical oncologists. All patients are qualified for surgery and operated upon by the same team. The pelvic part of peritonectomy is done by gynecologists with surgical assistance and diaphragmatic part by a surgeon with gynecologist assistance.

Results: Complete or near complete (R0 or R1) peritonectomy have been performed in 7 patients. Intraoperative complications included small bowel injury, bleeding from liver parenchyma, urethral and vesical injury. No injury to hepatic veins, IVC nor hilar structures occurred. In the postoperative period we have seen one intestinal leak requiring reoperation, one evisceration requiring two reoperations and one case of incarcerated diaphragmatic hernia requiring surgery. All patients experienced right pleural effusion managed conservatively. No bile leaks nor late bleedings were seen.

Conclusion: Complete diaphragmatic peritonectomy is a relatively safe and simple procedure and could be performed by a mixed gynecologic-surgical team.

Conflict of interest: No conflict of interest.

<http://dx.doi.org/10.1016/j.ejso.2016.06.036>

31. The technique of en block resection of pelvic peritoneum, uterus, adnexa and rectum from the retroperitoneal approach is effective in pelvic complete cytoreduction in patients with advanced ovarian cancer**P. Blecharz¹, J.J. Sznurkowski², A. Komorowski³, W. Lobaziewicz³, W. Szatkowski¹, M. Jasiowka¹**¹Cancer Center – M. Skłodowska-Curie Memorial Institute – Cracow Branch, Gynecologic Oncology, Krakow, Poland²Medical University of Gdansk, Surgical Oncology, Gdansk, Poland³Cancer Center – M. Skłodowska-Curie Memorial Institute – Cracow Branch, Surgical Oncology, Krakow, Poland

Background: The goal of surgical treatment for advanced ovarian cancer (AOC) is so called “optimal cytoreduction”, defined as residual disease smaller than 1 cm (R1). However, no macroscopic residual disease (R0) yields superior results in terms of survival. The cytoreductive complex surgeries in AOC include pelvic, retroperitoneal, intestinal and upper abdomen procedures.

The pelvic procedure, described as en block resection of pelvic peritoneum, uterus, adnexa and rectum from the retroperitoneal approach (“modified posterior exenteration”) allows to achieve pelvic R0 cytoreduction.

Aim of the study: The aim of the study was to assess the feasibility and tolerance of the procedure in the AOC patients.

Materials and methods: Thirty-six patients with AOC, FIGO stages III–III were treated with modified posterior exenteration between 2013 and 2015. The protocol of the procedure was as follows:

1. Deperitonisation of the urinary bladder
2. Deperitonisation of the pelvic parietal peritoneum

3. Opening retroperitoneal spaces (pararectal and paravesical) on both sides
4. Identifying and ligation of both ovarian vessels above the pelvic rim
5. Complete mobilisation of both ureters
6. Retroperitoneal ligation of round ligaments and uterine arteries
7. Dissection and resection of mesorectum until 2–3 cm below the Douglas pouch
8. Opening the anterior and posterior vaginal wall
9. Closing the vaginal cuff
10. Dissection of the rectovaginal space
11. Division of the sigmoid colon above the tumor
12. Division of the rectum below the Douglas pouch
13. Bulky pelvic nodes removal
14. Rectosigmoid end-to-end anastomosis with circular stapler.
15. Anastomotic leakage test

Results: No macroscopic residual disease in pelvis was achieved in 100% cases. The median duration of the whole surgical debulking procedure, including en block resection was 280 min and the median hospital stay was 12 days (range: 7–44 days). Complications included: postoperative ileus (n = 4), wound infection (n = 4), anastomosis dehiscence (n = 2), reoperation (n = 2), and death (n = 1, pulmonary embolism). Six patients required total parenteral nutrition. The median follow-up time was 28 months (range: 8–31 months). No patient experienced a recurrence of pelvic disease.

Conclusion: The procedure often block resection of pelvic peritoneum, uterus, adnexa and rectum from the retroperitoneal approach is effective in term of achieving R0 cytoreduction and has acceptable morbidity in patients with AOC.

Conflict of interest: No conflict of interest.

<http://dx.doi.org/10.1016/j.ejso.2016.06.037>

32. Body gastric cancer: Laparoscopic total gastrectomy

C. Vendrame, B. Bodanese

Regional Hospital of the West, Oncology, Chapecó, Brazil

Background: Gastric cancer is among the most prevalent malignant neoplasm in the world. The laparoscopic approach is becoming more and more popular in recent years.

Materials and methods: Patient AC, female, 39-year-old, previously asymptomatic, with no family history of malignant neoplasia, conducted an upper gastrointestinal endoscopy which showed mild enanthematous gastritis associated with an injury of 2 × 1.5 cm in the gastric body near the greater curvature, the biopsy was of an adenocarcinoma with signet ring cells. Chest and full abdomen tomography was conducted, to determine the staging, and showed no lymphadenomegaly or metastases in distance.

As for the positioning of the team, the surgeon was positioned to the patient's right side, the cameraman between her legs, and the first assistant to the patient's left. The monitor was also positioned to the patient's left but in a superior position. In some situations the surgeon and the cameraman switched positions. For this procedure the team used 6 trocars, one of 11 mm, another of 12 mm, and four of 5 mm. The energy used was the monopolar Hulk type and bipolar sealer and divider (LigaSure®).

Endoscopy was performed during surgery to locate the lesion. According to histology, patient age and lesion location, a total gastrectomy with D2 lymphadenectomy was chosen. The reconstruction was done with Roux-en-Y and esophagusjejunal anastomosis with circular stapler (No. 25) was performed.

Results: Total surgery time was of 310 min; blood loss was estimated at 150 ml. The patient had a good recovery after surgery. Enteral nutrition was initiated on the first postoperative day via jejunostomy. The liquid diet was introduced on the fifth postoperative day. The patient was discharged on the seventh day of hospitalization with full liquid diet. The increase of

food intake was weekly and on the thirtieth postoperative day the jejunostomy tube was removed and the diet was progressed to free.

The anatomical pathology was of a gastric adenocarcinoma with signet ring cells, free margins, without angiolymphatic invasion, 39 lymph nodes were resected, all cancer-free. In the two following years up to the present day no evidence of disease recurrence has been found.

Conclusions: Laparoscopic total gastrectomy with D2 lymphadenectomy has been shown to be feasible and safe in selected cases.

Conflict of interest: No conflict of interest.

<http://dx.doi.org/10.1016/j.ejso.2016.06.038>

33. GIST: Partial gastrectomy

C. Vendrame, B. Bodanese

Regional Hospital of the West, Oncology, Chapecó, Brazil

Background: The gastrointestinal stromal tumor (GIST) is relatively rare, sometimes its location is in an inconvenient position for resection, which makes the surgery and reconstruction more difficult.

Materials and methods: This video shows the resection technique of a GIST in a 48-year-old female patient complaining of abdominal pain. The patient underwent an endoscopy, showing a bulging of the gastric mucosa located in the posterior wall of the gastric body, near the lesser curvature, measuring about 5 cm in its largest diameter, in computed tomography of the abdomen its size is of 3.5 cm in its largest diameter, with progressive and persistent contrast-enhanced. The tumor had a slow growth compared to a prior exam made one and a half years before in another service, suggesting a leiomyoma or a low-grade GIST.

As for the positioning of the team, the surgeon was positioned to the patient's right, the cameraman was between patient's legs, the first assistant to the patient's left, and the monitor, also, to the patient's left in a superior position. For the procedure the team used 5 trocars, two of 11 mm and three of 5 mm, the energy used was the monopolar Hulk type and bipolar sealer and divider (LigaSure®). For reconstruction was used PDS 3-0 for two-plane continuous suture.

Results: Total surgery time was of 75 min and blood loss was negligible. The patient had a good postoperative evolution, starting a liquid diet on the first postoperative day, being discharged five days after surgery with a thickened liquid diet. The anatomical pathology was of a GIST of low-grade, without mitosis, with 4.5 cm, free margins. The findings were confirmed by immunohistochemistry.

Conclusions: The resection of GIST by laparoscopy is feasible even when the tumors are located in the proximal body and near the lesser curvature, provided that there is the possibility for a good exposure of the tumor and for adequate margins.

Conflict of interest: No conflict of interest.

<http://dx.doi.org/10.1016/j.ejso.2016.06.039>

34. Esophagectomy totally laparoscopic after neoadjuvant chemoradiation

C. Vendrame, B. Bodanese

Regional Hospital of the West, Oncology, Chapecó, Brazil

Background: Esophageal cancer presents itself as a localized disease in approximately 22 percent of all cases, regional disease accounts for another 30 percent of patients. The goal of surgical management is curative, and a surgical resection is the traditional mainstay of multidisciplinary therapy for patients with localized disease. Surgical management is independent neoadjuvant therapy.

Materials and methods: A 48-year-old female patient (JS) with progressive dysphagia for solids for 45 days. The patient underwent endoscopy, which identified a vegetating lesion of 25 cm from the upper dental arch extending itself to the mark of 29 cm. The biopsy confirmed a well-differentiated squamous cell carcinoma. The cancer staging was

done with CT of the chest, which showed lesion in the transition from the mid-distal esophagus in contact with 35% of the circumference of the aorta, the abdominal CT showed no alteration.

The patient presented a "performance status 1", and had a significant weight loss, dysphagia went to solid and pasty in 15 days. The patient underwent nutritional assessment and nasogastric tube was indicated, however the patient refused it and jejunostomy was used.

The multimodal treatment plan includes neoadjuvant chemoradiation with the CROSS trial scheme, which is the protocol adopted in our service (Weekly paclitaxel plus carboplatin plus concurrent RT 41.4 Gy over 5 weeks), followed by surgery 4 weeks after radiotherapy. Before surgery a new CT was performed to re-stage the cancer, and it showed a decrease in the esophageal injury and the cleavage plane with the aorta. The patient tolerated all the proposed treatment.

The surgery began from the chest with left lateral decubitus (LLD). LLD was opted due to the size of the lesion and the possibility for a switch to open surgery. After dissection of the esophagus and the mediastinal lymph nodes the patient adopted the supine position with the legs opened to the abdominal time, with dissection of the stomach and preparation of the gastric tube. Anastomosis was cervical on two levels with separate stitches.

Results: Total surgery time was of 240 min, estimated blood loss was of 300 ml, the patient began her diet by jejunostomy on the first day, on the fifth day a test with blue dye was performed and an orally diet with clear liquids was started. The patient was discharged on the eighth day with full liquid diet. The diet progressed on an outpatient basis, on the tenth day soft and liquid diet, on the fifteenth day soft diet and on the forty-fifth day it evolved to free diet with the removal of the jejunostomy.

The anatomical pathology had a complete pathologic response (pCR) having all the 25 lymph nodes identified as cancer-free.

Conclusions: The laparoscopic esophagectomy is a safe surgery and as it is minimally invasive, it allows us to have an early hospital discharge, even in larger lesions.

Conflict of interest: No conflict of interest.

<http://dx.doi.org/10.1016/j.ejso.2016.06.040>

35. Pancreaticoduodenectomy with partial resection of pancreatic body and tail for a multifocal neuroendocrine tumor

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Background: Pancreatic neuroendocrine tumours are considered a relatively unusual oncologic entity. Due to its relative good prognosis, surgery remains the goal standard therapy not only in localized disease but also in the setting of locally or metastatic disease.

Material and methods: The following article demonstrates the technical aspects of pancreaticoduodenectomy with resection of pancreatic body and tail for a multifocal neuroendocrine tumor. The indication for intervention in the underlying case was a patient diagnosed with a multifocal neuroendocrine tumor infiltrating caput, body and tail of the pancreas.

Results: The resection was carried out in open way, and the reconstruction, which included «duct-to-mucosa» pancreaticojejunostomy a biliiodigestive anastomosis and a gastroenterostomy, was carried. The total operative time was 245 min. The blood loss accounted for 200 ml. The postoperative course was uneventful, and the patient was discharged on the eighth postoperative day.

Conclusions: Pancreaticoduodenectomy with resection of pancreatic body and tail is a treatment option in carefully selected indications. The

complexity of the operation demands a high level of expertise in the surgical team.

Conflict of interest: No conflict of interest.

<http://dx.doi.org/10.1016/j.ejso.2016.06.041>

36. Transanal total mesorectal excision (TaTME) for rectal cancer

M.C. Arroyave Isaza, J.T. Marta, J.S. Trépanier, M. Fernandez-Hevia, B. De Lacy, A. Otero, A.M. Lacy

Hospital Clinic, Gastrointestinal Surgery, Barcelona, Spain

Background: The transanal total mesorectal excision (TaTME) is now available to the surgical community in order to solve several issues with previous surgical approaches. It can be performed by a single surgical team or through combined and simultaneous dissection by two surgical teams (the Cecal Approach).

Materials and methods: We present a video of a Low Anterior Resection with TME transanally and transabdominally (Cecal approach).

83 year-old woman with high blood pressure, dyslipidemia and Barrett's esophagus. Due to rectal bleeding, the patient was diagnosed with rectal cancer 7 cm from the anal verge. Baseline staging revealed a mriT3N1 lesion plus resectable lung metastases by CT-Scan.

Patient received chemoradiotherapy with moderate response to a mriT2N0.

Results: The patient was placed in a lithotomy position. Four trocars were used transabdominally, a 12 mm trocar was placed umbilically for the camera, and three 5 mm trocars were also placed, two in the right iliac fossa and one in the left hemiabdomen. A gel cap platform was used for the transanal approach.

The mesosigmoid peritoneum is incised to define the correct posterior plane. The inferior mesenteric artery is individualized and proximally ligated.

Simultaneously the transanal approach is performed. After visualizing the rectal tumor, a purse string suture is made to close the rectal lumen. The down to up dissection is begun in a circumferential manner. We usually begin on the anterior side, where you can see some fibrosis secondary to the preoperative treatment.

We continue on the posterior side dissecting the mesorectum and on the lateral side connecting the anterior and posterior planes following the "holly plane". At the same time, the abdominal dissection is continued into the pelvic space to perform a total mesorectal excision. The left lateral side is also incised taking care not to damage the vessel and nerves.

The rendez-vous between both teams is achieved, thanks to the combined work. Once the correct plane is achieved, we can continue the abdominal dissection applying the right traction.

A prolene purse string on the distal rectum is made to perform the mechanical anastomosis.

The correct proximal colon position is checked. The colorrectal anastomosis is checked for leakage or bleeding.

Diverting ileostomy was performed.

Patient was discharged on the fifth postoperative day with no complications.

The ileostomy was reverted after one month.

Pathology results: Moderately differentiated adenocarcinoma with fibrosis. Proximal and distal margins tumor-free. No lymph node metastases. Complete mesorectum. pT2N0.

Conclusions: TaTME is a feasible and safe technique that brings several advantages in rectal cancer surgery.

Conflict of interest: No conflict of interest.

<http://dx.doi.org/10.1016/j.ejso.2016.06.042>

15 September 2016 11:00–12:40
Proffered Paper: Breast Cancer I

37. Selective elimination of axillary surgery after primary systemic treatment in clinically node-positive breast cancer patients by combining PET/CT and the MARI procedure (Marking the Axilla with Radioactive Iodine Seeds)

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Background: The increasing use of primary systemic treatment (PST) for patients with breast cancer enables more breast conserving surgery. In addition, PST converts node-positive (cN+) into node-negative disease in 20–40% of patients. However, the current guidelines still recommend axillary lymph node dissection (ALND) for cN+ patients, even if patients become node-negative after PST, since false-negative rates (FNR) of sentinel lymph node biopsy after PST range from 5–30%. Recently, an alternative technique has been introduced to stage the axilla after PST: the MARI-procedure (sensitivity 97%; FNR 7%), in which a tumour-positive lymph node is marked with a radioactive iodine seed before the start of PST and selectively removed after PST. In the present study, we propose a new strategy for treatment of the axilla in cN+ patients by combining results of the pre-PST PET/CT with the post-PST MARI-procedure.

Material and methods: All patients who received a MARI-procedure from July 2014 to February 2016 were included. Before the start of PST a PET/CT was performed for axillary staging and the detection of distant metastasis. A radioactive iodine seed was placed in a proven tumour-positive axillary lymph node (MARI-node), after which PST was given according to Dutch national guidelines. At our institute, we have implemented a protocol in which results of the pre-PST PET/CT and the post-PST MARI-procedure determine the type of axillary treatment. Patients with 1–3 positive axillary lymph nodes (ALNs) on PET/CT and a tumour-negative MARI-node receive no further axillary treatment. Patients with ≤ 3 positive ALNs on PET/CT and a positive MARI-node receive axillary radiotherapy, as well as patients with > 3 positive ALNs on PET/CT and a negative MARI-node. An ALND is only performed in patients with > 3 positive ALNs on PET/CT and a positive MARI-node.

Results: In total 145 patients received a PET/CT and a MARI procedure, of whom 41.4% had hormone receptor positive tumours, 30.3% triple negative and 28.3% Her2-positive tumours. Ninety-three patients (64%) showed ≤ 3 and 52 patients (36%) > 3 suspected ALNs on PET/CT before the start of PST. In 113 patients (78%) an ALND was omitted; of these patients 78 (54%) were treated with axillary radiotherapy and 35 patients (24%) received no further axillary treatment. In 32 patients (22%) an ALND was performed (Table 1). During a median follow-up of 6 months there were no local recurrences.

Conclusion: Combining pre-PST axillary staging with PET/CT and post-PST staging with use of the MARI-procedure results in a reduction of 78% of ALNDs in breast cancer patients with clinical node-positive disease. Longer follow-up is required to confirm safety of this strategy.

Suspective ALNs on PET/CT	Outcome MARI	Axillary treatment		
		None	Radiotherapy	ALND + Radiotherapy
≤ 3	Negative	35	–	–
	Positive	–	58	–
> 3	Negative	–	20	–
	Positive	–	–	32
Total		35	78	32

Conflict of interest: No conflict of interest.

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38. Influence of biologic subtype of inflammatory breast cancer on response to neoadjuvant therapy and cancer outcomes

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Background: There is little data on the influence of tumor biologic subtype on treatment response and outcomes specifically for inflammatory breast cancer (IBC) patients. Currently, systemic therapies are selected based on tumor marker expression. We examined a contemporary cohort of IBC patients treated with modern systemic therapies to evaluate pathologic treatment response and cancer outcomes across biologic subtypes.

Patients & methods: We identified 57 patients in our prospective breast surgery registry with cT4d M0 IBC operated on at our institution 10/08-7/15. We analyzed patient, tumor and pathology variables and defined breast pathologic complete response (pCR) as no residual invasive cancer (ypT0 or ypTis). Comparison of features across biologic subtypes utilized Wilcoxon rank-sum or chi-square tests, while survival was analyzed with Kaplan–Meier and log-rank tests.

Results: 52 patients (91%) were clinically node-positive (cN+) at presentation. Correlation of patient, tumor and treatment variables with approximated biologic subtype defined as estrogen receptor-positive/HER2-negative (ER+/H2–), HER2-positive (H2+) and ER-negative/HER2-negative (ER–/H2–) is shown in the table. All patients received NST including H2-targeted agents if indicated. pCR rates in the breast, axilla and both differed significantly by biologic subtype (all $p < 0.001$). After 30 months median follow-up, 16 patients recurred. The site of first relapse was distant in 12 (75%). Disease-free (DFS) and breast cancer-specific survival (BCSS) differed significantly by biologic subtype, but not by pCR aggregated across IBC subtypes. 5-year DFS estimates were 52% for ER+/H2–, 90% for H2+ and 42% for ER–/H2– patients, $p = 0.002$, while 5-year BCSS estimates were 90%, 100% and 54%, respectively, $p = 0.06$, notably better than prior reports.

Conclusions: Our data show outcomes of IBC vary significantly by biologic subtype, suggesting IBC is not a distinct biologic entity transcending breast tumor marker classification. Modern systemic therapies have dramatically improved DFS and BCSS for H2+ patients, and BCSS but not DFS for ER+ patients.

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Table 1

	All 57 (100)	Biologic Subtype N (%)			P Value
		ER+/H2-17 (30)	H2+25 (44)	ER-/H2-15 (26)	
Age, median (IQR), years	55 (49–61)	55 (50–60)	53 (38–59)	60 (50–67)	0.11
Presentation					0.36
Mass	15 (26)	3 (18)	6 (24)	9 (60)	
Skin Abnormality	41 (72)	13 (76)	19 (76)	6 (40)	
Histology					0.18
Ductal	49 (86)	14 (82)	24 (96)	11 (73)	
Lobular	4 (7)	2 (12)	0	2 (13)	
Mixed Mammary	4 (7)	1 (6)	1 (4)	2 (13)	
cN+	52 (91)	16 (94)	23 (92)	13 (87)	0.76
pCR Breast	22 (39)	1 (6)	15 (60)	6 (40)	<0.001
pCR LN (of 52 cN+)	21 (40)	1 (6)	15 (65)	5 (38)	<0.001
LN+, median, IQR	8 (4–11)	8 (3–14)	0 (0–3)	5 (0–9)	0.004
Total pCR (ypT0/is,ypN0)	20 (35)	0	14 (56)	6 (40)	<0.001

Conflict of interest: No conflict of interest.

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39. Magnetic marker localization for non-palpable breast cancer: Initial experience

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Introduction: Magnetic Marker Localization (MaMaLoc) was developed as a novel intra-operative localization technology for non-palpable breast cancer. It aims to replace other localization technologies. The MaMaLoc technology consists of a newly developed magnetic localization marker and a magnetic detector. We present the ex vivo and first in vivo experience with the technology.

Material and methods: The magnetic marker was first implanted into a chicken breast. Imaging was obtained to assess the visibility of the marker on ultrasound (US), mammography, computed tomography (CT) and magnetic resonance imaging (MRI), which is essential for the intended image-guided placement of the marker. Next, the marker was implanted into two breast amputation specimens. Two surgeons were then tasked to perform breast conserving surgery (BCS) on a simulated lesion in the breast specimen using a magnetic detector. They scored the performance of the magnetic technology based upon their experience with other localization technologies.

Next, an in vivo safety and feasibility study was designed. Fifteen patients with a unifocal lesion that were scheduled for primary BCS using a single iodine seed (Radioactive Seed Localisation, RSL) were included. Subjects received both the standard of care (RSL) and the experimental magnetic technology (MaMaLoc). Both iodine seed and magnetic marker were placed in a single session using US guidance. Up to 30 days after placement, BCS was performed.

During surgery, the ability to transcutaneously detect the magnetic marker using the magnetic detector was recorded. Semi-objective data regarding the technology were obtained from radiologists and surgeons, utilizing a 5-points Likert scale ranging from ‘Strongly Disagree’ to ‘Strongly Agree’ and a set of statements regarding convenience, logistics, clinical applicability etcetera and tailored to specific radiology- or surgery-specific characteristics.

Results: Ex vivo data showed excellent visibility on US and mammography, by far the two most used imaging technologies for guided marker placement. On CT, visibility was slightly impaired due to a small artefact. On MRI, a susceptibility artefact obscured a large area of 7 cm diameter.

Surgeons scored the technology better than wire-guided localization (WGL) and radioguided occult lesion localisation (ROLL), and at least comparable to RSL. The technology was therefore considered feasible.

At the date of abstract submission, the in vivo study was still ongoing and results will be presented at the ESSO 2016 congress.

Conclusions: Magnetic marker localization is a promising new technology to improve breast conserving surgery. It combines the benefits of RSL (planning flexibility, continuous re-assessment of surgical approach, accuracy, patient comfort) and of WGL: simplicity.

Conflict of interest: No conflict of interest.

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40. Surgical margin status after breast conserving surgery and presence of residual disease

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Background: The Dutch breast cancer guideline advises to accept focally positive margin after breast conserving surgery (BCS) for invasive breast cancer and not to perform re-excision which, in clinical practice, is the case in half of those patients. To shed a light on the safety of this advice we studied which clinicopathological characteristics are associated with a close, focally positive, and extensively positive margin and the presence and predictors of residual disease and local recurrence.

Material and methods: All consecutively females undergoing BCS for primary DCIS or invasive (T1–T3) breast cancer between Jan 2005 and April 2014 at the Erasmus MC Cancer Institute were included. Definition of negative margin was tumor ≥ 2 mm width from inked margin, close was tumor < 2 mm, focally positive was tumor reaching the inked margin over a length of ≤ 4 mm, and extensively positive was > 4 mm. A subcohort was selected of all patients with re-excision except for those with a negative margin. Their excision specimens were revised by the pathologist. Follow-up information was collected until 1st July 2014.

Results: In total, 499 patients were included and 178 (35.6%) had re-excision including 132 (74.2%) by mastectomy. From those 499 patients, 213 (42.7%) had negative margin of which 15.0% a re-excision, 161 (32.3%) had close margin of which 33.8% a re-excision, 59 (11.8%) had focally positive margin of which 66.2% a re-excision, and 67 (13.4%) had extensively positive margin of which 83.9% a re-excision. Higher differentiation grade, larger tumors, lobular type and tumor positive axillary lymph nodes were significantly associated with more involved tumor margins. Residual disease was present in 79 (54.1%) patients with re-excision and in 21 (34.5%) after close margin, 19 (48.7%) after focally positive margin, and in 38 (78.3%) after extensively positive margin. The presence of residual disease was statistically significantly associated with the length

of tumor positive margin (HR 1.16 95% CI 1.02–1.31) and mitotic activity index (<10 vs ≥ 10) (HR 0.28 95% CI 0.09–0.84). Grow pattern (diffuse versus circumscribed) was not associated with the presence of residual disease. Median time of follow-up was 52 months (interquartile range 24–79). The 5-year local recurrence rate after primary BCS only, re-excision with no residual disease and re-excision with residual disease present was 4.6%, 1.9%, 4.1% respectively.

Conclusions: Focally positive margin after primary BCS is associated with higher likelihood of residual disease in the re-excision specimen in comparison to negative margin, but lower likelihood in comparison to extensively positive margin. The length of tumor reaching the inked margin is a predictor of the presence of residual disease and therefore can be used in clinical decision making whether to perform re-excision or not.

Conflict of interest: No conflict of interest.

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41. A multi-center prospective study of radiofrequency ablation without surgical excision for small breast carcinomas

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Background: As the management of breast carcinoma evolves toward less invasive treatments, the next step is the possibility of removing the primary tumor without surgery. The most promising noninvasive ablation technique is radiofrequency ablation (RFA), which can effectively kill tumor cells with a low complication rate. Our preliminary studies of RFA followed by standard surgical resection have indicated that this technique is effective for surgical ablation of small (≤ 2 cm) breast tumors without extensive intraductal components (EIC).

Methods: To determine if RFA is oncologically and cosmetically appropriate for the local treatment of primary breast carcinoma, this multi-center prospective study used RFA as the sole local treatment of breast tumors ≤ 1.5 cm in size on ultrasound and MRI. Exclusion criteria include receiving of preoperative chemotherapy, or the presence of invasive lobular carcinoma or invasive ductal carcinoma with suspicious EIC. After confirmation that the standard baseline core biopsy for diagnosis and measurement of tumor markers (ER, PgR, HER-2/neu expression and the presence of the Ki-67 proliferative marker) have been obtained, consent will be obtained and the patient scheduled RFA. All patients received adjuvant radiation therapy. The use and choice of systemic therapy will be based on the information from the baseline core biopsy. The first primary endpoints of this study are successful tumor ablation, as evidenced by negative findings on vacuum-assisted or core biopsies and imaging studies after RFA. The second primary endpoints are the incidence of procedure related adverse events. Forty patients with small tumors that are clearly identifiable and measurable by ultrasound and MRI were enrolled. The response to ablation was evaluated with both vacuum-assisted or core biopsies and imaging studies every 3 months during the first year. The long-term outcomes were assessed using quality of life measurement scales and imaging studies every 6 months thereafter through year 5.

Results: Of the 58 patients who participated in this study, 55 completed the protocol. In 48 of the 55 (87%) treated patients, successful tumor ablation, as determined by negative findings on vacuum-assisted or core biopsies and imaging studies, was confirmed. The remaining 7 patients with biopsies positive for residual tumor underwent surgical resection. There were no local or distant recurrences in treated 55 patients with a median follow up of 47 (range 36–73) months.

Conclusions: RFA can be safely used alone in patients with small breast tumors, provided that local tumor control must be regularly assessed by image-guided vacuum-assisted or core biopsies after ablation. RFA has several potential advantages over lumpectomy for the treatment of early stage breast cancer.

Conflict of interest: No conflict of interest.

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42. Towards the intraoperative use of diffuse reflectance spectroscopy during breast conserving surgery

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Background: Tumor-free resection margins are indispensable for successful breast conserving surgery. This is a challenging requirement for surgeons since tumor tissue deposits can be difficult to recognize during surgery. Diffuse Reflectance Spectroscopy (DRS) is an optical technology that measures the spectral response of tissue after illumination with light. The measured DRS spectrum can be translated into optical parameters (i.e. blood, saturation, fat, water) providing an optical fingerprint of tissue which can be used for differentiating tissue types. In breast cancer, biological differences between normal tissue and tumor tissue, among other things, consist of changes in fat and water content. Here we investigate if real-time tissue characterization based on diffuse reflectance spectroscopy can be a feasible technology for the intra-operative detection of tumor deposits on a margin.

Material and methods: To obtain a reliable correlation between the optical measurements and histology, our DRS technology was integrated into 16G biopsy needle which was used during routine US-guided biopsy ($n = 35$) for breast cancer diagnosis. In each patient, optical measurements were obtained of normal tissue and tumor tissue. Furthermore, in five patients continuous measurements were obtained along the needle trajectory from normal tissue towards the tumor. At the final measurement location, a biopsy was taken to confirm histopathology.

Results/Discussion: The optical parameters derived from the DRS measurements were used to discriminate normal tissue from tumor tissue. Saturation, fraction Mie scattering, collagen, amount of water and especially the fat content were significantly different between these tissue types. The mean fat content provided the best discrimination between normal and tumor tissue as it decreased from 74% to 26%. This decrease was observed in all patients, except one. DRS measurements showed an accuracy of 96% in predicting tissue diagnosis (tumor versus normal breast tissue). Additionally, the measurements obtained in the continuous mode proved that the fat content could display the transition from normal tissue to tumor tissue as these measurements followed the same trends as the initial point-measurements.

Conclusions: DRS can real-time discriminate normal breast tissue from tumor tissue during breast biopsy procedures. Furthermore, the border of the tumor could be detected based on the optical parameters derived from the DRS measurements. Especially fat proved to be useful for detecting the tumor border. The next step towards implementation of

this technology in a surgical tool is to further examine the performance of this technology at the surgical margins during surgery.

Conflict of interest: Other Substantive Relationships: This study was supported by Philips Research, Eindhoven, Netherlands. The authors who are affiliated with Philips Research only have financial interests in the subject matter, materials, and equipment, in the sense that they are an employee of Philips. None of the other authors have any financial relationship with Philips Research or conflict of interests.

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43. Super paramagnetic iron oxide nanoparticles for sentinel node detection in patients with breast cancer: Experience from seven centres in Sweden and Denmark

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Background: Sentinel node biopsy (SNB) constitutes the golden standard in patients with early breast cancer. The efficacy of Tc and patent blue has been established; however, their drawbacks pose the need for new detection methods with equal results. Super paramagnetic Iron Oxide particles are a promising alternative.

Methods: 206 patients with early breast cancer were included from seven hospitals in Sweden and Denmark. Tc and patent blue were administered in standard fashion. Patients were injected with SPIO (Sienna+) preoperatively. Sentinel node biopsy was performed with a handheld magnetometer (SentiMag) first and the gamma probe directly after that and detection rates were recorded for both methods. Additionally, the presence of postoperative skin discoloration was documented and followed.

Results: Mean age was 61.7 years and median BMI 25.4. Mean tumour size was 19.0 mm. Patent blue was used in 127 patients (61.7%).

SN detection rates were similar between Tc+/- ink and SPIO both per patient (97.1% vs 97.6%, $p = 0.76$) as well as per node (91.3% vs 93.3%, $p = 0.34$). The effectivity of the method was not affected by the presence of malignancy. Concordance rates between methods were also consistently high (98.0% per patient and 95.9% per node). The transcutaneous detection with SPIO was affected by high body mass index ($p < 0.001$), but without consequences in the detection of the SN. Discoloration was present in 35.5% of patients postoperatively, almost exclusively in those treated with breast conservation. It faded away slowly and was still detectable in 8.6% of patients after 15 months.

Conclusions: SPIO is comparable to the standard technique for the detection of SN in patients with breast cancer. It does not involve complex logistics such as those involved in the use of Tc or the allergenic effects of ink. Potential persistent skin discoloration is of consideration in patients planned for breast conservation.

Conflict of interest: No conflict of interest.

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44. Does breast screening offer a survival benefit? A retrospective comparative study of oncological outcomes of screen detected and symptomatic early stage breast cancer cases

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Background: It is based on high evidence randomized controlled trials that mammography screening is able to reduce breast cancer mortality up to 32%. Some recent studies doubt the impact of the non-palpable early stage breast cancer detection on mortality reduction. The aim of this study was to analyze the clinicopathological and long term follow up data of breast cancer patients diagnosed via population based mammographic screening in comparison to a non-screened symptomatic group of early staged breast cancer patients.

Patients and method: The prospectively led database of the National Institute of Oncology was systematically analyzed for breast cancer cases diagnosed by the National Population Based Breast Cancer Screening Program from 2002 to 2009. As a control group symptomatically diagnosed early stage breast cancer patients were collected randomly from the same database matched for age and follow-up period. Medical records and pathology reports were reviewed retrospectively. During the investigated period breast cancer cases were treated according to the current ESMO guidelines adapted by the National Institute of Oncology, Hungary.

Results: During the investigated period 298 breast cancer patients were collected from 47,718 mammography screening. 331 symptomatic non-screened breast cancer patients were randomly selected [TK1] [M2]. The screened group presented a significantly lower median tumor size ($P < 0.00001$) than symptomatic group. Incidence of negative regional lymph nodes was significantly higher in the screened group ($P < 0.0006$). Incidence of chemotherapy was 17% greater in the symptomatic group than in screened group ($P = 4 \times 10^{-5}$). At a median follow-up of 65 and 80 months the screened group did not show better overall ($P = 0.717$) and disease-free survival ($P = 0.081$) than symptomatic group.

Conclusion: According to our investigation the mammography screening had not brought any significant overall and disease free survival in the early stage breast cancer patients comparing to the symptomatic non-screened group. The drawback of the symptomatic early stage tumors compared to non-palpable tumors might be equalized by modern breast cancer molecular subtypes based multimodality oncology treatment.

Conflict of interest: No conflict of interest.

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45. Is intraoperative imprint cytology indicated in the surgical treatment of early breast cancers?

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Background: Introduction of intraoperative imprint cytology (IPC) of the sentinel lymph node (SLN) in the treatment of breast cancer has significantly reduced the number of axillary block dissections (ABD) required during the second surgeries, reducing the burden of patients and surgical

expenses. Recently, supplementary ABD was not considered to be necessary if the presence of isolated tumor cells or micrometastases is confirmed in the SLN based on several prospective studies. It is not indicated in case of macrometastases detected in the SLN in addition to complementary adjuvant treatment in a patient group meeting the inclusion criteria of the ACOSOG Z0011 study. The aim of our study is to determine the sensitivity and usefulness of IPC regarding these results.

Material and methods: Sensitivity and specificity of IPC of the SLN were examined in 1168 patients operated on for having early breast cancer. The method was analyzed retrospectively as well regarding the guidelines of the Z0011 study. SLN biopsy was performed with double tracer method (99mTc isotope and patent blue). During intraoperative IPC, new samples were cut in every 250–500 μ m and were placed on a slide, impression smears were prepared and were evaluated after being stained with hematoxylin eosin.

Results: IPC was performed during surgeries for having invasive breast cancer in 1168 cases, metastasis was confirmed in 202 cases (202/1168, 17.29%). Immediate supplementary axillary block dissection was performed in these patients. Metastasis was confirmed in the SLN(s) in 149 additional cases during final histological examination of the sample. Sensitivity of IPC was found to be 57.18%, its specificity was 99.63%. After this, analysis was performed excluding cases meeting the inclusion criteria of the ACOSOG Z0011 study and having metastasis smaller than 2 mm (micrometastasis/isolated tumor cells) considered to be positive during intraoperative cytology. Sensitivity of the method decreased to 34.23% while its specificity was still high, 99.76%.

Conclusions: IPC, regarding new guidelines of axillary block dissection cannot be considered to be a beneficial and cost-effective intervention in the surgical treatment of early breast cancer.

Conflict of interest: No conflict of interest.

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46. Determining the maximum resectable breast volume in breast conserving surgery in correlation with tolerable aesthetic and functional outcomes. A potential guide for deciding between conventional and oncoplastic breast conserving surgery or mastectomy: A prospective cohort study

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Background and purpose: Breast-conserving surgery (BCS) is considered the standard treatment for early stage breast cancer. However, fair to poor cosmetic outcomes following conventional BCS have been observed in as many as one third of cases. The aim of this study was to determine the critical tumor-breast volume ratio for each quadrant of the breast beyond which conventional BCS could no longer offer acceptable cosmetic and functional results or satisfactory quality of life for the patient; ultimately, we aimed to establish objectives for the breast surgeon when making his decision.

Methods: A prospective cohort study was performed between December 2011 and December 2013 involving 350 patients younger than 70 years old with early stage and with T \leq 30 mm unifocal breast cancer who underwent wide excision and axillary sentinel lymph-node biopsy followed by whole breast irradiation. With the help of multiple pre- and post-operative standardized photo documentations, specimens and the measurement of breast volumetry using validated panels (Breast Cancer Treatment Outcome Scale [BCTOS], Breast Cancer Conservative Treatment – cosmetic results [BCCT.core] software, the EORTC Cancer Quality of Life Questionnaire number C30-BR23), quality of life, aesthetic and functional parameters, and their changes in correlations with the excised breast volume percentages were statistically analyzed.

Results: The maximum resectable volume percentages in conventional BCS not resulting in unacceptable aesthetic and functional outcomes or decreased quality of life were 18–19% in the upper–outer quadrant ($p < 0.0001$), 14–15% in the lower–outer quadrant ($p < 0.0001$), 8–9% in the upper–inner quadrant ($p < 0.0001$), and 9–10% in the lower–inner breast quadrant ($p < 0.0001$).

Conclusion: With the help of the calculated cut-off values for each breast quadrant, the breast surgeon can make more objective decisions to perform conventional BCS, oncoplastic techniques or even mastectomy with immediate reconstruction. Our results revealed that if the resected volume is larger than 10% of the whole breast volume in the inner quadrants and larger than 15–19% in the outer quadrants, oncoplastic breast conserving surgery or mastectomy with immediate reconstruction is recommended instead of conventional BCS to obtain an acceptable or good aesthetic result after adjuvant radiotherapy.

Conflict of interest: No conflict of interest.

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15 September 2016 11:00–12:40 Proffered Paper: Colorectal Cancer I

47. Histological, biochemical and transcriptional classification of pseudomyxoma peritonei can solve the uncertainty of predicting outcome?

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Background: By clinical, biological and histological features. Different histological classifications are used; the one proposed by Ronnet divided PMP into adenomucinosis (DPAM) and mucinous carcinomatosis (PMCA), with distinct presumed prognostic implications. The 2010 WHO classification identified low- and high-grade PMP, while the AJCC staging introduced a three-tier grading system for prognostic staging. However, PMP histopathology doesn't reliably predict tumour prognosis. Recently, tumour markers have been identified as independent prognostic factors; lastly, the transcriptional classifier by Levine identified three distinct subtypes: cluster 1 [PMP, low risk, good prognosis], cluster 2 [PMP, high risk, poor prognosis] and cluster 3 [colorectal cancer (CRC), poor prognosis]. Thus, the lack of a uniformly accepted classification is still a long-standing problem.

Methods: From a prospective database of 120 patients affected by PMP who underwent cytoreductive surgery (CRS) plus HIPEC, we selected 70 patients with a follow-up >36 months. Overall survival (OS) according to pathological classifications (DPAM vs PMCA, low- vs high-grade PMP and G1 vs G2-3) and tumour markers levels were calculated. A Ca125 level >35 U/L, Ca19.9 >37 U/mL and CEA >5 ng/mL were considered threshold values. Survival curves were compared using the log-rank test. From this cohort of patients, samples of peritoneal metastases (14 PMP, 4 CRC) were selected to perform microarray-based global mRNA expression profiling.

Results: Survival analysis performed according with three different histopathological classification systems (Ronnnet, $p = 0.2358$; WHO, $p = 0.8017$ and AJCC, $p = 0.9148$) and with the levels of three independent tumor markers (Ca125, $p = 0.5983$; Ca19.9, $p = 0.7164$ and CEA, $p = 0.2255$) do not show any significant correlation with patient OS. Gene expression profiling was then exploited to stratify samples accordingly with Levine transcriptional criteria. We found that genes distinctive of cluster 3 properly distinguish CRC carcinomatosis from PMP, while only few genes of cluster 1 are expressed in our samples. The stratification of PMP according with genes of cluster 2, highlighted the presence of two subgroups. This preliminary analysis, based on a small-sized dataset, suggests that these two groups do not show significant differences in terms of OS.

Conclusions: Histopathological and biochemical classification don't reliably predict long-term OS. Transcriptome analysis confirmed that CRC and PMP are two different tumor types characterized by distinctive molecular features. Preliminary data suggest that the prognostic values of previously defined gene expression signatures may not faithfully predict patient prognosis. We are considering other transcriptional traits to improve patient stratification and prognosis prediction.

Conflict of interest: No conflict of interest.

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48. MicroRNA prognostic signature for distant relapse in early stage colon cancer

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Background: The role of adjuvant chemotherapy in stage T2-T3N0 colon cancer (CC) is controversial and there are currently no reliable factors allowing for individual selection of patients with high risk of relapse. We searched for microRNA-based signature with prognostic significance in this group.

Material and methods: We assessed by qRT-PCR expression of 754 microRNAs (miRNAs) in tumor samples from 85 stage pT2-3N0 CC patients treated with surgery alone. MiRNA expression was compared between 40 patients who did and 45 who did not develop distant metastases in the first four years after resection. Additionally, miRNA expression was compared between 85 cancer and 14 normal colon mucosa

samples and between the mismatch repair (MMR) competent and deficient tumors.

Results: We developed 5-miRNA signature (miR-1296, miR-135b, miR539, miR-572 and miR-185), which was found prognostic ($p = 1.28E-07$, HR8.4 [95% CI 3.81–18.52]) for distant metastasis-free survival (DMFS) and further cross-validated in a leave-one-out analysis, with the sensitivity and specificity of 74% and 78%, respectively. Additionally, low expression of miR-1300 and miR-939 was significantly correlated with shorter DMFS in Cox univariate analysis ($p = 0.049$) after correction for multiple testing. The expression of miR-592 was significantly associated with the MMR status (p -adjusted <0.01). The expression of miR-888 and miR-1243 was specific for CC (p -adjusted <0.05).

Conclusions: We developed a miRNA expression signature that may be predictive for the risk of distant relapse in early stage colon cancer.

Conflict of interest: No conflict of interest.

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49. Timing of systemic chemotherapy in patients with colorectal peritoneal carcinomatosis treated with cytoreductive surgery and HIPEC

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Background: Timing of systemic chemotherapy in patients with colorectal peritoneal carcinomatosis (PC) treated with cytoreductive surgery (CRS) and hyperthermic intraperitoneal chemotherapy (HIPEC) is controversial. Neoadjuvant systemic chemotherapy may offer benefits, including selection of patients with early progressive disease and an increase of the rate of patients treated with multimodal therapy. The aim of this study was to evaluate the effect of neoadjuvant systemic chemotherapy on survival.

Materials and methods: Data of patients undergoing CRS-HIPEC in a tertiary referral centre from January 2004 to June 2015 were registered. The influence of patient-related, tumor-related and treatment-related factors on disease free survival (DFS) and overall survival (OS) were investigated using Cox regression models. Timing and number of cycles of systemic chemotherapy were included in the multivariate model. Main outcome was OS.

Results/Discussion: Two hundred eighty consecutive patients underwent CRS-HIPEC. In group A 78 patients (28%) were treated with neoadjuvant or perioperative chemotherapy and CRS-HIPEC. In group B 169 patients (60%) were intentionally treated with CRS-HIPEC and adjuvant chemotherapy. In group C 33 patients (12%) had received their chemotherapy before PC was diagnosed. Median follow-up time was 29.8 months (IQR 17.4–52.5). Median disease free survival was 20.3 months (IQR 13.3–40.4) and did not significantly differ between the treatment groups ($P = 0.29$). Median OS was 36.9 months (IQR 20.6–79.7) in group A, 43.1 months (IQR 25.7–95.9) in group B and 34.0 months (IQR 20.0–53.7) in group C ($P = 0.19$). Extent of PC (region count of 3–5 (HR 1.58 (95% CI 1.02–2.45)) and 6–7 (HR 3.34 (95% CI 1.66–6.72)) vs 1–2 regions), a higher lymph node ratio (HR 7.96 (95% CI 2.16–29.31) and cycles of systemic chemotherapy (0 cycles (HR 2.52 (95% CI 1.48–4.29) and partial chemotherapy (HR 2.15 (95% CI 1.27–3.65) vs complete chemotherapy) were associated with poorer OS.

Conclusion: Timing of systemic chemotherapy does not appear to have impact on survival in patients with colorectal PC undergoing CRS-HIPEC.

Conflict of interest: No conflict of interest.

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50. Quality of life in rectal cancer patients: Watch-and-wait policy versus standard treatment – A matched controlled study

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Background: In 15–20% of the patients with rectal cancer, chemoradiation (CRT) leads to a clinical complete response (cCR). Instead of surgery, these patients follow a stringent post-treatment schedule, called the watch-and-wait protocol (W&W).

The aim of this study is to compare the quality of life (QoL) of W&W-patients to the quality of life of a matched-controlled group of patients who underwent CRT & surgery (TME).

Material and methods: QoL of W&W-group was compared to the TME-group. Treatments of all patients were finished ≥ 2 years ago. Patients were matched on age, sex, T-stadium and tumour height. QoL was objectivized with the EORTC-QLQ-C30 and -CR38, SF-36, International Index of Erectile Function (IIEF), Female Sexual Function Index (FSFI), International Prostate Symptom Score (IPSS), Vaizey-score and LARS-score.

Results: 41 patients were included in each group. The W&W-group showed significant less defecation problems according to the Vaizey-score ($p = 0.021$) and LARS-score ($p = 0.044$). The SF-36 showed a better physical function ($p = 0.016$) and physical role ($p = 0.006$) in favour of the W&W-group. The EORTC-QLQ-CR30 and -CR38 showed better body image ($p = 0.047$), sexual function ($p = 0.040$), general health ($p = 0.051$), physical function ($p = 0.041$), role function ($p = 0.015$) and cognitive function ($p = 0.015$) in favour of the W&W-group. Besides, the W&W group had less defecation problems ($p = 0.012$) and financial problems ($p = 0.001$) according to the EORTC-questionnaires. Men in the W&W-group showed less intermittency problems ($p = 0.002$), better QoL ($p = 0.003$), and better total score ($p = 0.022$) on the IPSS-scale.

Conclusions: On different domains of the questionnaires, W&W-patients showed better quality of life compared to the TME-group. The most important difference is the less defecation problems in the W&W-group according to the LARS- and Vaizey-score.

Conflict of interest: No conflict of interest.

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51. Pathological complete responders after chemoradiotherapy for locally advanced rectal cancer: What can be learned from MRI and endoscopy for the selection of complete responders?

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Background: Organ-saving treatment for rectal cancer is upcoming and this has led to an increase in improving the selection of clinical

complete responders. The currently used selection strategy consists of digital rectal examination, sigmoidoscopy (+/-biopsy) and MRI with diffusion-weighted imaging (DWI). However, many complete responders are missed, leading to overtreatment of complete responders. This study focuses on what can be learned from operated pathological complete responders (pCR) who were missed with restaging by MRI + DW50I and endoscopy.

Material & methods: Patients with a pCR after CRT and surgery for locally advanced rectal cancer were retrospectively selected. The MRI + DWI and sigmoidoscopy images were re-evaluated by an expert reader who scored a confidence level for clinical complete response (CL0 = definitely residual tumour, CL4 = definitely no residual tumour). These confidence levels were then used to categorise patients into groups: (1) residual tumour at reassessment and would again be referred for surgery, (2) probable or definite complete response and would now be offered organ preserving treatment. The reader also assessed primary stage of the tumour and recorded the presence of MRI features regarding the volume, morphology and signal intensity of fibrosis, DWI signal, presence of edema and nodal morphology and size. At endoscopy aspect of the scar and presence of ulceration or adenomatous residual tissue were noted. MRI and endoscopic features were compared between groups using Chi-square test and student's t-test.

Results: 21 patients were included with a pCR after surgery (67% male, mean age: 69.0 ± 9.5 y). Thirteen out of the 21 patients were patients assessed as having residual tumour (non-CR group), the other 8 patients were assessed as probable or definite complete response (CR group). Fibrosis/tumour volume was larger in the non-CR group than the CR-group ($p = 0.16$) and patients in the non-CR group had a significantly lower tumour than the CR-group ($p = 0.001$). In the non-CR group, mixed signal on T2W-MRI is seen more often than in the CR group (69% vs 38%, $p = 0.20$). Full-thickness or spicular fibrosis was found more in the non-CR group than the CR group (92% vs 50%, $p = 0.047$). Residual nodal disease was found in 4/13 non-CR patients, which was ypN0 at histology, in 3 patients these nodes showed spicular fibrosis. In 6 patients endoscopy showed residual adenomatous tissue, while MRI did not indicate residual tumour.

Conclusions: This study shows that with today's expertise complete responders can more accurately be selected for organ-saving treatment. The CRs that are still missed with restaging show distinct imaging features compared to clear CRs. These features can help in improving the selection of patients after CRT for a watch-and-wait strategy.

Conflict of interest: No conflict of interest.

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52. Resection of the primary tumour for asymptomatic incurable metastatic colorectal cancer – A EURECCA international comparison

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Background: The indication for resection of the primary tumour in patients with asymptomatic metastatic colorectal cancer is under debate. So far, there are no results from RCTs; the CAIRO4 study is still enrolling patients and these results should be awaited. Several retrospective studies suggested a survival benefit in patients who underwent resection of the primary tumour, but bias due to confounding by indication is highly likely. Comparative Effectiveness Research, by using country as instrumental variable, could provide clues to the best treatment strategy for asymptomatic incurable metastatic colorectal cancer.

Material and methods: Population-based cohorts (2007–2013) from the Netherlands and Norway including all patients with synchronous metastatic colorectal cancer (who had no surgery of metastatic disease) were compared on treatment strategy and overall survival. Using country as an instrumental variable (pseudo-randomisation), we assessed the effect of different treatment strategies on mortality within the first year. Analyses were adjusted for age, gender, localisation, year of diagnosis, and localisation of metastases.

Results: Overall, 21,196 patients were included; 16,144 Dutch patients and 5,052 Norwegian patients. The proportion of patients who had surgery of the primary tumour was 38.6% in the Netherlands compared with 51.5% in Norway ($p < 0.001$). Of all Dutch patients, 58.4% received chemotherapy compared with 21.4% of Norwegian patients. Radiotherapy was given in 10.2% of Dutch patients compared with 11.2% of Norwegian patients. With the Netherlands as a reference category, the adjusted HR for overall survival was 0.98 (95% CI 0.93–1.03; $p = 0.36$). Instrumental variable analysis showed an adjusted OR of 1.00 (95% CI 0.98–1.03; $p = 0.72$).

Conclusions: The present international comparison shows variations in treatment strategy between the Netherlands and Norway. However, we did not observe a difference in overall survival between these countries. Instrumental variable analysis showed no benefit of a treatment strategy with more surgery of the primary tumour on mortality within the first year.

Conflict of interest: No conflict of interest.

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53. Optimal timing of surgery after neoadjuvant chemo-radiation therapy in locally advanced rectal cancer

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Background: Surgery is the corner stone for the management of rectal cancer. An unsolved aspect of neoadjuvant chemo-radiation is the appropriate timing of surgery after completion of neoadjuvant chemo-radiation. The purpose of this study was to demonstrate the optimal time of surgical resection after the completion of neoadjuvant chemo-radiotherapy in treatment of locally advanced rectal cancer.

Material and methods: This study compared 2 groups of patients with locally advanced rectal cancer, treated with neoadjuvant chemo-radiotherapy followed by surgical resection either 6–8 weeks (group 1) or 9–14 (group 2) weeks after the completion of chemo-radiotherapy. The impact of delaying surgery was tested in comparison to early surgical resection after completion of chemo-radiotherapy.

Results: There was no statistically significant difference between the 2 groups regarding treatment toxicity. The difference between the two groups regarding the type of surgery was statistically not significant ($P = 0.382$). The total significant response rate that could result in functional preservation was estimated to be 3.85% in group I and 15.38% in group II. 9.62% of our patients had residual malignant cells at one cm surgical margin. All those patients with positive margins at one cm were in group I (19.23%). No patients in group II had positive margins at 1 cm (0%). There was less operative time in group II, but the difference between both groups was statistically insignificant ($P = 0.845$). The difference between both groups regarding operative blood loss and intra operative blood transfusion was significantly less in group II ($P = 0.044$). There was no

statistically significant difference between both groups regarding the intra operative complications ($P = 0.609$). The current study showed significantly less post-operative hospital stay period, and less post-operative wound infection in group II ($P = 0.012$ and 0.017).

The current study showed more tumor regression and necrosis in group II with a highly significant main effect of time $F = 61.7$ ($P < 0.001$). Pathological TN stage indicated better pathological tumor response in group II ($P = 0.04$). Pathological complete response rate was reported in only one patient in group I (3.85%), and in 7/26 patients (26.92%) in group II.

The current study showed recurrence free survival for all cases at 18 months of 84.2%. In group I, survival rate at the same duration was 73.8%, however none of group II cases had local recurrence (censored). The difference was of statistical significance ($P = 0.031$). Disease free survival (DFS) during the same duration (18 months) was 69.4% for patients in group I and 82.3% for group II. The difference was of no statistical significance ($P = 0.429$).

Conclusion: Surgical resection delay up to 9–14 weeks after chemotherapy was associated with better outcome and better recurrence free survival.

Conflict of interest: No conflict of interest.

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54. Proactive treatment of pelvic T4 locally advanced and recurrent colorectal cancer

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Introduction: Colorectal cancer with localized pelvic disease is amenable to a curative approach. Even more advanced cases, including T4 tumours and recurrent pelvic cancer can be managed with extensive surgery to achieve local control. Peritoneal involvement can also be dealt with and early referral or simultaneous HIPEC (Hyperthermic Perioperative Chemotherapy), together with appropriate surgery; it may be able to provide a complete clearance of the primary cancer and prevent intra-abdominal diffusion of the disease.

Patients and methods: From 2010 to 2015, among 50 consecutive pelvic resections performed both for pelvic recurrence or locally advanced recto-sigmoid tumors, we performed simultaneous HIPEC (proactive treatment) in 13 patients. Total pelvicectomy was performed in 3 patients: 2 for T4 tumors (1 mucinous) and one for pelvic recurrence (mucinous); posterior pelvicotomy was performed in 10 patients: 3 for T4 tumors (all mucinous) and 7 for pelvic recurrence (4 mucinous). All patients received extended pelvic peritonectomy, intraperitoneal oxaliplatin with systemic 5-Fluorouracil for a 30 min HIPEC treatment. Peritoneal dissection was started at the transverse umbilical line.

Results: Among patients treated with HIPEC there were 4 Clavien Dindo grade III–IV complications. No postoperative death occurred. The median postoperative hospital stay was 17 days. Up to date 11 patients are disease free: respectively after 64, 52, 47, 40, 38, 26, 25, 17, 4 and 3 months. Of these, 1 patient developed liver disease and is now disease free after chemotherapy; 1 patient, pre-treated with chemotherapy for a lung metastasis before proactive HIPEC, underwent lung resection after abdominal surgery; 2 patients underwent an APR for recurrent cancer on rectal stump and colorectal anastomosis respectively. None of these patients developed a peritoneal recurrence. One patient died after 20 months with a huge pelvic recurrence of a G3 mucinous tumour and 1 patient is alive at 30 months with metastatic disease (liver and lung).

Conclusions: In high risk patients (peritoneal involvement, ovarian metastases, perforated tumours, previous R1-2 resections or intraoperative tumour disruption, positive cytology, adjacent organs involvement, T3 mucinous tumor, T4 cancers) “proactive” HIPEC is a very promising treatment option to prevent intra-abdominal diffusion of pelvic disease. Our

results, in line with other series, show the feasibility and the oncological safety of this approach with acceptable morbidity and no mortality.

Conflict of interest: No conflict of interest.

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55. The diagnostic performance of CT imaging in detecting colorectal peritoneal metastases

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Background: Staging of tumor burden is essential in patients with colorectal peritoneal carcinomatosis (PC) who are eligible for cytoreductive surgery (CRS) and hyperthermic intraperitoneal chemotherapy (HIPEC). This study aims to compare the extent of PC on preoperative computed tomography (CT) with the intraoperative findings.

Materials and methods: Preoperative abdominal CT scans of patients who underwent CRS-HIPEC, performed between 2005 and 2007, were evaluated by an experienced radiologist. The extent of PC was scored according to the Dutch region count, in which the peritoneal cavity is divided into seven regions. Gold standard was the intraoperative region count. When five or less abdominal regions were affected CRS-HIPEC was considered useful and thus executed. Diagnostic performance of CT was calculated and survival analyses were performed.

Results/Discussion: Forty-nine patients were included. The accuracy for selection of colorectal PC patients with good and poor prognosis, based on a region count of five or less, was 86%. In 8% of the other patients the extent of PC was underestimated and in 6% the extent of PC was overestimated. Patients with more than five affected abdominal regions had poorer disease free survival and overall survival (median 11.3 months (interquartile range (IQR) 9.1–28.2) and 19.9 months (IQR 18.5–42.4)) compared to patients with a region count of five or less (median 21.8 months (IQR 15.6–39.7) and 39.5 months (25.0–84.7)).

Conclusion: Abdominal CT has a high accuracy in selection of patients who could benefit from CRS-HIPEC provided examination by an experienced radiologist.

Conflict of interest: No conflict of interest.

Abstract 55

Time dependent survival analysis

	No. at risk	No. events	Crude Hazard Ratio	Adjusted Hazard Ratio*
TAI-users versus non-user (n = 6186)				
Non-users	5439	2501	1 (Ref)	1 (Ref)
TAI-users	747	277	0.37 (95% CI 0.30–0.46)	0.49 (95% CI 0.38–0.62)
Solely TAI-user versus non-user (n = 5534)				
Non-users	5439	2501	1 (Ref)	1 (Ref)
Solely TAI-users	95	54	0.58 (95% CI 0.35–0.95)	0.52 (95% CI 0.32–0.85)
TAI-users versus non-users per tumour type				
Colon cancer (n = 3904)				
Non-users	3398	1609	1 (Ref)	1 (Ref)
TAI-users	506	187	0.34 (95% C.I. 0.26–0.44)	0.46 (95% C.I. 0.34–0.62)
Rectal cancer (n = 2282)				
Non-users	2041	892	1 (Ref)	1 (Ref)
TAI-users	241	90	0.43 (95% CI 0.30–0.62)	0.55 (95% CI 0.36–0.85)

*Adjusted for use of aspirin, sex, age at incidence date, stage, surgery (yes/no), chemotherapy (yes/no), radiotherapy (yes/no), amount of comorbidities

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56. The effect of thrombocyte aggregation inhibitors on cancer survival: More evidence for a platelet-mediated effect of aspirin on cancer

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Background: Several studies have suggested an association between aspirin (acetylsalicylate) use and improved cancer survival. The mechanism behind the beneficial effect is not completely clarified. One of the hypothesis is that circulating tumour cells (CTC's) are guarded from the immune system by thrombocytes. When the aggregation of thrombocytes is inhibited, the protection of the CTC's vanishes and the immune system will be able to clear the CTC's. Aspirin is a thrombocyte aggregation inhibitor (TAI) and could in this way reduce the mortality in patients with colorectal cancer. The aim of this study was to provide epidemiological evidence for the hypothesised platelet-mediated mechanism by studying the effect of non-aspirin TAI on survival of patients with colorectal cancer.

Material and methods: Patients with colorectal cancer, diagnosed between 1998 and 2011 in the southern region of the Netherlands (Eindhoven Cancer Registry) were linked to drug dispensing data from the PHARMO Database Network. Patients using TAI (mainly clopidogrel, dipyridamole) were compared to non-users. A sub analysis was performed in patients using solely TAI (not in combination with aspirin) versus non-users.

Patients using only aspirin, using TAI before diagnosis and patients whose follow-up was less than 14 days were excluded from the analysis. The association between the use of TAI and overall survival was analysed using Cox regression models with use of TAI as time-varying exposure.

Results: In total, 6184 patients were diagnosed with colorectal cancer. In this cohort, 5439 patients were non-users (88%) and 747 (12%) were users of TAI. The results of the survival analysis are shown in the table. The effect of TAI shows to be independent from the use of aspirin.

Conclusions: The observation that TAI use is associated with improved overall survival in colorectal cancer patients makes the hypothesis that the mode of action of aspirin is platelet-mediated more plausible.

Conflict of interest: No conflict of interest.

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15 September 2016 11:00–12:40

Proffered Paper: Upper Gastrointestinal Cancer

57. Total esophagectomy is not always necessary in the treatment of squamous carcinoma & adenocarcinoma of the distal third of the esophagus & the cardia**P. Desai, R. Parikh, R. Deshpande**

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Background: The incidence of adenocarcinoma of cardia & the distal third of the esophagus is on the rise. Based on our data the authors wish to emphasise that in selected patients, a left sided thoraco-abdominal approach with a radical lower esophagectomy with anastomosis (esophago-gastrostomy) just under the aortic arch and above the left pulmonary hilum satisfies surgical principles for treatment of cancer of lower reaches of the esophagus & cardia. A total esophagectomy is not always necessary.

Material & methods: From 1995 to 2010, 330 patients aged (42–68 years) underwent surgical resection; 186(56%) were distal esophageal lesions, 46(14%) involved the cardio-esophageal junction & 98(30%) were lesions of the gastric fundus. The surgical approach was through the left thoraco-abdominal approach. TNM classification was used to stage the disease. Salient features of nodal dissection through this approach are demonstrated. This is compared with literature review of total esophagectomy for similar lesions.

Results: The surgical cohort was staged as shown.

T1N0	T2N0	T1N1	T2N1	T3N0	T3N1,2
8	21	14	47	26	214

The disease free survival (DFS), overall survival (OS) & the morbidity & mortality rates are nearly similar with both approaches without any statistically significant difference. The DFS in T1N0, T2N0-1, T3N0-1 ranged from 16–64% at 5 years, the morbidity & complications ranged from 13–15% and mortality within 3–11% in either groups. In locally advanced (T3N1) lesions with involvement of predominantly celiac, paraesophageal & perigastric group of nodes, total esophagectomy transhiatal (TH) or trans-thoracic (TT), with a 3 field nodal dissection does not improve survival & is compatible with significant complications, increased morbidity & mortality.

Conclusions: Total esophagectomy with 3 field nodal dissection is not always necessary for cancers of the distal third, cardioesophageal junction & cardiac fundus. A left sided thoraco-abdominal approach with 2 field nodal clearance gives equivalent DFS & OS as total esophagectomy. Intra-thoracic anastomosis in the left and right chest (Ivor Lewis procedure) is safe & has lesser incidence of anastomotic disruption & strictures as compared to cervical anastomosis after total esophagectomy.

Conflict of interest: No conflict of interest.

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58. A decrease in palliative resections in both young and elderly gastric cancer patients in the Netherlands**S. Nelen¹, M. Van Putten², R. Verhoeven², V. Lemmens³, K. Bosscha⁴, D.W. Hans¹**

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Introduction: A considerable amount of gastric cancer patients is over 70 years of age and stage IV at diagnosis. The role of palliative resection is debated in many different cancer types and also in gastric cancer. The aim of this study was to assess the trends in treatment and survival in palliative treated patients.

Methods: All non-cardia gastric cancer patients who could receive palliative treatment based on clinical tumor stage (cM1 and cT4(B)) diagnosed between 1989 and 2013 were selected from the Netherlands Cancer Registry. Trends in treatment and 2-year overall survival (OS) were analyzed and compared between young (<70 years) and elderly patients (≥70 years). Multivariable logistic regression was used to examine the probability of undergoing surgery. Multivariable cox regression analyses were used to identify independent risk factors for death.

Results/Discussion: 6,903 young and 8,108 elderly palliative gastric cancer were included. Resection rates decreased over time for both young and elderly patients, from 24% to 26.4% among the young and elderly patients in 1989–1994 respectively to 2.3% and 3.8% in the period 2010–2013. Both young and elderly patients who underwent surgery had a better two year OS compared to patients who received chemotherapy only or no treatment at all, respectively 22% vs 6% vs 2% ($p < 0.001$) and 15% vs 5% vs 1% ($p < 0.001$). Multivariable cox regression analysis demonstrated that young and elderly patients who underwent chemotherapy only had a worse overall survival compared to patients who underwent surgery only (HR = 1.19 95% CI 1.09–1.29 and HR = 1.12 95% CI 1.01–1.25). Period of diagnosis was not associated with overall survival among elderly patients. However, among young patients overall survival was significantly worse in the period 2010–2013 compared to 1989–1994 (HR = 1.25 95% CI 1.09–1.44).

Conclusion: Palliative surgical resection for gastric cancer patients is increasingly less performed. Although this can be caused by selection bias, surgical resection seems to have a better survival.

Conflict of interest: No conflict of interest.

<http://dx.doi.org/10.1016/j.ejso.2016.06.064>

59. Efficacy of surgical treatment for responders to chemotherapy for gastric cancer with para-aortic lymph node metastasis**Y. Tanizawa¹, E. Bando¹, M. Tokunaga¹, T. Kawamura¹, R. Makuuchi¹, Y. Kinugasa², Y. Tsubosa², K. Uesaka², M. Terashima¹**

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Background: Gastric cancer (GC) patients with para-aortic lymph node (LN) metastasis (PANM) are generally considered to be candidates for systemic chemotherapy. However, surgery is often performed for patients in some specialized centers if the regions and numbers of PANM are limited. The Japanese Clinical Oncology Group conducted a clinical trial of neoadjuvant chemotherapy for GC with bulky N (+) and/or PANM limited to 16a2/b1 (1-PANM), regions that are considered to be potentially resectable, and demonstrated an improved 5-year survival rate compared to the historical control. However, the efficacy of surgical resection following chemotherapy for GC with extensive PANM (e-PANM; PANM beyond 16a2/16b1 such as 16a1 and/or 16b2) is unknown. The aim of this study was to clarify the efficacy of surgical resection for responders to chemotherapy for GC with e-PANM.

Subjects and methods: Twelve patients with PANM who were clinically diagnosed as potentially resectable following a response to chemotherapy were included in this study. Five patients had 1-PANM and 7 had e-PANM before chemotherapy. Survival and clinicopathological

features were compared between patients with e-PANM and l-PANM. The pathological grade of tumor regression was classified based on the Japanese classification of GC: Grade 0, no evidence of effect; Grade 1a, viable tumor $>2/3$; Grade 1b, $1/3 < \text{viable tumor} \leq 2/3$; Grade 2, viable tumor $\leq 1/3$; Grade 3, no viable tumor.

Results: Of 12 patients, 9 underwent R0 resection and 3 did not because of the existence of non-curable factors at laparotomy. All three of these patients had e-PANM. Median survival time of the nine patients with R0 resection was 1037 days. Of these 9 patients, 5 had l-PANM and 4 had e-PANM. The 5-year survival rate of patients with l-PANM was 80%. However, there was no 3-year survivor among patients with e-PANM. Patients with a high pathological response (Grade ≥ 2) had a significantly better survival than patients with a low response (Grade $\leq 1b$), with 5-year survival rates of 75% vs 0%, respectively. In patients with e-PANM, 2 patients were high responders. However, none of them survived over 3 years after surgery. There was no long-term survivor with viable cancer cells in distant LNs despite receiving chemotherapy. Three patients who were alive for >5 years had l-PANM, and they all had a high pathological response both in the stomach and LNs (\geq Grade 2).

Conclusions: Surgical resection for patients with GC who respond to chemotherapy might be effective for patients initially diagnosed with l-PANM. However, a strong pathological response in both the stomach and LNs is required to achieve long-term survival. Survival outcomes of patients with e-PANM were poor even if an R0 was achieved. Therefore, surgical resection in patients with GC and e-PANM is not recommended, even in those who respond to chemotherapy.

Conflict of interest: No conflict of interest.

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60. A randomized patient-blind controlled phase III study to compare the efficacy and safety of intravenous ferric carboxymaltose (Ferinject®) with placebo in patients with acute isovolemic anemia after gastrectomy

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Background: Acute isovolemic anemia (decrease in hemoglobin concentration with normal or even increased blood volume) after gastric cancer surgery may negatively influence short- and long-term outcomes. Therefore correction of isovolemic postoperative anemia is supposed to be beneficial. This prospective randomized patient blinded, placebo-controlled multicenter trial was designed to evaluate the efficacy of

intravenous ferric carboxymaltose (IFC) administration in terms of QOL and objective measures of serum hemoglobin(Hb) and iron parameters.

Methods: A total of 454 gastric cancer patients with Hb level ≥ 7 g/dl to <10 g/dl at 5–7 postoperative days after oncologic resection were enrolled for this study from 7 study sites in Korea. Eligible patients were randomly assigned in a 1:1 ratio through a centralized web-based system. Included stratification factors were, institute and clinical or pathological stage. 228 patients were assigned to the study group which was administered IFC (1,000 mg for bodyweight ≥ 50 kg or 500 mg for bodyweight <50 kg). 226 patients were assigned to the placebo group which was received 0.9% normal saline (200 mL for bodyweight ≥ 50 kg or 100 mL for bodyweight <50 kg). All patients with a serum ferritin level of <15 ng/mL and Hb-level <10 g/dl at week 3 visit were received the additional dose of 500 mg of IFC or 100 mL of normal saline. The primary efficacy endpoint was the number of responders defined as an increase of Hb level of at least 2 g/dl related to the baseline Hb measured after randomization at 12 weeks after administration of either placebo or IFC. Secondary endpoints included the percentage of patients with Hb ≥ 10 , 11, and 12 g/dL at 3 and 12 weeks, the percentage of patients requiring alternative anemia management therapy, the average time-to-response (Hb increase ≥ 2 g/dL and/or Hb ≥ 10 g/dL), the evolution of Hb, ferritin, and transferrin saturation over the study duration (12 weeks) and finally safety/tolerability of IFC. QoL as one of the most important secondary endpoints was assessed by EORTC QLQ-C30 and STO22 questionnaires at 3 and 12 weeks.

Results: Enrollment and follow up have been completed. The results are currently being analyzed and will be presented at ESSO conference.

Conclusions: Correction of isovolemic postoperative anemia in gastric cancer patients after oncologic resection is considered to be beneficial. Administration of ferric carboxymaltose is considered to be superior to placebo for anemia correction without the possible risks of red blood cell transfusion. Further, improved quality of life for patients with quick recovery of hemoglobin levels is expected.

Conflict of interest: No conflict of interest.

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61. Evaluation of the regional lymph node for cervical esophageal squamous cell carcinoma: Proposed selection for improved survival stratification

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Background: The 7th edition of the Union for International Cancer Control-TNM (UICC-TNM) classification for esophageal cancer provides the definition of N-staging by the number of involved lymph nodes and the regional lymph node. However, the definition of regional lymph node for cervical esophageal cancer has not been clarified. In this study, we evaluated the nodal status of this classification for cervical esophageal cancer.

Methods: We reviewed 48 patients who had cervical esophageal cancer and treated by chemoradiotherapy between 2002 and 2013. We evaluated valid regional lymph node for cervical esophageal cancer on the incidence of clinical lymph node metastasis (cN+) in each location of lymph node. In addition, we evaluated the impact of the location of cN+ on overall survival.

Results: There were 37 patients (77.1%) who had cN+. The location of cN+ was as follows: cervical paraesophageal lymph node (#101); 27 (56.3%), deep cervical lymph node (#102); 6 (12.5%), supraclavicular lymph node (#104); 13 (27.1%), recurrent nerve lymph node (#106rec); 23 (47.9%). Based on these results, we proposed the valid nodal status

that designated #101, #102, #104, and #106rec as regional. Modified UICC-TNM classification introduced this nodal status showed the overall 5-year survival rate was 68.6% in N0, 42.6% in N1, 30.1% in N2, and 0% in N3. This modified nodal staging predicts better survival stratification compared with current UICC-TNM classification for esophageal cancer.

Conclusions: The proportion of valid regional lymph node and staging system for cervical esophageal cancer showed a better stratification of overall survival.

Conflict of interest: No conflict of interest.

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62. Perioperative chemotherapy for gastric cancer in daily clinical practice: A nationwide population-based study

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Background: Based on the results of the MAGIC trial it is recommended to treat patients with perioperative chemotherapy if they are eligible for a gastrectomy. However, little is known about the administration of perioperative chemotherapy in the daily clinical practice. The aim of this study was to examine the utilization of this treatment and its impact on survival in the Netherlands.

Material and methods: All 3,486 patients diagnosed with potentially curable gastric cancer (cT1 cN+ cM0/cT2-4a, cN0-3, cM0) who underwent a gastrectomy between 2006 and 2014 were selected from the Netherlands Cancer Registry. Trends in treatment were examined, including administration of perioperative chemotherapy, neoadjuvant chemotherapy and treatment with surgery only. Multivariable logistic regression analyses were used to investigate the likelihood to undergo these treatments. Cox regression analyses were used to compare overall survival according to treatment of patients who survived at least 3 months after surgery.

Results: The percentage of patients treated with perioperative chemotherapy increased from 4% in 2006 to 40% in 2014. Among patients who underwent neoadjuvant chemotherapy, 63% underwent adjuvant treatment in 2014. Females, older patients and patients having surgery in a hospital which performed less than 20 gastrectomies per year had a lower likelihood to undergo adjuvant treatment after neo-adjuvant chemotherapy and surgery. Patients who received perioperative chemotherapy had the most favourable survival (HR = 0.73 95% CI 0.64–0.84) and patients who received neoadjuvant chemotherapy followed by surgery had a similar survival compared to patients who underwent surgery only (HR = 0.89 95% CI 0.77–1.04).

Conclusions: A significant proportion of the patients (60%) who underwent a gastrectomy in 2014 were not treated with perioperative chemotherapy. The prognosis of patients treated with perioperative chemotherapy seems to be most favourable, although this may be due to selection bias.

Conflict of interest: No conflict of interest.

<http://dx.doi.org/10.1016/j.ejso.2016.06.068>

63. Hospital of diagnosis influences the probability to receive curative treatment for oesophageal cancer

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Background: Surgical treatment for oesophageal cancer (OC) is centralized in the Netherlands, while the diagnostic process is often performed in another hospital where surgical treatment is not performed. We investigated the influence of the hospital of diagnosis on the probability to undergo a potentially curative treatment and its impact on survival in patients with OC.

Material and methods: All patients with OC or gastro-oesophageal junction tumors diagnosed between 2005 and 2013 who were potentially curable according to their stage (cT1-4A, N0-3, M0-M1A) were selected from the Netherlands Cancer Registry. Multilevel analysis was performed to examine the probability of undergoing potentially curative treatment (resection, definitive chemoradiotherapy or local tumor excision) according to hospital of diagnosis. Effects of variation in probability of receiving curative treatment among hospitals of diagnosis on survival were investigated by Cox regression analyses for the period 2005–2009 and 2010–2013.

Results: A total of 11,728 patients with potentially curable OC, diagnosed in 91 hospitals, were included. The proportion of patients that underwent curative treatment ranged from 37% to 91% in the period 2005–2009 and from 48% to 93% in the period 2010–2013 depending on the hospital of diagnosis. After adjustment for patient- and hospital-related characteristics, this proportion ranged from 51% to 84% in the recent period ($P < 0.001$). Multivariable survival analyses showed that patients diagnosed in hospitals with a low probability of receiving curative treatment had a worse overall survival (HR = 1.08; 95% CI 1.01–1.17; HR = 1.16; 95% CI 1.06–1.26).

Conclusions: The variation in probability of undergoing a potentially curative treatment option for OC between hospitals of diagnosis and its impact on survival indicates that decision-making in OC may be improved.

Conflict of interest: No conflict of interest.

<http://dx.doi.org/10.1016/j.ejso.2016.06.069>

64. EORTC-1203: Integration of trastuzumab, with or without pertuzumab, into perioperative chemotherapy of HER-2 positive stomach cancer: INNOVATION EudraCT number 2014-000722-38; NCT02205047

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Leeuwenhoekziekenhuis, Surgery, Amsterdam, Netherlands

¹⁴ VU University Medical Center, Pathology, Amsterdam, Netherlands

¹⁵ University Cancer Center Leipzig, Oncology, Leipzig, Germany

Background: Around 10–20% of patients with gastric cancer (GCa) have HER2+ tumors. The addition of trastuzumab to cisplatin/fluoropyrimidine based regimen improved survival in metastatic HER2+ GCa. When pertuzumab was added to trastuzumab and chemo, a significant increase in histopathological complete response rate (RR) was observed in HER2+ breast cancer. This study aims to investigate the added value of combining HER2 targeting drugs with perioperative chemotherapy for GCa and gastroesophageal junction cancer (GEJCa). A surgical and pathology quality assurance (QA) strategy has been set up for the study.

Materials and methods: This is a randomized, open label phase II trial. Biopsy from patients with resectable GCa or GEJCa (UICC tumor stage Ib–III) will be centrally screened for HER2. Over a 4 year accrual period, 225 patients with HER2+ cancers will be centrally randomized across 59 centers from Europe and Korea. Control arm is cisplatin (80 mg/m² every 3 weeks) and capecitabine (1000 mg/m² twice daily every 2 out of 3 weeks) or 5FU (800 mg/m²/day for 5 days every 3 weeks) for 3 cycles before and after surgery. Experimental arm 1 is chemo plus trastuzumab (8 mg/kg loading dose, followed by 6 mg/kg every 3 weeks). Experimental arm 2 is chemo with trastuzumab and pertuzumab (840 mg every 3 weeks). Trastuzumab and/or pertuzumab will be given on day 1 of every chemo cycle and continued for a total of 17 cycles. Stratification is by histological subtype (intestinal/non-intestinal); region (Korea vs Europe); location (GEJCa vs non-GEJCa) and HER2 (Immunohistochemistry 3+ vs IHC 2+/FISH+). The primary endpoint is an increase in pathological RR (<10% residual tumor cells) after central review from 15% to 30% with addition of trastuzumab or the combined HER2 targeting agents. The RR in each experimental arm will be tested versus 15% with a one-sided type I error of 5%. If both tests are positive, the experimental arm with the higher RR will be recommended if the difference is more than 5%. The QA strategy is being communicated via site visits and web conferences by the EORTC team that includes a surgeon and pathologist. Central surgical monitoring will be performed by 3 independent surgeons including a gastric surgeon from Japan Clinical Oncology Group (JCOG) using a central imaging platform supported by Keosys Medical Imaging. This will be complemented by a blinded prospective central pathology review to be performed by 2 expert gastrointestinal pathologists. The study is now enrolling patients since September 2015.

Conclusion: This study can potentially show the added value of perioperative treatment using combined targeted therapy for GCa and GEJCa. Because of the critical impact of surgery on patient outcomes, surgical QA will be considered in the analysis of the study. The EORTC surgical QA strategy in INNOVATION can be a framework for surgical trials.

Conflict of interest:

Advisory Board:

1. A. Wagner - Roche Merck Serono Celgene Lilly Bayer

2. F. Lordick - Biontech

3. A. Roth - Roche

4. Y.K. Kang - Lilly/ImClone Novartis Ono Pharmaceutical Roche/Genentech Taiho Pharmaceutical

Corporate-sponsored Research:

1. A. Wagner - Roche

2. F. Lordick - GSK Fresenius Biotech

3. Y.K. Kang - Bayer Novartis Roche/Genentech

Other Substantive Relationships:

1. A. Wagner - Taiho (Speaker's Bureau) Meck, Bayer (Travel)

2. F. Lordick - Amgen, Bayer, Taiho, Roche (Travel)

3. A. Roth - Roche (Travel)

4. M. Moehler - Amgen Bayer Merck Serono Nordic Bioscience Roche (Travel) Amgen Lilly/ImClone Merck Serono Roche/Genentech (Honoraria)

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65. Molecular surgery for gastric cancer-role of microsatellite instability in elderly patients

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Background: Microsatellite instability (MSI) is one of the subgroup in the new molecular division of gastric cancer (GC). The aim of the study was to present clinical and pathological information of MSI GC with a special attention of elderly patients older than 75 years.

Material and methods: We analyzed 472 patients with GC. They were divided into younger than 75 and patients ≥ 75 years. MSI analysis of all GC patients were performed on fresh frozen tissue using 5 quasimonomorphic mononucleotide repeats NR-21, NR-24, NR-27, BAT-25, and BAR-26, done by PCR usage.

Results: MSI phenotype was found in 111 of 472 patients (23.5%). MSI status correlated significantly with older age, female gender, non-cardia location, advanced stage of the disease additionally with better 5 years survival (67.6% vs 35%, $p < 0.001$). Multivariate analysis, using Cox proportional hazard model, confirmed MSI status as an independent predictor of survival (hazard ratio of microsatellite stable (MSS) vs MSI-H: 1.60, $p = 0.017$). In a group of patients ≥ 75 years, 38% have MSI, and in a group of patients ≥ 85 years almost a half. Older patients with MSI showed: more female patients, older, T2 and T3, less involved lymph nodes, more subtotal gastrectomies, more distal situated tumors, more intestinal histotype, more stage II, and less M1 status. No difference in mortality was observed between MSI and MSS group. 5 years survival difference between MSI (65.6%) and MSS (22.3%) patients ≥ 75 years was 43.3% ($p < 0.001$).

Conclusions: MSI is an important subgroup of elderly GC patients with favorable prognosis. Because of risk of postoperative morbidity and mortality, the current goal in the treatment of older patients with GC is to propose a limited surgery that may reduce the postoperative complication rate, without compromising the oncological outcome of these patients. MSI staging can offer a new standard in GC treatment, especially in elderly groups of patients, allowing in future a more tailored treatment based on molecular analysis.

Conflict of interest: No conflict of interest.

<http://dx.doi.org/10.1016/j.ejso.2016.06.071>

66. Increasing chemotherapeutic treatment and survival difference between young and elderly gastric cancer patients in the Netherlands

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Introduction: Previous studies suggest that the survival gap between young and elderly gastric cancer patients is increasing in Europe, which might be caused by differences in patient, tumor and treatment specific factors. This study investigates the difference in treatment and survival among young and elderly gastric cancer patients in the Netherlands.

Methods: All non-cardia gastric cancer patients with potentially curable gastric cancer according to stage (cT1-3, cN0-3, cM0) diagnosed between 1989 and 2013 were selected from the Netherlands Cancer Registry. Trends in treatment and overall survival were compared between young (<70 years) and elderly patients (≥ 70 years). Multivariable logistic

regression was used to examine the probability of undergoing surgery or chemotherapy in the last 4 years. Multivariable cox regression analyses were used to identify independent factors associated with survival

Results/Discussion: 8,107 young and 13,814 elderly gastric cancer patients were included. The surgical resection rate decreased from 88.9% for the young and 64.4% for the elderly gastric cancer patients in 1989–1994 to 81.7% and 54.8% in 2010–2013 respectively. The amount of young patients receiving chemotherapy increased through the years, i.e. between 1989 and 1994 only 3.1% received chemotherapy while this increased to 72.7% between 2010 and 2013. For elderly patients it increased to a lesser extent from 0.2% to 21.2%.

Two-year overall survival for young gastric cancer patients increased from 53.5% in 1995–1999 to 60.1% in 2010–2013 ($p < 0.01$). For elderly patients it increased to a lesser extent from 31.6% to 36% ($p < 0.01$). This difference did partly result in an increased survival gap between young and

elderly patients. Furthermore, multivariable cox regression analyses showed overall survival significantly improved for elderly patients since 2000 (HR 0.91 95% CI 0.86–0.96 $p < 0.01$) and for young patients since 2005 (HR 0.82 95% CI 0.71–0.95 $p < 0.01$).

Conclusion: Better patient selection, improved surgical outcome and addition of chemotherapy improved the outcome for patients with potentially curable gastric cancer who received curative surgery. In recent years, especially young patients receive more often chemotherapy as a treatment modality for curative treatment of gastric cancer, resulting in an increased survival gap between young and elderly patients.

Conflict of interest: No conflict of interest.

<http://dx.doi.org/10.1016/j.ejso.2016.06.072>

15 September 2016 11:00–12:40 Proffered Paper: Various Tumour Types II

67. Evaluation of the role of pre-operative neo-adjuvant chemotherapy (NACT) in stage T3 buccal mucosa carcinoma

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Background: To evaluate role of NACT in stage T3 Buccal Mucosal Carcinoma in terms of: (1) Tumour response, (2) Surgical complications and (3) Recurrence.

Material and method: (1) Prospective randomized controlled trial, (2) Carried over period of 6 months from May 2015 to October 2015, (3) Sample Size (n) = 100, (4) Randomized in two groups: Case group: NACT followed by surgery (n = 50) and Control group: upfront surgery (n = 50).

Result:

Response to chemotherapy (NACT)

Response %	Present study %
Complete response(CR)	4
Partial Response (PR)	76
Stable disease (SD)	12
Progressive disease (PD)	8

Complication of surgery

	Case	Control
Partial mucosal dehiscence	6(12%)	8(16%)
wound infection	2(4%)	4(8)
total flap necrosis	2(4%)	2(4%)
orocutaneous fistula	2(4%)	2(4%)
Bleeding	0(0)	2(4%)

Recurrence pattern

	Case	Control
Local	12%	18%
Regional	18%	14%
Both	2%	2%
Distant	2%	4%

Conclusion: The rational underlying the use of neo adjuvant chemotherapy in locally advanced buccal mucosa cancer is the possibility of: (1) better drug delivery in well vascularised tumours, (2) tumors shrinkage, (3) sterilization of initial oedematus wet margins would allow better results when surgery & or RT are added and (4) eradicate micro metastasis.

Though the NAC seems to be promising, but loco-regional control, survival benefits and appropriate NAC regimen are still to be defined. It has been suggested that in the advent of newer chemotherapy molecules & regimens and more aggressive drug combinations might result in survival benefit after NAC schedule.

Conflict of interest: No conflict of interest.

<http://dx.doi.org/10.1016/j.ejso.2016.06.073>

68. Sentinel lymph node biopsy in papillary thyroid carcinoma in decision for selective modified lateral neck dissection

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Background: Surgical management in clinically node negative (cN0) patients with papillary thyroid carcinoma (PTC) remains debatable, despite the fact that frequency of micrometastases may approach 90% depending on the sensitivity of the detection method. Furthermore, preoperative ultrasound identifies only half of the lymph nodes found at surgery, due to the presence of the overlying thyroid gland. This encouraged some authors to apply the concept of sentinel lymph node biopsy (SLNb) in PTC. Three meta-analyses on this issue were published. Our aim was to investigate if SLNb using methylene blue dye is accurate for detection of lymph node metastases (LNM) in lateral neck compartments and if it may help in decision for selective modified lateral neck dissection in cN0 patients with PTC.

Material and methods: Study included 153 cN0 patients with PTC. All underwent total thyroidectomy with prophylactic central neck dissection and SLNb of lateral lymph nodes using 1% solution of methylene blue dye. Selective modified lateral neck dissection was performed in all cases with SLNs metastases.

Results: Over 80% of patients had pT1 tumors, including 57% of microcarcinomas. Neck LNM were histologically verified (pN1) in 40.9% of cN0 PTC cases. LNM in central neck compartment were predictive for lateral LNM in 80.5% of cases. Predictive factors for LNM were: male gender,

patients younger than 45 years, tumors larger than 1 cm, capsular and vascular tumor invasion. Our method enabled detection of LNM in 21% of SLNs in lateral neck compartment, which were over 50% predictive of metastases to other lateral lymph nodes. Out of 171 SLN procedures, blue dyed lymph nodes were successfully detected in 157 of them, with identification rate of 91.8%. Sensitivity, specificity, positive and negative predictive value were 85.7%, 96.7%, 88.3% and 95.9%, respectively. The overall accuracy of the method was 94.3%, with 91.2% probability of repeating the results in the second specimen (ROC AUC, 95% CI: 84.2–98.3%).

Conclusions: The proposed method of SLN biopsy is feasible, safe and accurate in detection of additional LNM in the lateral neck compartment and may help in decision for selective modified lateral neck dissection and radioiodine therapy in cN0 but pN1 patients with PTC.

Frozen section SLN	Definitive H&E SLN		Summary
	Malignant	Benign	
Malignant	30	4	34
Benign	5	118	123
Summary	35	122	157
Diagnostic test			
Identification rate (IR)	157/171		91.8%
Sensitivity (Sn)	30/35		85.7%
Specificity (Sp)	118/122		96.7%
Positive predictive value (PPV)	30/34		88.2%
Negative predictive value (NPV)	118/123		95.9%
Accuracy	148/157		94.3%

Conflict of interest: No conflict of interest.

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69. Surgical treatment and prognostic factors for well-differentiated thyroid carcinomas in children and adolescents

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Background: Well-differentiated thyroid carcinoma in children and adolescents is rare, but it shows aggressive behavior. Gross lymph node metastases and distant metastases are common on first clinical presentation. The aim was to present our experience in the management of well-differentiated thyroid carcinomas in patients under the age of 21 by analyzing clinical features, effectiveness of surgical approach and long-term outcome.

Material and methods: During 33 years (1981–2014), at the Institute of Oncology and Radiology of Serbia 62 children and adolescents were operated due to well-differentiated thyroid carcinoma. Mean age was 16.7 (range 7–21) years. At the time of diagnosis, 6.45% patients had lung metastases. Total thyroidectomy or completion of thyroidectomy was performed in all cases, followed with central neck dissection and frozen section examination of the jugulo-carotid compartments. Radioiodine 131 therapy was applied in 42 (67.74%) patients and postoperative external beam radiotherapy in 2 (3.23%). Median follow-up was 10.9 (range 0.69–33.05) years.

Results: Median tumor size was 20 (range 2–60) mm. Papillary thyroid carcinoma was found in 96.77%, while follicular and Hurtle cell carcinoma in 1.61% patients, each. Multifocal tumors were found in 50% and capsular invasion in 59.7% of cases. Lymphonodal metastases in either central or lateral neck compartments were found in 72.6% of patients. Multifocality and capsular invasion were significantly more frequent in patients 16 years of age or younger ($p < 0.01$ both). Median disease-free interval has not been reached and overall survival rate was 100%.

Conclusions: Well-differentiated thyroid carcinoma in children and adolescents is characterized with high rate of locoregional aggressiveness, multifocality, capsular invasion, lymph node metastases and distant

metastases at the time of diagnosis. Extensive surgical approach should be performed in both primary and recurrent disease in young patients with well-differentiated thyroid carcinomas in order to achieve locoregional disease control and long disease-free survival.

Conflict of interest: No conflict of interest.

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70. Intraoperative anatomical landmarks for identification of the recurrent laryngeal nerve during thyroidectomy: A meta-analysis

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Background: The recurrent laryngeal nerves (RLN) are branches of the vagus nerves, which classically arise in the inferior neck and innervate most of the intrinsic muscles of the larynx. The RLN is a highly studied anatomical structure, yet little consensus has been achieved in developing a uniform methodology to safeguard the nerve and reduce iatrogenic injury. The goal of this study was to assess the intraoperative anatomical landmarks for identification of the RLN, such as the Inferior Thyroid Artery (ITA), Ligament of Berry (BL), Tracheoesophageal Groove (TEG), and Tubercle of Zuckerkandl (ZT) through a comprehensive evidence-based approach. Injury to the RLN, both temporary and permanent, is one of the most feared and challenging postoperative complications arising from thyroidectomy.

Material and methods: Applicable intraoperative articles were identified by a comprehensive database search of PubMed, CNKI, ScienceDirect, EMBASE, BIOSIS, SciELO, and Web of Science. Eligibility assessment and data extraction were performed always by at least two reviewers. Statistical analysis was conducted using MetaXL, with all pooled prevalence rates calculated using a random effects model. Heterogeneity among included studies was assessed with the Chi² test and the I² statistic.

Results: Eighteen studies ($n = 6,176$ nerves) demonstrated that the RLN is most often found posterior to the ITA [57.8% (95% CI: 45.3–65.3)] followed by anterior in 26.4% (95% CI: 17.0–34.6), and finally between the ITA branches in 15.9% (95% CI: 8.6–23.2) of cases. Seven studies ($n = 1,505$ nerves) on the relationship of the RLN to the BL showed the nerve coursing superficially to the ligament 76.0% (95% CI: 34.9–100) of the time, deep to the BL in 17.0% (95% CI: 0–49.4) and piercing the ligament in 7.0% (95% CI: 0–32.3) of cases. Eight studies ($n = 4,058$ nerves) revealed that the RLN was most often [60.1% (95% CI: 49.9–70.0)] found inside the TEG. Of those nerves found outside of the TEG, 3 studies ($n = 737$ nerves) further analyzed the RLN's position with 54.2% (95% CI: 0–100) being found lateral to the groove, followed by 41.7% (95% CI: 0–100) being found anterior to the TEG. Intraoperative assessment of the RLN/ZT relationship in six studies ($n = 665$ ZTs) demonstrated the RLN coursing posterior to a present ZT in 73.6% (95% CI: 22.4–96.3) of cases, followed by an anterior course in 16.0% (95% CI: 0–46.2) of cases.

Conclusions: The use of these landmarks and relationships can easily allow for a reduction in surgical time and identification of the RLN. Our results demonstrate the use of the BL to be the most reliable landmark followed by the ZT if it is present. A complete understanding of the anatomy of the RLN and its highly variable relationship to surrounding structures is the best defense for a surgeon in preventing iatrogenic injury and long-term complications.

Conflict of interest: No conflict of interest.

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71. Analysis of follow up of 2500 patients with differentiated thyroid cancer treated in one department

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Background: Differentiated thyroid cancer (DTC), with two major histological subtypes papillary (PTC) and follicular (FTC), is a disease of low mortality. On the other hand, the morbidity of DTC is increasing in Europe, Asia and US, although this phenomenon is believed to be an effect of improved diagnostics. The aim of the study was to analyse the cohort of the patients treated in Center of Oncology in Warsaw because of DTC during the years 1995–2015.

Material and methods: The group consisted of 2578 patients treated and followed up in Center of Oncology – Maria Skłodowska-Curie Memorial Hospital, (Warsaw, Poland). Follow up or survival time was calculated as a time between initial treatment (thyroidectomy) and patient death or 31st of December 2015 (if patient stayed alive). The treatment of the patients consisted of thyroidectomy, radioiodine therapy and thyrotropin suppression. Patients mortality was determined dividing the number of deaths by number of patients (in analysed groups). The rates per person-year were calculated dividing the number of deaths by the sum of total follow-up years.

Results: The study included 2578 patients (2221 women and 357 men) with median age at diagnosis 46.7 years and overall follow of up to 6.7 years (1–10.5 years). The overall mortality was 4.52%, and was the highest for insular FTC (36%) and the lowest for classical variant of PTC (3.41%). The factors increasing risk of death were: male sex, age > 45, size of nodule > 3 cm, pT > 2, N1b, M1 extrathyroidal invasion and angioinvasion. Multifocality had no influence on survival of DTC patients.

Conclusions: Properly treated DTC has generally good prognosis, however in patients with follicular variant of FTC aggressive surgical and adjuvant treatment should be advised. Taking into consideration very good prognosis and low death risk in patients with classical variant of PTC, aged < 45, N0 or N1a, M0, pT1a-2 without angioinvasion of extrathyroidal invasion, less aggressive surgical treatment should be allowed. However most of this factors are defined after histopathological examination, thou there exist clinical need for the noninvasive preoperative test allowing introduction of a less-invasive treatment. The other approach is acceptance of lobectomy with unilateral central node dissection as an initial treatment of low risk DTC and further “tailored” treatment based on analysis of risk factors.

Conflict of interest: No conflict of interest.

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72. Comparing oncoplastic breast surgery with conventional breast conserving therapies. Oncological, cosmetic and quality of life outcomes of 350 cases

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Background: Oncoplastic breast surgery (OPS) benefits Breast Conserving Surgery (BCS) patients by allowing a maximized resection volume with extended tumor-free margins, resulting in no delay of adjuvant therapy. Furthermore, OPS yields optimized cosmesis, elevated patient satisfaction and enhanced quality of life. The aim of the study was to assess oncological outcomes, complications, patient satisfaction in OPS versus BCS procedures by finding answers to the following clinical questions: 1. Is there a difference in the rate of microscopically positive surgical margins between OPS and BCS? 2. Is there any delay in the oncological treatment of patients who undergo OPS? 3. Is the oncological safety of OPS similar to BCS? 4. Do OPS take longer time to be performed? 5. Are complications more frequent? 6. Are cosmesis and patient satisfaction improved?

Patients and methods: The study was performed at the National Institute of Oncology in Budapest, Hungary. Clinico-pathologic data of a prospective database was analyzed. All OPS patients underwent Level-II OPS procedures between 2008 January and 2014 December. All procedures were performed by two qualified (EBSQ) breast surgeons. As a control group, a retrospective assessment was carried out from the same period, evaluating clinico-pathological data of randomly selected BCS cases operated by the same breast surgeons. 72 factors were considered including reported complications, cosmesis and quality of life.

Results: Increased surgical duration, more quadrantectomy, larger excised specimens, extended negative margins, and fewer completion surgeries were recorded in OPS. No difference in time to adjuvant therapy, or complications were summarized. Statistical analytics of QLQ surveys expressed a significant superiority of OPS. This was reinforced by higher cosmetic rates.

Conclusions: According to the results, it is assumed that the mean follow-up period was insufficient to verify oncological safety, local control and DFS. OPS allows for wider excision even in cases of larger primary tumors or smaller breast volume, while reducing risk of positive margins, and the rate of completion procedures. The duration of OPS is significantly longer, which indicates an increased stress factor for patients and entails extra costs to the healthcare system. No differences in complications are related to OPS. Adjuvant therapy is not delayed and patient satisfaction with cosmetic end results is higher.

Conflict of interest: No conflict of interest.

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73. Lymphatic duct Sparing Partial Mastectomy (LSPM) – The concept and the practice

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Background: Many guidelines basically do not recommend sentinel node biopsy (SNB) for ductal carcinoma in situ (DCIS) treatment because theoretically lymphnode metastasis could not happen if the preoperative diagnosis is accurate. However remaining inaccuracy of preoperative diagnosis made by core needle biopsy (CNB), in other words, suspicion that there may be invasive cancer found in DCIS after meticulous pathological examination of whole surgical specimens tends to make surgeons perform SNB “just in case”. If later SNB after complete pathology can be performed with the same quality as the one at the first breast operation, there is no need to hustle SNB and unnecessary SNB can be avoided. After hundreds of fluorescent tracer guided SNB experiences, we know that just one or sometimes two breast lymphatic flow (BLF) aim at sentinel node(s). If the lymphatic flow is intentionally preserved in the first surgery, later SNB may be performed successfully with the same quality as the first one, which we call Lymphatic duct Sparing Partial Mastectomy (LSPM).

Material and methods: (1) DCIS patients diagnosed by CNB for whom partial mastectomy was scheduled were subject to LSPM. After injecting a fluorescent tracer indocyanine green (ICG) at the areola, the BLF toward the axilla was visualized by near-infrared illumination and the flow

was traced on the skin. Skin incision was carefully designed so that it would not injure the BLF.

(2) In order to assess technical difficulties to preserve lymphatic ducts when adjacent mammary gland is excised, preservation of breast lymphatic ducts was challenged in a nipple-sparing mastectomy with SNB using dual tracers (ICG + blue dye).

Results: (1) LSPM was applied to 6 DCIS cases. BLF ran at the upper-outer quadrant of the breast in all cases. In 4 cases, since DCIS located in other quadrants, skin incision on the lesion was apart from the BLF and the flow was naturally preserved. Later SNB was done in one of these cases, because the final diagnosis was invasive cancer. The same BLF as seen in the first operation was identified and SNB was successful. In other 2 cases in which DCIS was at the upper-outer quadrant, some adjustments where to make a skin incision to preserve BLF were needed (video presentation).

(2) Breast lymphatic ducts were clearly visualized by ICG fluorescence from skin surface to 10 mm deep. After rough location of lymphatic ducts were shown by fluorescence then finding blue dye stained lymphatic ducts under white light was easy. By dividing the border between mammary gland and subcutaneous fat tissue, lymphatic ducts remained in the fat tissue and preserved without difficulty.

Conclusions: LSPM allows us to perform later SNB with the same quality as the concurrent one in the first DCIS operation. Since SNB can wait until final pathology, unnecessary “just in case SNB” is avoided in DCIS operation.

Conflict of interest: No conflict of interest.

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74. Post-operative pain in breast patients: Use of the pectoral nerve II blocks

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Background: Minimising post-operative pain after breast surgery has a significant impact on morbidity, patient satisfaction and long-term chronic pain, as well as facilitating day case surgery. Blockade of the pectoral nerves supplying the breast and underlying chest wall with local anaesthetic, also referred to as a ‘PECS’ block can be administered under ultrasound guidance pre-operatively. This study presents an analysis of our initial experience using PECS II blocks for routine breast cancer surgery.

Patients and methods: All female patients who underwent unilateral breast surgery (wide local excision or mastectomy) and axillary surgery (sentinel lymph node surgery or axillary clearance) at a single institution over a 2 month period (October–December 2015) were identified. Data related to the surgery, anaesthetic and post-operative analgesia-related parameters were recorded retrospectively using a standardised data-sheet. Opiate analgesia use was standardised to mg of IV morphine and anti-emetic use was recorded as the number of standard doses of either cyclizine (50 mg/iv), ondansetron (4 mg/iv) or metoclopramide (10 mg/iv). The blocks were placed pre-operatively under ultrasound-guidance using a total of 30 ml 0.25% chirocaine.

Results: 32 patients (mean age of 61 years) were included. 22 received standard care (including local anaesthetic in 18/22) and 10 received a PECS II Block. There were no significant differences in the ASA grade or the operation performed in each group. There were statistically significant reductions in both the standardised quantity of intra-operative opiate use (7.58 mg vs 1.1 mg IV morphine, $p = 0.0007$) and the total opiate use (10.6 mg vs 3.3 mg IV morphine, $p = 0.01$) in the PECS II group. There was a tendency towards significance in both the reduction of total post-operative anti-emetic use (0.9 standard doses/pt vs 0.3 standard doses/pt,

$p = 0.24$) and the need for more than one type of anti-emetic (23% ($n = 5$) vs 0% ($n = 0$), $p = 0.15$) when PECS II blocks were used. There was no difference in the maximum pain score or the length of stay (measured in days).

Conclusions: The use of a PECS II block minimises the amount of opiate analgesia required when performing breast surgery. Our data suggests that this reduces post operative nausea and thus the need for anti-emetics. It is anticipated that further work, with greater patient numbers, will demonstrate that this approach improves post operative recovery and has a positive affect on reducing long term chronic pain.

Conflict of interest: No conflict of interest.

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75. Pulmonary metastasectomy as step towards radical treatment of patients with clear cell renal carcinoma

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Metastatic stage of kidney cancer is a dramatic outcome of the disease, which requires intensive multimodal treatment approach. Despite poor sensitivity of kidney cancer to the conventional chemotherapy and external beam irradiation, surgical metastasectomy, beside target chemotherapy, may yield definite benefit to the patient in some clinical setting of M+. The purpose of the work is to assess the prevalence and epidemiology of the lung metastases (Mts) in kidney cancer, and role of the surgical metastasectomy in patients after nephrectomy.

Materials and methods: From 2000 to 2015 the total of 1356 patients underwent the nephrectomy for clear cell renal cell carcinoma (CCRCC). Median age was 62 years (range 47–82 years), males were 81 (64.8%). Among them 125 (9.2%) had lung metastases. The pulmonary Mts were diagnosed either at the time of the surgery (65 patients, 52%) or later on (60 patients, 48%) in term of 3–112 months after the nephrectomy (median 32.5 mo.). During 2013–2015 from 125 patients with lung metastases 14 patients (11.2%) or 1% of patients after nephrectomy underwent surgical metastasectomy for solitary metastasis to the lung. We performed following surgical procedures: lobectomy in 10, bilobectomy in 1, atypical resection in 2, and segmentectomy in 1 patient. The metastasectomy was performed in median 24 months after the nephrectomy (range: 1–50 months). No chemotherapy preceded or followed the pulmonary metastasectomy in patients with solitary Mts.

Results: After surgical metastasectomy of solitary lung metastases in patients with CCRCC after prior nephrectomy all patients were alive during 24-months follow-up (range 3–38 months).

Cancer specific survival in patients after nephrectomy for CCRCC looks as follows: 36 patients (28.8%) with nephrectomy and pulmonary Mts are alive after 0.9–137.2 months of follow up (median 42.6 months). Those 89 (71.2%) of patients with pulmonary Mts after nephrectomy survived 0.3–104.3 months (15.0 months) after the date of establishment of pulmonary metastases.

Conclusions: Kidney cancer is a deadly disease. Prevalence of lung metastases in clear cell renal cell cancer patients subjected to nephrectomy was 9.2% in our clinical setting. Despite 28.8% of cancer survivors with pulmonary metastases at median 42.6 months, the progression of the kidney cancer to the lungs worsens the survival prognosis with median life expectancy of 15 months. Surgical metastasectomy in patients with lung metastases is underutilized procedure, performed only in 11.2% patients with lung metastases, but yielding promising results for overall survival in patients with solitary pulmonary metastases. Considering extensive time lapse from nephrectomy to diagnosis of pulmonary metastasis

(3–112 months after nephrectomy) extensive (up to 10 years) follow up must be thoroughly performed.

Conflict of interest: No conflict of interest.

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76. Circulating tumor cells in patients undergoing radical cystectomy for muscle-invasive bladder cancer: Interim results of the CirGuidance study

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Background: Half of the patients with muscle-invasive bladder cancer (MIBC) develop distant metastases after curative treatment. While neoadjuvant chemotherapy (NAC) followed by radical cystectomy (RC) offers a significant overall survival benefit of 5%, physicians remain reluctant to apply NAC. This is mainly because the survival benefit is rather limited and NAC is accompanied by significant toxicity. Therefore, there is an unmet clinical need to identify patients who will not benefit from NAC. Circulating tumor cells (CTCs) are tumor cells that are present in the peripheral blood of cancer patients and may identify patients at increased risk for developing metastatic disease. In the CirGuidance study (NTR 4120), the decision to give NAC to MIBC patients is based on CTCs. Here, we

present data on the first cohort of participating patients and the association of CTCs with clinicopathological parameters.

Material and methods: Patients with clinical stage T2–T4aN01M0 MIBC (urothelial carcinoma) who were candidate for RC were included in this prospective trial. In all patients, 7.5 mL of peripheral blood was drawn prior to the decision to give NAC. CTCs were enumerated using the CellSearch machine. Patients in whom CTCs were absent, underwent immediate RC without NAC, and patients who had ≥ 1 CTC/7.5 mL were advised to receive NAC prior to RC. Univariate logistic regression was performed to explore whether clinicopathological characteristics were associated with the presence of CTCs.

Results: For this interim analysis 108 patients were included. The CTC detection rate was 22% (24 patients), and seven of 24 CTC-positive patients received NAC. Clinical T-stage was cT2 in 68%, cT3 in 37%, and cT4 in 5%, and 4% had clinical lymph node involvement. Pathological staging was pT0/pTis/pT1 in 18%, pT2 in 26% and pT3/pT4 in 56% showing tumor upstaging in 34% of the patients. Lymph node metastases were observed in 27% of the patients, and extranodal growth was observed in 40% of the pN+ patients. In 37% of the male patients, the cystoprostatectomy specimen revealed concomitant prostate cancer. In univariate logistic regression analysis, the presence of CTCs was not associated with age ($p = 0.09$), gender ($p = 0.77$), clinical T stage (cT2 vs cT3 vs cT4; $p = 0.89$), clinical N stage ($p = 0.21$), pathological T stage (pT0–pT1 vs \geq pT2; $p = 0.34$), presence of lymph node metastases ($p = 0.43$), presence of extranodal growth ($p = 0.12$) or with the presence of concomitant prostate cancer ($p = 0.21$).

Conclusion: In clinical stage T2–T4a MIBC, we detected CTCs in 22% of 108 chemo-naïve patients undergoing RC. The preoperative CTC status did not correlate with any clinicopathological characteristic. The prognostic relevance of CTCs in the CirGuidance study is still under evaluation and will follow two years after inclusion is completed ($n = 260$; inclusion completed first quarter 2017).

Conflict of interest: No conflict of interest.

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16 September 2016 11:00–12:45

Proffered Paper: Niall O'Higgins Award Session

77. Failure-to-rescue as outcome measure after surgery for esophagogastric cancer

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Background: Complex surgical procedures including resections for esophageal or gastric cancer are associated with substantial postoperative morbidity and mortality. Failure-to-rescue (FTR) is defined as mortality

in patients with complications. Timely recognition and effective management of postoperative complications may reduce postoperative mortality. The aim of this study was to evaluate and compare trends in postoperative morbidity, mortality, and FTR in patients who underwent a resection for esophageal or gastric cancer.

Material and methods: All patients with esophageal or gastric cancer registered in the national Dutch Upper GI Cancer Audit (DUCA) between 2011 and 2014 who underwent a resection with curative intent were included. Outcome measures were major postoperative complications (postoperative complication resulting in a reintervention, a prolonged hospital stay (>21 days) and/or postoperative mortality), postoperative mortality (in-hospital and/or 30-day mortality) and FTR (postoperative mortality after a major postoperative complication). Differences between patients with esophageal and gastric cancer were tested using a multilevel model.

Results: A total of 2644 patients with esophageal cancer and 1584 patients with gastric cancer were included. In patients with gastric cancer, postoperative mortality decreased significantly during the study period from 7.7% to 3.8% ($p = 0.018$). FTR also decreased significantly from 38% to 19% ($p = 0.013$). For patients with esophageal cancer, no significant improvements were observed (Table 1). In both groups of patients, the most frequent postoperative complications were pulmonary and cardiac complications, and

anastomotic leakage. The risk of developing a major postoperative complication was lower in patients with gastric cancer (OR 0.54; 95% CI 0.42–0.70) compared to patients with esophageal cancer. However, the risk of dying from these complications (FTR) was higher in patients with gastric cancer (OR 1.85; 95% CI 1.05–3.27) compared to patients with esophageal cancer. Other factors associated with major postoperative complications and FTR were higher age, higher ASA score, higher Charlson Comorbidity Index and additional organ resection due to tumor infiltration.

Table 1

Outcomes in esophagogastric cancer surgery.

	Esophageal cancer				Gastric cancer			
	2011	2012	2013	2014	2011	2012	2013	2014
Major postoperative complication	31%	28%	29%	34%	20%	22%	20%	18%
Postoperative mortality CT	3.9%	4.4%	4.7%	3.9%	7.7%	6.1%	4.5%	3.8%
Failure-to-rescue	13%	16%	15%	11%	38%	27%	22%	22%

Conclusion: Postoperative mortality and FTR rates significantly improved for patients with gastric cancer. Patients with gastric cancer had a significantly lower risk of developing a major postoperative complication compared to patients with esophageal cancer. However, the risk of dying from these complications was higher (FTR) in patients with gastric cancer.

Conflict of interest: No conflict of interest.

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78. Surgicopathological quality control in the CRITICS gastric cancer trial

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Background: The British MAGIC and the American Intergroup 0116-study changed current clinical practice for resectable gastric cancer, by showing survival benefit with perioperative chemotherapy and postoperative chemoradiotherapy respectively (Cunningham, NEJM, 2006; MacDonald, NEJM, 2001). However, a rate of 42% of completing treatment (Cunningham, NEJM, 2006) and suboptimal surgery (54% had a D0 lymph node dissection; MacDonald, NEJM, 2001) were critical aspects. Therefore, quality assurance was closely monitored in the international CRITICS trial (ChemoRadiotherapy after Induction chemotherapy In Cancer of the Stomach). The most important quality indicator was the Maruyama Index (MI), as proven in the Intergroup 0116 and D1–D2 trial (Hundahl, Annals of surgical oncology, 2002; Peeters, World J Surg, 2005). This study provides an overview of surgicopathological quality control in the CRITICS trial.

Material and methods: The CRITICS trial is a multicentre randomized phase III trial. From 2007 to 2015, 788 patients with resectable gastric cancer were included. After receiving three courses of chemotherapy, all patients underwent surgery including a D1+ lymphadenectomy (removal of stations 1–9 and 11 with exception of station 2 and 4 for distal tumours) according to the protocol (surgical compliance) and with a minimum of 15 lymph nodes (surgicopathological compliance). Patients were randomized before start of preoperative chemotherapy to three additional courses of chemotherapy (arm A), or chemoradiotherapy (arm B) postoperatively. The Maruyama Index (MI) was determined and used to predict overall survival. Multivariate logistic regression was used to determine factors associated with compliance for postoperative therapy.

Results: 646 patients were eligible for the current analyses. Surgicopathological compliance (at least 15 lymph nodes removed) was 71.1% (n = 459) and improved over the years from 57.1% (2007) to 89.5% (2015). Surgical compliance (i.e. D1+ or D2 dissection) was 85.6% (n = 553).

Almost half of patients (n = 298, 46.1%) developed complications, of which 144 (22.3%) were surgical complications. Anastomotic leakage was the most frequent surgical complication (n = 47, 7.3%). Age of 70 years or older (OR = 0.29; 95% CI 0.17–0.49) and the presence of surgical complication (OR = 0.58; 95% CI 0.36–0.92) were associated with a lower chance to receive postoperative treatment. The in-hospital mortality rate was 2.3%.

Conclusion: Surgicopathological compliance improved over the years as a result of quality assurance in the CRITICS trial. Although improvements in compliance were seen during a time period where centralization of gastric cancer surgery occurred, surgical quality assurance remains a crucial factor in randomized clinical trials. Results of the MI will be presented.

Conflict of interest: No conflict of interest.

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79. Laparoscopy-assisted versus open D2 distal gastrectomy for advanced gastric cancer: Results from a randomized phase II multicenter clinical trial (COACT 1001)

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Background: For advanced gastric cancer (AGC), D2 gastrectomy is the standard treatment worldwide, and this procedure shows improved

survival. One systematic review and several retrospective studies showed that overall survival rate and disease-free survival following laparoscopic D2 gastrectomy for AGC was not significantly different from ODG. In addition, we showed that the compliance rate of D2 lymph node dissection in LADG was not different from that in ODG in gastric cancer patients. Laparoscopic D2 gastrectomies are technically challenging, and their oncologic safety has not been proven by a prospective randomized controlled trial. This study was a multicenter, prospective, randomized phase II study to evaluate the feasibility of LADG with D2 lymph node dissection compared with ODG for AGC treatment.

Methods: Patients with cT2–T4a and cN0–2 (AJCC 7th staging system) distal gastric cancer were randomly but not blindly assigned to LADG or ODG groups using fixed block sizes with a 1:1 allocation ratio. The primary endpoint was the noncompliance rate of the lymph node dissection, which was used to evaluate feasibility. Secondary endpoints included 3-year disease-free survival, 5-year overall survival, complications, and surgical stress response.

Results: Between Jun 2010 and Oct 2011, 204 patients were enrolled and underwent either LADG (n = 105) or ODG (n = 99). Of those, 196 patients (100 in LADG and 96 in ODG) were included in the intention-to-treat analysis. There were no significant differences in the overall noncompliance rate of lymph node dissection between LADG and ODG groups (47.0% and 43.2%, respectively; p = 0.648). In the subgroup analysis, the noncompliance rate in the LADG group was significantly higher than in the ODG group for clinical stage III disease (52.0% vs 25.0%, p = 0.043). Three-year disease-free survival was not different in between the groups (LADG, 80.1%; ODG, 81.9%; p = 0.448). Postoperative complication rate and surgical stress response were not different between the groups.

Conclusions: LADG was feasible for AGC treatment based on the noncompliance rate of D2 lymph node dissection.

Conflict of interest: No conflict of interest.

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80. EORTC-1409: An EORTC-ESSO prospective colorectal liver metastasis database with an integrated quality assurance program (CLIMB) NCT02218801

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Background: For patients with unresectable colorectal liver metastases (CRLM), several oncological and surgical strategies have evolved to increase both the probability of achieving R0 surgery and future liver

remnant volume. There is a need to benchmark variations in surgical care and propose a minimum set of quality standards for liver metastasis surgery in Europe. With the goal to improve the standards of surgical oncology research, The European Organization for Research and Treatment of Cancer (EORTC) and European Society of Surgical Oncology (ESSO) developed a prospective database to evaluate the outcome of patients who undergo different treatment strategies including surgery and systemic therapy and to propose quality indicators for complex liver metastasis surgery.

Materials and methodology: CLIMB is a prospective observational cohort study where patients with unresectable and borderline resectable CRLM are registered after being discussed in a multidisciplinary tumor (MDT) board. Assessment of resectability, treatment plan, systemic and surgical treatments administered, post-operative complications, and survival data are prospectively collected. Primary endpoints are 30 and 90-day complication rates and a proposal for quality indicators in liver metastasis surgery. At least 200 patients need to be registered to reach 100 post-operative patients for the primary analysis. Progression-free and overall survival data will be analyzed after post-operative patients have been followed up for 2 years. A QA program has been set up. It involves site visits, observation of the MDT, medical review and early feedback with the local surgical team to ensure prospective inclusion of patients and consistency in documenting post-operative outcomes. This will address the expected heterogeneity in the patient population and will be the basis for a continued QA program beyond this study.

Results: The study is actively recruiting 92 patients with unresectable CRLM from highly specialized centers for complex liver surgeries across Europe have been registered. Variations in the use of imaging modalities, tumor biomarker assessments, pathology evaluation reporting and regimens for systemic treatment have been documented. Impact of these parameters on resection rates, surgical and long-term outcomes will be analyzed and will be the basis for benchmarking in CLIMB.

Conclusion: A prospective outcomes research is a feasible way to engage dedicated teams to obtain high quality real-world data in a surgical study. The “CLIMB model” of an international prospective database of surgical outcomes can be used to complement data from randomized controlled trials and map out cost-effective solutions to improve patient care. The EORTC-ESSO collaboration is the first step to establish a global surgical oncology research QA initiative.

Conflict of interest: No conflict of interest.

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81. First results of the International Watch & Wait Database (IWWD) for Rectal Cancer

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Background: In 2014 the International Watch-and-Wait Database (IWWD) for rectal cancer was established under the umbrella of EUR-ECCA and the Champalimaud Foundation. The main goal of this database is to collect all available retrospective and prospective data to expand knowledge on the benefits, risks and oncological safety of organ preserving strategies in rectal cancer (Beets, ESJO 2015 41(12):1562–4). In April 2015 the database was opened for data registration. At this point, over 600 patients are included.

Methods: An international multicentre retrospective observational study. Data was collected by participating centres and stored in a highly secured NEN7510 certified and encrypted research data server. Each centre always retains full ownership of their data. For this analysis we selected all data from patients retrospectively included in the database.

Results: 511 patients are retrospectively registered in the database. These patients originate from 10 countries and 32 participating centres. The year of decision for a Watch-and-Wait regimen ranges between 1991 and 2014. Reason for patient inclusion was mainly clinical complete (88.8%) or clinical near complete (7.4%) response. Less than 2% of all cases were included because surgery was not possible or patient refused surgery. As shown in Table 1 imaging modalities used at baseline were variable, most frequently used modalities are colonoscopy and MRI. Induction therapy consisted in 87.8% of a variable chemoradiation schedule. A minority received radiotherapy or chemotherapy alone. Surgery for distant metastasis at baseline was performed in 3 cases (0.6%). Tumour response after induction therapy was mostly stated as definitely (56%) or probably (27.8%) no residual tumour. Median follow-up was 2.5 years (range 0–23.4 years). Local regrowth occurred in 26% of all cases (n = 133). In 7% (n = 36) distant metastasis were diagnosed during follow-up.

Conclusions: This is the largest retrospective series of patients with rectal cancer in which surgery was waived after induction therapy. These data illustrate differences in induction therapy as well as baseline or follow-up imaging strategies worldwide. Prospective data collection on the Watch-and-Wait strategy for rectal cancer is needed as this will increase our knowledge on oncological safety of omitting surgery and may contribute to international consensus on staging, treatment and surveillance protocols in rectal cancer care.

		N = 511
Sex	Male	328 (64.2%)
	Female	183 (35.8%)
Age	Mean	62.81
BMI	Mean	26.9
Baseline imaging	Colonoscopy Endo/rectoscopy	343 (67.1%)
	MRI	270 (52.8%)
	ERUS	371 (72.6%)
	CT-pelvis	59 (11.5%)
	PET-scan	22 (4.3%)
T stage baseline	cT1	9 (2.3%)
	cT2	96 (24.9%)
	cT3	257 (66.9%)
	cT4	21 (5.5%)
N stage baseline	cN0	154 (39.8%)
	cN1	143 (37.5%)
	cN2	86 (22.2%)
M stage baseline	M0	466 (98.3%)
	M+	8 (1.6%)
Induction therapy	CRT	476 (87.8%)
	Chemotherapy Radiotherapy	14 (2.7%) 21 (4.1%)

Conflict of interest: No conflict of interest.

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82. Optimal treatment of the axilla after positive sentinel lymph node biopsy in primary invasive breast cancer: OTOASOR Trial, a randomized, single centre, phase III, non-inferiority trial

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Introduction: The National Institute of Oncology, Budapest conducted a single centre randomized clinical study. The OTOASOR (Optimal Treatment Of the Axilla – Surgery Or Radiotherapy) trial compares completion axillary lymph node dissection (cALND) to axillary nodal irradiation (ANI) in patients with sentinel lymph node (SLN)–positive primary invasive breast cancer.

Methods: Patients with primary invasive breast cancer (clinically lymph node negative and less than or equal to 3 cm in size) were randomized before surgery for cALND (arm A-standard treatment) or ANI (arm B-investigational treatment). SLNB was performed by the radio-guided method. The use of blue-dye was optional. SLNs were investigated with serial sectioning at 0.5 mm levels by haematoxylin and eosin staining. In the investigational treatment arm patients received 50 Gy ANI instead of cALND. Adjuvant treatment was recommended and patients were followed up according to the actual institutional guidelines.

Results: Between August 2002 and June 2009, 2106 patients were randomized for cALND (arm A-standard treatment, 1054 patients) or ANI (arm B-investigational treatment, 1052 patients). SLN was identified in 2073 patients (98.4%) and was positive in 526 patients (25.4%). Fifty-two SLN-positive patients were excluded from the study (protocol violation, patient's preference). Out of the remaining 474 patients, clinical and tumor characteristics were similar between 244 patients randomized to cALND and 230 randomized to SLNB plus ANI. Primary endpoint of the study is axillary recurrence and secondary endpoints are overall survival, breast cancer specific survival, disease-free survival, distant disease-free survival. We note high correlations by non parametric correlation matrix analysis between palpability with type of breast procedure, histological tumour size, pT category and SLN metastasis category. Mean length of follow-up is was 97 months (Q–Q3 80–120, range 54–134). Axillary recurrence (primary end point) was 2.0% vs 1.7% (p = NS). The 8 years overall survival was 77.9% vs 84.8%; disease-free survival was 72.1% with cALND and 77.4% with SLND plus ANI.

Conclusions: Eight years follow-up data of our OTOASOR trial suggest that ANI without cALND does not increase the risk of axillary failure in SLN+ patients.

Conflict of interest: No conflict of interest.

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83. Risk factors for surgical morbidity in older women with breast cancer: An interim analysis of the Bridging the Age Gap in Breast Cancer Study

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Background: Morbidity rates following breast cancer surgery are reportedly low. However there is little data on surgical morbidity in older patients undergoing breast cancer surgery and few that have systematically assessed the impact of pre-morbid fitness and frailty. This study has analysed surgical morbidity in a large, multi-centre, prospectively collected cohort of older women undergoing breast cancer surgery in the UK and stratified outcomes according to age, surgery type, co-morbidity and frailty.

Material and methods: The Age Gap Study is a large, UK multi-centre prospective cohort study of older women with early breast cancer. This represents an interim analysis of surgical outcomes. The incidence and severity (CTCAE classification) of postoperative systemic or local wound complications following breast cancer surgery were analysed. Outcomes were analysed according to age, modified Charlson Co-morbidity Index (CCI), Activities of Daily Living (ADL) score and type of surgery, classified as either minor (wide excision, SLNB) or major (mastectomy, axillary clearance, reconstruction). Odds ratios for the occurrence of wound/systemic complications were derived using multivariable logistic regression in the statistical package SPSS.

Results: Data was available for 1965 patients recruited between April 2013 and December 2015, from 51 UK hospitals, of which 1383 had surgery (70.4%). Median age of the surgical cohort was 76 years (70–95). Risk of postoperative complications was significantly higher with major vs minor surgery: Odds Ratio 1.39 (95% CI 1.05–1.84), $p < 0.05$ vs 2.32 (1.11–4.84), $p < 0.05$ for developing wound and systemic complications, respectively. No deaths related to breast surgery were recorded. Surgical morbidity rates were slightly higher in patients with CCI scores of ≥ 3 (moderate to severe co-morbidity) or in the presence of dependency in one or more ADL categories. This was not statistically significant.

Conclusions: Major surgery was associated with an increased risk of postoperative morbidity in the Bridging the Age Gap study of older patients undergoing breast cancer surgery in the UK. However, no mortality from breast surgery was observed, nor a significant association with frailty, as assessed by co-morbidity and dependency. These data may aid in selection of surgery for older breast cancer patients.

Abstract 83

Variable		OR for occurrence of wound complications	p-Value	95% CI	OR for occurrence of Systemic complications	p-Value	95% CI
Age	Per year over 70	1.01	0.39	0.99–1.04	1.01	0.82	0.94–1.08
ADL score	Dependent vs independent	1.34	0.18	0.87–2.07	1.05	0.93	0.35–3.12
CCI score	3+ vs 0	1.36	0.17	0.88–2.09	2.27	0.11	0.83–6.24
Type of surgery	Major vs minor	1.39	0.023*	1.05–1.84	2.32	0.026*	1.11–4.84

* indicates statistical significance at 5% level.

Conflict of interest: No conflict of interest.

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84. Complications in primary versus secondary deep inferior epigastric artery perforator (DIEP) flap breast reconstructions: A multicentre study

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Background: There is general agreement that immediate breast reconstruction after mastectomy is an integral part of the complete management of breast cancer. However, the number of primary autologous breast reconstructions performed – with the deep inferior epigastric perforator (DIEP) flap as first choice – is still limited. A possible reason for this could be that the complication rate of

primary autologous breast reconstruction is higher as compared to delayed reconstruction. This multicentre study compares the complication rate in primary versus secondary DIEP flap breast reconstructions.

Material and methods: Between January 2010 and December 2014 a total of 490 free DIEP flap breast reconstructions were performed in 406 patients in one university hospital (n = 278) and two community hospitals (n = 112 and n = 100) in the Netherlands. All DIEP flap breast reconstructions were performed by the same group of plastic surgeons. Medical records were searched retrospectively, documenting patient characteristics, risk factors and the occurrence of major or minor complications at the recipient site. Major complications were total or partial flap loss and venous congestion requiring re-exploration of the flap. Minor complications were infection, hematoma, seroma, fat necrosis, and wound problems (dehiscence, superficial skin necrosis, and/or delayed wound healing). Post-operative flap re-explorations and reanastomoses were also examined.

Results: A total of 197 primary (40.2%) and 293 secondary (59.8%) DIEP flap breast reconstructions were performed in 145, and 261 patients respectively. Major complications occurred in 10.2% primary versus 8.5% secondary DIEP flap breast reconstructions ($p = 0.543$). Patients suffered significantly more frequent from wound problems (primary 5.1% versus secondary 13.7%; $p = 0.002$) in secondary reconstructions. Minor recipient site complications, the amount of re-explorations of the flap (12 in primary reconstructions versus 16 in secondary reconstructions; $p = 0.768$), and reanastomoses (9 primary versus 9 secondary; $p = 0.388$) were not significantly different in both groups. Also, the result in terms of flap viability after re-exploration of the flap was not significantly different (66.7% vital flaps after re-exploration in primary reconstructions versus 50.0% in secondary reconstructions; $p = 0.378$).

Conclusions: Primary autologous DIEP flap breast reconstructions can be safely performed without an increase in complication rate as compared to secondary reconstructions. In secondary reconstructions wound problems at the recipient site occurred more frequent. This study shows that the complication rate is no justification to perform a delayed autologous breast reconstruction rather than primary.

Conflict of interest: No conflict of interest.

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85. Sentinel node biopsy before neoadjuvant chemotherapy in breast cancer: A Swedish multicenter study

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Background: Sentinel lymph node-biopsy (SLNB) is now standard procedure for axillary staging in early breast cancer with higher accuracy and considerably less associated arm morbidity compared to axillary

lymph node dissection (ALND). In the neoadjuvant setting, ALND has been, and still is, the standard staging procedure. Since neoadjuvant chemotherapy is currently not only indicated in locally advanced and inflammatory breast cancer, but also in operable breast cancer for downsizing purposes making them candidates for breast conserving surgery, half of the women planned for neoadjuvant treatment (NAC) are lymph node negative at diagnosis and up to 50% of the lymph node positive women will convert during treatment. These women will not benefit from ALND, instead they are at risk of permanent arm morbidity.

The primary aim of study I is to evaluate if a negative SLNB before NAC is accurate and if ALND after NAC can be safely avoided. A secondary aim is to see if a repeat SLNB can be identified after NAC and if it is reliable so that SLNB positive women who are downstaged after NAC, also could be spared an ALND. There is also a study II, not presented in this abstract, in which clinically node positive women planned for NAC have SLNB performed after NAC together with ALND.

Material and methods: Swedish prospective multi-centre study in which clinically, sonographically and cytologically node negative women planned for NAC were eligible for SLNB performed before NAC, and also a repeat SLNB after NAC together with breast surgery and ALND, between October 2010 and December 2015.

Results: Of 221 patients included in study I, 215 are so far ready for data analysis. The detection rate for SLNB performed before NAC was 98.1% (211/215). Repeat SLNB was performed in 93 of 215 patients. The detection rate for repeat SLNB was 68.8% (64/93). 107 patients had a positive SLNB before NAC, 93 had macro- and 14 micrometastasis. In 98 out of 107 women with data after NAC, 24 still had, but 74 had no residual axillary metastases. 108 patients had a negative SLNB before NAC and in 103 women with data after NAC, we found eight women with axillary metastases (8/115 = 7%).

Conclusions: SLNB before neoadjuvant treated breast cancer had in this national multi-centre study a high detection rate (98.1%) and a false negative rate of 7.0% which is in level with primary operated early stage breast cancer. However, of note is that these women with negative SLNB upfront but nonetheless positive axillary lymph nodes after NAC have already had chemotherapy and will probably not be offered regional radiotherapy.

Conflict of interest: No conflict of interest.

<http://dx.doi.org/10.1016/j.ejso.2016.06.091>

16 September 2016 14:00–15:30 Proffered Paper: Breast Cancer II

86. Oncological safety of breast-conserving surgery after neo-adjuvant chemotherapy in locally advanced breast cancer patients

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Background: Breast-conserving surgery (BCS) after neo-adjuvant chemotherapy (NAC) has gradually been used even in locally advanced breast cancer (ABC) patients. The aim of this study was to retrospectively assess the oncological safety of BCS after NAC in terms of Ipsilateral Breast Tumor Recurrence (IBTR) in ABC patients.

Material and methods: The subjects comprised of 228 breast cancer patients who underwent BCS after NAC between 2006 and 2013 in National Cancer Center Hospital, Tokyo. In this study, we defined cStageIII as ABC. Of 228 patients, 171 patients were cStageII (non-ABC), and 57 patients were ABC. We divided IBTR into 2 categories (1. IBTR without distant metastasis (IBTR (-DM)). 2. IBTR accompanied with DM (IBTR (+DM)). We analyzed each IBTR-free survival between ABC and non-ABC by using a Kaplan–Meier analysis, and evaluated the predictors for each IBTR by using Cox proportional hazards modeling.

Results: There was significant difference in ten-year IBTR (-DM)-free survival between ABC and non-ABC groups (91.1% versus 98.2%; $P = 0.032$). Although ABC was a predictor of IBTR (-DM), IBTR (-DM) itself did not affect the incidence of DM (Hazard ratio; 1.96, 95% confident interval (0.2–15.7), $P = 0.527$) On the other hand, there was no significant difference in ten-year IBTR (+DM)-free survival between ABC and non-ABC groups (92.2% versus 96.7%; $P = 0.202$), and ABC was not a predictor of IBTR (+DM). In a multivariate analysis, lymphovascular invasion (LVI), pathological chemo-sensitivity, margin status, higher histological grade, and ABC were independent predictors of DM, and DM (+IBTR) did not show worse outcome compared with DM (-IBTR).

Conclusions: BCS after NAC in ABC is oncologically acceptable in terms of IBTR regardless of DM. Biological features such as LVI, histological grade, and chemo-sensitivity were important factor to achieve oncological safety of BCS after NAC in ABC.

Conflict of interest: No conflict of interest.

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87. Breast cancer patients undergoing mastectomy and immediate breast reconstruction: Does BRCA carriers have different outcomes?

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Background: Approximately 5–10% of all breast cancers are hereditary. Although tumor histopathologic features are different in BRCA1 carriers compared with BRCA2 carriers and noncarriers, some studies have shown that overall prognosis of breast cancer in BRCA carriers is similar to sporadic breast cancers while others have reported worse survival. We aim to compare disease free survival and overall survival between sporadic cancers and BRCA carriers who have undergone mastectomy and immediate breast reconstruction.

Material and methods: A total of 176 women who underwent mastectomy and immediate breast reconstruction between January 2010 and December 2014 were included in the study. Of these, 138 were non carriers and 38 were BRCA carriers. The Kaplan–Meier method was used to estimate disease free survival and overall survival rates.

Results: BRCA noncarriers tended to be older ($P = 0.002$) and were more likely to have N1 disease ($P = 0.03$), ER-positive ($P < 0.001$), PR-positive ($P = 0.001$), HER2-positive ($P = 0.04$), low histologic grade ($p = 0.001$) and Ki 67% $< 15\%$ ($p = 0.04$) tumors compared with BRCA carriers. At a median follow up of 3 years, 8 (4.6%) patients have developed a disease recurrence or metastasis. There were no significant differences in disease free ($p = 0.4$) or overall survival ($p = 0.8$) outcomes with respect to BRCA status.

Conclusions: Despite having initially poor prognostic features, overall prognosis of breast cancer in BRCA carriers is similar to that of sporadic breast cancers. Studies with larger prospective cohorts and longer follow-up are needed to validate these findings.

Conflict of interest: No conflict of interest.

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88. Validity of Oncotype Dx recurrence score in predicting recurrence in hormone receptor positive and node negative early breast cancer patients

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Background: The impact of Oncotype Dx testing in decision making for adjuvant therapy in early stage breast cancer patients with oestrogen receptor (ER) positive and axillary lymph node negative disease is well established in literature. The primary objective of this study was to determine the long term outcome of patients undergoing oncotype Dx testing at our institute.

Methods: Between 2009 and 2013, 195 patients with ER positive and axillary lymph node negative breast cancer underwent the Oncotype Dx test. Data were collected regarding the Oncotype Dx recurrence score, ER status, progesterone receptor (PR) status, and HER2 gene amplification. Other clinical and pathological variables, treatment with chemotherapy, and follow-up for local and distant recurrences were also evaluated.

Results: The median age of the patients was 58 years (range 37–76 years). One hundred and fifty-six (80%) patients had an infiltrating ductal carcinoma; 28 (14.4%) had an infiltrating lobular carcinoma and 11 (5.6%) had a special type of breast cancer. The majority of patients had grade 2 tumours (128/195). A low recurrence score reported by Oncotype Dx was recorded in 104 patients (53.3%); 65 (33.3%) had an intermediate result; and 26 (13.3%) had high recurrence scores. Only 53 patients (27.2%) were treated with chemotherapy and endocrine therapy. This included 23 patients in the high recurrence group and 29 in the intermediate group. Three patients in the high recurrence group refused chemotherapy. The remaining 134 (68.7%) were treated only with endocrine therapy.

The median follow up was 51 months (range 14–69 months). During this period, six patients developed disease specific events. Two of these patients developed distant disease and died. Both of these patients had a high recurrence score (RS) (39 and 40) and they had received chemotherapy. One patient (RS 24) had distant disease and was alive at last follow up. Two other patients developed local recurrence (RS 23 and 14 respectively) and they had not received chemotherapy. A sixth patient developed disease in contralateral breast (RS 21). One other patient in the cohort died without any evidence of distant metastasis. The recurrence follow up was unknown for 7 patients.

Conclusions: With a median follow-up of 51 months, our data indicate that the actual recurrence rate for our cohort was 3.3% (6/183 patients). Our study confirms that Oncotype Dx is reliable in predicting the recurrence rate in node negative early breast cancer patients. Its use avoids unnecessary chemotherapy in many women shown to be at low risk.

Conflict of interest: No conflict of interest.

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89. The non-invasive treatment for sentinel lymph node metastasis by photodynamic therapy using verteporfin nanoparticles

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Introduction: Sentinel lymph node biopsy (SLNB) has become a standard procedure for axillary lymph node evaluation in clinically node-negative breast cancer patients. Recent trial suggested that patients with 1 or 2 sentinel lymph nodes (SLNs) involvement could be treated with SLNB alone.

Although SLNB is much less invasive procedure comparing with axillary lymph node dissection (ALND), it is still associated with complications such as lymph edema, numbness and pain.

Photodynamic therapy (PDT) against cancer is a non-invasive optical therapeutic method in which the topical or systemic delivery of photosensitizing drugs is followed by its subsequent activation with broadband red light.

In this study, the usefulness of PDT for treating SLN metastasis was evaluated in murine model.

Materials and methods: Verteporfin, a hydrophobic photosensitizer forms a soluble aggregate with PMB30W, the 2-methacryloyloxyethyl phosphorylcholine (MPC) polymer solutions. PMB30W-verteporfin aggregate was injected at dorsum manus of BALB/c nude mice. The concentration of verteporfin in tissues was determined by measuring the fluorescence emitted at 700 nm (with excitation at 430 nm). To develop a murine SLN metastasis model, 5×10^5 human epidermoid carcinoma A431 cells with stable expression of GFP were injected to the forearm of BALB/c nude mice. Seven days after inoculation of cancer cells, 20 μ l of PMB30W-verteporfin aggregate was injected at dorsum manus of BALB/c nude mice and 75 J of light energy was delivered using a 640 nm diode laser for a total treatment time of 1 min. Fifty-three mice were randomly assigned to the combination of PMB30W-verteporfin injection and light exposure, light exposure alone, PMB30W-verteporfin injection alone, and no treatment groups. Ten days after PDT, brachial lymph nodes which were considered as SLNs were harvested and evaluated by stereoscopic fluorescence microscope.

Results: The concentration of verteporfin in SLN was significantly higher than other organs including lung, liver, kidney and brachial skin.

The combination of PMB30W-verteporfin injection and light exposure group significantly reduced the SLN metastasis (13%) comparing with no treatment group (52%), light exposure alone group (57%) and PMB 30W-verteporfin injection alone group (46%).

Conclusions: These data suggested that PDT using PMB30W polymer as a nanotransporter of verteporfin could be a minimally invasive treatment of SLN metastasis in breast cancer, and represent a potential alternative procedure to SLNB.

Conflict of interest: No conflict of interest.

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90. Neurotisation in deep inferior epigastric artery perforator (DIEP) flap breast reconstructions: Our technique and results

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Background: Autologous breast reconstructions still often lack sensation. The hypothesis is that neurotisation in autologous breast reconstructions results in a better recovery of the sensation of the reconstructed breast, thereby improving the quality of life. The microsurgical technique of neurotisation in DIEP flap breast reconstructions is presented and the first results are reported.

Material and methods: During abdominal dissection of the DIEP flap the sensory nerves are identified. These nerves derive from intercostal nerve T11/T12 and often run together with the dominant perforator vessels above the fascia. Under the fascia, the sensory nerve is dissected up to the point where the motor branch splits off. Direct neurotisation by end-to-end anastomosis is performed to the anterior intercostal nerve branch in the

second or third intercostal space. Sensation was tested by one researcher using Semmes–Weinstein monofilaments in a predetermined pattern.

Results: Between August 2012 and February 2016 neurotisation was performed in 50 DIEP flap breast reconstructions in 39 patients. Lower pressure thresholds were found for DIEP flap breast reconstructions with neurotisation compared to DIEP flaps without neurotisation. The sensation of the reconstructed breast improved over time from a threshold of 60 g of pressure (monofilament 5.88 after mean 3 months) to almost 1 gram (3.91 after mean 16 months). Without neurotisation it only improved from 100 g of pressure (6.07 after mean 4 months) to 35 g (5.57 after mean 28 months). There are no additional risks involved, but the operation time is extended by 20–30 min.

Conclusions: The sensation of the reconstructed breast seems to improve more after neurotisation in DIEP flap breast reconstructions compared to without neurotisation, with no additional risks for the patient. An experienced microsurgeon is capable of performing this extra procedure. Although the first results are promising, more research is needed to confirm these results.

Conflict of interest: No conflict of interest.

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91. Efficacy of multidisciplinary meetings on breast cancer outcomes. A systematic review and pooled analysis. European Commission Initiative on Breast Cancer, Quality Assurance Scheme Development Group, and Iberoamerican Cochrane Centre contributed S. Deandrea, L. Pylkkänen, M. Ambrosio, L. Neamtii, Z. Saz-Parkinson, A. Bramesfeld, A. Uluturk, D. Lerda
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Background: In developed countries, treatment of breast cancer has increasingly been provided within centralised, specialist multidisciplinary teams for optimal decision-making in diagnosis, treatment and support of patients. Although multidisciplinary meetings (MDM) are empirically considered a key factor in the improvement of coordination of care, a systematic assessment of their impact on breast cancer outcomes is still lacking.

Methods: We undertook a systematic review following standard Cochrane Collaboration methods. We included studies that assessed MDM (onsite or remote meetings) versus non-MDM for breast cancer patients and measured the following outcomes: 5 (or 10)-year breast cancer mortality; 5 (or 10)-year breast cancer recurrences (local-regional and distant separately); 5(or 10)-year breast cancer specific survival; adverse events related to breast cancer treatment; long-term adverse events possibly related to breast cancer treatment; satisfaction of women with the communication of the treatment decision. We searched the following databases: The Cochrane Database of Systematic Review, The Database of Abstracts of Reviews of Effects (DARE), MEDLINE, EMBASE, CINAHL, PDQ, and McMaster Health Systems Evidence, till November 2015. All languages were considered. We conducted a pooled analysis under the random-effects model. We also undertook a scoping review for resource use considerations and women's values and preferences.

Results: We included 5 observational studies with a total of 42293 women. The quality of the evidence was low or very low, principally because of risk of bias and imprecision. No studies provided information about: 10-year mortality due to breast cancer, 10-year breast cancer specific survival, 5 or 10-year breast cancer recurrence, or adverse events. Two studies analysed 5-year mortality due to breast cancer, favouring the MDM group (RR 0.82, 95% CI 0.73–0.91). Two studies calculated HR for 5-year mortality, favouring the MDM group (HR 0.83, 95% CI 0.78–0.89). One study reported 5-year breast cancer specific survival favouring the MDM group intervention (RR 1.04, 95% CI 1.02–1.07). A controlled cohort study assessing satisfaction of 186 women with the communication of the treatment decision favoured the MDM group (RR 1.28, 95% CI 1.06–1.54). We could not identify relevant economic evidence.

Conclusions: There is some evidence that having MDMs as part of the treatment processes in breast cancer care is associated with improved outcomes. However, the low quality of studies retrieved would recommend well-designed studies on the topic.

Conflict of interest: No conflict of interest.

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92. Oncoplastic techniques in upper-lateral tumor location: Development of classical and introduction of modern techniques A. Zhygulin¹, V. Palysia¹, O. Dmytrenko¹, D. Vinnyska¹, V. Bondarenko²

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Backgrounds: Breast tumors occur mostly in the upper-lateral quadrant (ULQ). We present our 9-year experience of the first in Ukraine Breast Unit, organized in accordance with EUSOMA criteria, in oncoplastic techniques which allow preventing the breast deformities after tumor excision.

Methods: All the patients were discussed on the multidisciplinary meeting according to the international guidelines. All patients were involved into decision-making process. We've chosen oncoplastic techniques according to the breast and tumor size, breast ptosis grade, breast and skin tissue quality and patients preferences and offered the new modification of the technique. For tumors located in ULQ we used level 1 technique (LIT) and wide local excision (WLE), racquet technique (RT), B-plasty, S-plasty and Z-plasty, periareolar mammoplasty (PM), different types of horizontal plasty (HP), rotational flap (RF), inferior flap (IF), modified Ribeiro therapeutic mammoplasty (MRTM), different types of lateral thoracic flap (LTF), LD-mini flap (LDMF) and LICAP-flap. We've also offered the new technique – combination of Rotational Glandular and Lateral Thoracic flaps – the Rotation Advancement flap (RAF). We use a wide portion of axillary region joins with lateral section of the breast according to the natural borders and points to compensate the defect after tumor removing. We've developed detailed marking plans and performed the analysis and photos of all patients during treatment.

Results: 352 oncoplastic breast conserving surgeries for 345 patients were performed in our hospital during 2007–12.2015. 151 (43.8%) patients had tumors in ULQ and 154 surgeries were performed for them. We had performed 3 (2%) bilateral surgeries and 10 (6.6%) symmetrized. Mainly we used LIT and WLE – in 43 (27.9%), RT – in 6 (3.9%), PM – in 6 (3.9%), RAF – in 30 (19.5%), LTF – in 20 (13.0%), MRTM – in 14 (9.1%), IF – in 11 (7.1%). We also used LDMF and LICAP-flap in 3 (1.9%) and 3 (1.9%) patients respectively. The average age was 55 (30–85). The average weight of specimen was 114 (8–554) g, and size – 3.47 (0.5–15) cm. ALND were performed in 64 (41.6%) cases, SLNB – in 96 (62.3%). All kinds of early complications were observed in 37 (24.0%) cases. Most of them were seromas (15). We followed up 124 (82.1%) patients during 33 (6–103) months and found out 4 (2.6%) local, 15 (9.9%) systemic recurrences and 10 (6.6%) patients died.

Conclusion: Different techniques can be successfully used to prevent the deformity in the ULQ. Most effective are therapeutic mammoplasties and volume replacement techniques. New simple modification of local flap – Rotation Advancement flap with tissue mobilization from axillary region according to the natural points of rotation and borders allows getting excellent results and avoiding symmetrized procedures.

Conflict of interest: No conflict of interest.

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93. The impact of the Oncotype Dx recurrence score on treatment decisions and clinical outcomes in patients with early stage lobular breast cancer

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Background: Oncotype Dx (ODX) has been used to estimate the prognosis and predict benefits from adjuvant systemic treatment in patients with estrogen receptor-positive, node-negative invasive breast tumors. The impact of ODX assay testing in patients with invasive lobular carcinoma (ILC) has been reported by a few authors. We describe our experience and long term results in patients with ILC who underwent ODX assay testing and subsequent adjuvant treatment and compared them with patients who had infiltrating ductal carcinomas (IDC).

Material and methods: All cases with invasive lobular carcinoma and ductal carcinomas that underwent ODX testing from Jan 2010 till Dec 2014 were identified from a clinical data base. The histopathologic and immunohistochemical features and recurrence score for each patient, treatment regimen and medical oncologic assessments of each patient and long term outcome at last follow-up were reviewed.

Results: Two hundred and eleven patients underwent ODX testing of early stage, node-negative breast cancer. Of these 28 (13.3%) were ILC and 183 (86.7%) were IDC. The median age was 55 years for patients with IDC and 59 years for ILC (p value 0.037). The mean tumor size for patients with IDC was 20 mm vs 29.7 mm for patients with ILC. Most of the tumors in the ILC cohort were grade 2 (85.7% vs 63.4%). In the IDC group 110 (60%) of cases were low risk, 44 (24%) were intermediate risk and 29 (16%) were high risk. Whereas, in ILC group 15 (53.6%) of cases were low risk, 11 (39%) were intermediate risk and 2 (7.4%) were high risk (p value 0.16).

Adjuvant chemotherapy was used in 28.6% of patients with ILC, 30% of patients with IDC. The recurrence scores resulted in change of decision in 37.7% of patients with IDC vs 43% of patients with ILC. Follow-up data was available for 201 patients. With a median follow up of 45 months (range 1–69 months), there were 6 significant events – 3/174 in patients with IDC and 3/27 in patients with ILC (p value 0.026). Of the three patients with ILC, one had within breast recurrence, one developed contralateral disease (RS 23 and 21 respectively) and one had systemic recurrence and she died (RS 39). In the IDC cohort, two patients developed systemic disease of whom one died (RS 40 and 24 respectively) and one had local chest wall recurrence (RS 14). One non tumor related death was noted in our cohort.

Conclusions: ODX testing for early stage node-negative lobular breast cancer patients plays an equally important role in treatment decisions. The long-term impact on survival in patients with ILC remains undetermined and warrants further investigation.

Conflict of interest: No conflict of interest.

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94. Sentinel node biopsy with superparamagnetic iron oxide (SPIO) in early breast cancer patients: 3 years follow up of the newly implemented method

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Background: Sentinel node biopsy (SNB) is the standard staging procedure in node negative breast cancer. The “gold standard” for SNB is an isotope technique (radiotracer alone) or the combine technique (blue dye + radiotracer). SNB with the superparamagnetic iron oxide (SPIO) is a new magnetic method of detection without drawbacks of isotope detection. Purpose of the present study was evaluation of the new technique of SNB after 36 months of follow up.

Materials and methods: Between 01/2013 and 10/2015 118 women (age: 33–74) with confirmed node negative breast cancer underwent SNB using both methods: SPIO (Sienna+[®], Endomagnetics Ltd., Cambridge, UK) and a handheld magnetometer (SentiMag[®], Endomagnetics Ltd., Cambridge, UK) and isotope (^{99m}Tc nanocolloid) in two breast cancer units. Follow up time ranged from 2 to 36 months.

Results: One hundred eighteen pts/118 SNB were evaluated. Staging: pTis: 5, pT1b: 12, pT1c: 65 (55%), T2: 37. Sixty five pts using both methods (^{99m}Tc+SPIO), 53 SPIO only. Breast conservative surgery was performed in 97 (82.2%) pts, oncoplastic techniques in 35 (36%) pts, mastectomy in 17 (14.4%) pts, NSM+IBR in 4 (3.3%) pts. The identification rate: 95.3% (62/65) for SPIO vs 95.3% (62/65) for ^{99m}Tc; 96.6% (114/118) for SPIO only. Two hundred seventeen SN were identified (average 1.83). SPIO migration time varied from 15 to 65 min. (average 23.81). Positive SN(+) occurred in 19 (16.1%) pts. Twenty three (19.4%) pts underwent previous breast surgery (lumpectomy/WLE). In this group of pts SN identification rate for SPIO was 95.6%. Twelve SNB were done after preoperative chemotherapy with 100% SPIO identification rate. Two pts underwent re-SNB with only SPIO nodal detection. No recurrence in the axilla or post-op complications (no brownish pigmentation in injection site) was observed in the follow-up period.

Conclusions: In the 3 years follow up the ferro-magnetic technique proved to be easy to implement and safe method of SNB with high identification rate, even in pts who underwent previous breast surgery or systemic therapy.

Conflict of interest: No conflict of interest.

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16 September 2016 14:00–15:30 Proffered Paper: Colorectal Cancer II

95A. Local recurrence in the lateral lymph node compartment in rectal cancer: Improved outcomes with induction chemotherapy combined with multimodality treatment

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Background: Lateral nodal disease is of major importance in the treatment of rectal cancer in the East, but a mostly neglected entity in the West. Recent literature however shows that in enlarged lateral nodes neoadjuvant chemoradiotherapy and total mesorectal excision is not sufficient, and up to 80% of the patients have a lateral nodal recurrence. In this study, the treatment of recurrences in the lateral compartment (latLRs) in a national tertiary referral center is evaluated.

Material and methods: Of 214 patients with locally recurrent rectal cancer who underwent multimodality treatment in the Catharina Hospital

in the last 10 years, a total of 51 patients with latLR were selected (the latLR region was classified as upper, middle, or lower). Thirteen (25%) of these patients received induction chemotherapy prior to chemo(re) irradiation.

Results: LatLRs occurred mainly after low and N+ primary tumors. Seven (14%) patients had a complete response (pCR) and 28 (55%) underwent an R0 resection. Patients with a lower latLR had the highest chance of undergoing an abdominoperineal resection and resection of anterior organs. Induction chemotherapy resulted in a 31% pCR rate compared with 8% without it ($p = 0.039$). Patients who received induction chemotherapy had an 85% R0 resection rate, while this was 45% in patients who did not receive it ($p = 0.013$). The 5-year local re-recurrence (LRR) rate was 64.3%, and overall survival (OS) was 34.2%; the only factor improving these was an R0 resection. Five-year survival after multivariate analyses was 10.3% after an R+ resection compared with 66.8% after an R0 resection ($p = 0.011$).

Conclusions: LatLRs impose a major surgical challenge and result in high LRR and low OS. More R0 resections can possibly be achieved with induction chemotherapy, which is the only factor that can improve LRR and OS. Attention should be paid to prevent lateral nodal recurrence; current evidence and a multi-center pooled research proposal will be discussed.

Conflict of interest: No conflict of interest.

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95. Intensifying colorectal cancer follow-up – Survival analysis of the randomized multicenter CEAwatch trial

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Background: The multicenter randomized controlled trial “CEAwatch” showed that an intensified Carcinoembryonic Antigen (CEA)-based postoperative follow-up protocol for colorectal cancer patients provides the benefits of earlier detection time and increased curative treatment rate of recurrences compared to the current Dutch guideline. It is yet unknown whether this leads to long term survival benefits. The current study compares long term overall survival (OS) between patients with recurrent disease detected by the intensified CEA follow-up protocol and those detected by care as usual (CAU) in the CEAwatch trial.

Materials and methods: From all 3194 patients, all recurrences during the study period (Oct 2010–Oct 2012) were selected. For patients with a recurrence, the OS was compared for those detected by the intensified follow-up and by CAU using Cox regression adjusted for differences in detection time of recurrences as well as patients’ age, gender, primary tumour stage and hospital. The same analyses were performed to compare the OS of recurrences detected by different screening modalities (i.e., CT imaging, regular CEA, intensified CEA and self-reported physical complaints).

Results: 238 (7.45%) recurrent cases were included. No differences in survival time were found for OS comparing intensified follow-up to CAU follow-up (HR: 0.73, 95% CI: 0.46–1.17, p -value: 0.19). Furthermore, no survival benefits were found between detection by CT imaging, regular CEA and intensified CEA, but all three methods had better survival outcomes compared to detection via physical complaints.

Conclusion: No survival gain in favour of the intensified program is found. Whilst, patients detected by postoperative follow-up screening modality showed better survival compared to patients detected by physical complaints, supporting the importance of postoperative follow-up of colorectal cancer.

Conflict of interest: No conflict of interest.

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96. Role of lateral pelvic lymph node dissection in improving survival in low rectal cancer

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Background: The en bloc excision of primary tumor along with locoregional lymphadenectomy is the standard curative surgical treatment for rectal cancer. The development of local or locoregional recurrence is primarily due to sub-optimal surgical resection. The current standard technique of total mesorectal excision does not have satisfactory results in low rectal cancers. It has been stated that with the introduction of lateral pelvic lymph node dissection, local control has improved and survival is better in comparison to Western reports of surgery alone. We hypothesized that the rate of local recurrence in lower rectal cancers with LLND would be less if groups are balanced by minimization methods.

Material and methods: This was a prospective randomized study of 240 consecutive patients who underwent curative surgery as TME with LLND or TME alone for lower rectal cancer stage II and III, located at or below the peritoneal reflection. This study approved by institutional ethical board. After assessment of disease resectability and operability, the patients were randomized pre-operatively by third party with a ratio of 2:1. The groups were balanced by minimization methods for gender, age, clinical stage and pre-operative short course radiotherapy. The primary end point was disease free survival. The intra-operative and post-operative parameters as well as local control of disease were compared at the end of two years. The relation of lateral lymph node metastasis with clinicopathologic characteristics was also analyzed.

Results: One hundred sixty three patients were randomly allocated to TME with LLND (Group 1) and 77 patients to TME alone (Group 2), for a period of four years. Twenty patients with T1N0 tumor and 17 patients who were lost to follow up in both the groups were excluded from the study. Operation time was significantly longer in the Group 1 (median 294 min) than in Group 2 (214 min, $p < 0.001$). Blood loss was more in Group 1 (375 mL) than in Group 2 (305 mL, $p < 0.21$) but the difference was statistically insignificant. Twenty three (16.7%) patients had lateral pelvic lymph node metastasis in Group 1. Grade 3–4 postoperative complications were higher in Group 1 but the difference was statistically insignificant. The 2-year disease free survival in Group 1 was 94.9% and 86.2% in Group 2 ($p = 0.002$). Patients with metastatic lateral pelvic lymph nodes had a lower DFS in comparison with non-metastatic LPLN in Group 1 ($p = 0.042$).

Conclusions: Tumor location, transmural extension, presence of mesorectal lymph nodes in lower rectum and differentiation are significant risk factors for lateral lymph node metastasis. Lateral pelvic lymphadenectomy with TME in lower rectal cancer improves DFS. Lateral lymph node metastasis is an important predictor of local recurrence and DFS in patients with low rectal cancer.

Conflict of interest: No conflict of interest.

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97. Organ preservation for clinical complete and near complete responders after chemoradiotherapy for rectal cancer: Long-term results of 196 patients

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Background: Fifteen to twenty percent of the patients with locally advanced rectal cancer have a pathological complete response (pCR) after chemoradiotherapy (CRT). These patients have an excellent long-term outcome. Organ preservation strategies like a watch-and-wait strategy (W&W) or a local excision (TEM) could be a good alternative to TME resection in selected patients. The aim of this prospective cohort study was to evaluate the long-term oncological outcome of patients with a (near) complete response (cCR), who are treated with organ preservation. This report is on behalf of the Dutch Wait-and-See Group.

Material and methods: Patients with a cCR were prospectively selected for the W&W-policy; near cCR had transanal endoscopic microsurgery (TEM). The selection of these patients was performed with MRI and endoscopy. Stringent follow-up, using CEA, CT, MRI and endoscopy, was performed 3-monthly during the first year, and 6-monthly thereafter. Recurrence rates and survival analyses were estimated using Kaplan–Meier curves.

Results: One-hundred ninety-six patients were included (66.3% male, mean age: 63.7 years). The median follow-up was 15.2 months (IQR 6.6–39.9), and 78 patients (40%) had a follow-up of at least 2 years. There were 176 patients in the W&W-group and 20 patients in the TEM-group (ypT0: 10, ypT1: 3, ypT2: 7). Twenty-seven of the 196 patients (13.8%) treated with an organ-preserving treatment developed a local regrowth within the lumen (n = 21, W&W: 18, TEM: 3), in a lymph node (n = 4, W&W: 2, TEM: 2) or in both (n = 2, W&W: 2). All local regrowths occurred within the first 2 years. All patients were salvageable by TEM or TME surgery. Six patients (3.1%) developed metastases (W&W: 4 & TEM: 2). Two-year local regrowth-free survival is 82.1%. Two-year disease-free and overall survival are 81.7% and 98.3% respectively.

Conclusions: Organ preservation for clinical complete and near complete responders after chemoradiotherapy for rectal cancer patients show excellent long-term outcomes. This organ-saving treatment appears oncologically safe when combined with good selection criteria and stringent follow-up.

Conflict of interest: No conflict of interest.

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98. Perioperative outcomes of cytoreductive surgery and hyperthermic intra-peritoneal chemotherapy versus cytoreductive surgery alone for colorectal peritoneal carcinomatosis: PRODIGE 7 randomized trial
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Background: Although the feasibility of CRS plus HIPEC has been evaluated in numerous studies, the mortality and morbidity rates of CRS alone have not been investigated and compared with those of CRS plus HIPEC. The objective of the study was to evaluate the influence of hyperthermic intraperitoneal chemotherapy (HIPEC) on post-operative outcomes,

after cytoreductive surgery (CRS) for the treatment of peritoneal carcinomatosis (PC) of colorectal origin.

Patients and methods: Between February 2008 and January 2014, 265 patients were randomly assigned to be treated with either CRS plus HIPEC with oxaliplatin or CRS alone, in association with systemic chemotherapy, in this multicenter phase III trial (NCT00769405). Randomization was allowed after complete or sub-complete (residual tumor nodules <1 mm) macroscopic resection. Complications were graded in accordance with CTCAE v3.0 classification.

Results: There were no significant differences between the two groups in the carcinomatosis extent and magnitude of surgery. At 30 days, the overall mortality rate was 1.5% in both groups. Overall grade 3–5 complications rate at 30 days was 34.7% and was similar between HIPEC and control groups (39.8% vs 29.6%, p = 0.078). Grade 3–5 peritoneal hemorrhage was the only intra-abdominal complication significantly more frequent in the HIPEC group (8.3% vs 2.3%, p = 0.050). Grade 3–5 extra-abdominal morbidity rates were 24.8% and 20.5%, respectively (p = 0.397). At 60 days, grade 3–4 morbidity was significantly increased in the HIPEC group (36.4% vs 23.3%, p = 0.020).

Conclusion: This randomized prospective multicenter study validates the therapeutic curative management of PC from colorectal cancer by CRS with acceptable mortality and morbidity rates. HIPEC after CRS did not significantly increase the overall mortality and morbidity rates compared with CRS alone at 30 days, but increased the overall morbidity rate at 60 days.

Conflict of interest: No conflict of interest.

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100. Prevention of anastomotic leakage in stapled colorectal anastomoses: Results of the multi-center randomized controlled C-seal trial

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Background: Anastomotic leakage is a major complication after colorectal surgery. In order to reduce the clinical anastomotic leakage rate, the C-seal was developed. The C-seal is an intraluminal drain, which is stapled to the colorectal anastomosis covering its intraluminal site, preventing intestinal leakage in case of anastomotic dehiscence. The C-seal trial is initiated to evaluate the efficacy of the C-seal to reduce anastomotic leakage in stapled colorectal anastomoses.

Material and methods: The C-seal trial is a randomized controlled trial performed in 41 hospitals in the Netherlands, Germany, France, Hungary and Spain. Patients undergoing elective surgery with a stapled colorectal anastomosis <15 cm from the anal verge were eligible. Exclusion criteria were age <18 years, ASA classification ≥4, clinical signs of peritonitis and major surgery 30 days prior to surgery. Informed consent was obtained from each patient. Included patients were equally randomized between the C-seal and control group, stratified for center, anastomotic height and intention to create a defunctioning stoma. Primary outcome was anastomotic leakage requiring invasive treatment within 30 days postoperative.

Results: From December 2011 to December 2013, 402 patients were included for analysis, 202 in the C-seal group and 200 in the control group. There was a 7.7% overall anastomotic leakage rate with 10% leakage in the C-seal group 5% in the control group. Male gender and C-seal application were associated with a higher leakage rate. Construction of a defunctioning stoma led to a lower leakage rate.

Conclusion: C-seal application in stapled colorectal anastomoses does not reduce the incidence of anastomotic leakage.

Conflict of interest: No conflict of interest.

<http://dx.doi.org/10.1016/j.ejso.2016.06.106>

101. Prognostic value of lymph node ratio in locally advanced rectal cancer patients after preoperative radiotherapy 25 Gy followed by total mesorectal excision (TME) – Results from randomized trial
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Background: The absolute number of metastatic lymph nodes (MLN) has been established as one of the most important prognostic factors in rectal cancer. In recent years, the lymph node ratio (LNR) has gained increasing attention in colorectal cancer research. Only limited number of studies concerning the relevance of lymph node ratio exclusively for rectal cancer have been published so far. In addition, the proportion of patients with harvested lymph nodes larger or equal to the recommended 12 lymph nodes is smaller after neoadjuvant therapy. The purpose of the study was to examine the associations between the LNR and survival in patients with radically resected rectal cancer (R0, TME) after preoperative radiotherapy 5 × 5 Gy. The study was registered at ClinicalTrials.gov, identifier NCT01444495.

Material and methods: Between 1999 and 2006 a total of 154 patients with locally advanced rectal cancer (LARC) were randomly assigned to groups with short (7–10 days) or long (4–5 weeks) time-interval between preoperative radiotherapy (5 × 5 Gy) and surgery. All patients underwent total mesorectal excision (TME). The patients were subsequently followed-up for 10 years. Numbers of total and metastatic lymph nodes were recorded prospectively in specially tailored database. Survival analysis was completed based on data obtained from national census registry in June 2015. The 5-year overall survival (OS) was compared in three groups with different LNR (0, ≤0.2 and >0.2) and in groups with <12 and ≥12 retrieved lymph nodes.

Results: Radical resection (R0) was performed in 136 (88%) patients, lymph nodes were harvested in 129 patients. The median number of harvested lymph nodes in these patients was 16 (interquartile range 10–22). At least 12 lymph nodes were retrieved in 93 patients (72%). The respective numbers of patients with different LNR (0, ≤0.2 and >0.2) were as follows: 88, 15 and 26. The 5-year OS for the three groups were 70%, 78% and 53% respectively (p = 0.19). LNR was significantly prognostic indicator for worse survival in the group with less than 12 retrieved lymph nodes (p = 0.001) but not in the group with ≥12 lymph nodes harvested (p = 0.93).

Conclusion: LNR is not a prognostic factor in LARC patients treated with short course preoperative radiotherapy followed by TME. Its prognostic value for worse survival was confirmed only in patients with less than 12 lymph nodes retrieved.

Conflict of interest: No conflict of interest.

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102. National audit on rectal cancer patients with complete response after neo-adjuvant therapy – An investigation on behalf of the Young Italian Society of Surgical Oncology (Y-S.I.C.O.)

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Background: Complete pathologic response after neo-adjuvant therapy in rectal cancers (RC) has been reported ranging from 8 to 39% of the cases. Within this sub-group of patients, described surgical approach goes from a local excision (LE) to extended surgery (low anterior resection or abdominoperineal resection). Actually, about the 10% of ypT0 could present positive nodes in the surgical specimen and the oncologic outcome is still uncertain. Despite a large interest, definitive data in these patients are scant. We therefore decided to conduct a national audit focused on the clinical and pathological features, adopted treatment strategies and long-term outcomes of RC patients with complete response.

Methods: We established a national cooperative study group of young S.I.C.O. members. Ethical Committee approval was obtained. Data from patients presenting a complete tumor regression (ypT0, ypTx and ypTis) after neo-adjuvant treatments over the last 10 years were retrieved and analyzed. Patients demographics (age, sex), clinical features including tumor location (cm from the anal verge), stenosis, type of neo-adjuvant therapy (long course chemoradiation -CHT-RT or short course radiotherapy-RT), length of the interval to surgery, staging modalities, radiological assessment of the response to treatments, type of surgical resection, pathological data (pN and lymph node harvest -LNH), hospital stay, postoperative morbidity (Clavien's classification) and adjuvant therapy were analyzed. Statistical analyses comparing patients who underwent a mesorectal excision vs LE and between patients treated with long-course CHT-RT vs short-course were performed. Also, Overall Survival (OS), Disease Free Survival (DFS) and Disease Specific Survival (DSS) were investigated.

Results: Overall, 206 non-metastatic local advanced RC presenting complete pathologic response were analyzed (M/F 1.9, mean age 63.7 years SD 10.7). Long course CHT-RT was used in the 87.8% of the patients and the 95.6% underwent mesorectal excision. Within this sub-group, the 8.7% were N1. LE provided a shorter hospital stay but a similar morbidity rate compared to mesorectal surgery. Short term RT resulted in a larger LNHN compared to long course neo-adjuvant scheme.

A worse OS was reported in N1 patients comparing with the N0 group (mean follow-up: 45.8 months). Furthermore, a trend of better OS was observed in patients with an interval to surgery longer than 7 weeks.

Conclusions: Preliminary data based on this large series of RC patients with complete pathological response after neo-adjuvant treatments are very promising. Standard CHT-RT and traditional resections are still the most used approach whereas LE is seldom performed. A further analysis on a larger group of patients might help to implement the multi-disciplinary management of this sub-group.

Conflict of interest: No conflict of interest.

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103. Synchronous colorectal carcinomas and their relation to treatment patterns, short-term outcomes and overall survival

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Background: Synchronous colorectal carcinomas (CRC) occur in 1–8% of patients diagnosed with CRC. Studies investigating the impact of synchronous CRC on survival report conflicting results. The aims of this nationwide population-based study were to evaluate treatment patterns in patients with synchronous CRC and its association with hospital stay, postoperative 30-day mortality and 5-year overall survival (OS) compared to patients with solitary CRC.

Material and methods: All patients diagnosed with primary CRC between 2008 and 2013 that underwent elective surgical resection were selected from the Netherlands Cancer Registry. Patients with two invasive CRCs, diagnosed within six months and with similar date of resection were classified as ‘synchronous CRC’. Baseline characteristics and treatment outcomes were compared between synchronous and solitary CRC. Multivariable logistic regressions were performed for the following outcomes: prolonged postoperative hospital stay (>14 days) and postoperative 30-day mortality, adjusting for age, gender, tumour stage, tumour localization and type of resection. Five-year OS curves were calculated with

Kaplan–Meier and multivariable cox proportional hazard regression was performed to adjust for age, gender, tumour stage and tumour localization.

Results/discussion: A total of 43,189 CRC patients were identified, of whom 1747 patients (4.3%) met the definition for synchronous CRC. Patients with synchronous CRC were older (mean age 71 (SD 10.7) years versus 69 (SD 11.4) years), more often male (60% versus 54%) and diagnosed with more advanced tumour stage (stage III–IV 52% versus 47%) compared to patients with solitary CRC ($p < 0.0001$ for all). In 1168 (67%) patients with synchronous CRC, both tumours were localized in the colon, of which 65% (43% of total) in one colon segment; in 203 (12%) patients, both tumours were situated in the rectum. Extended surgery (e.g. (sub)total colectomy, proctocolectomy or combination) was performed in 42% ($n = 949$) of patients with synchronous CRC compared to 1% ($n = 666$) in solitary CRC ($p < 0.0001$). Having synchronous CRC was associated with higher risk of prolonged postoperative hospital stay (20% versus 15%; OR 1.4 (1.23–1.66)), postoperative 30-day mortality was lower in patients with synchronous CRC (2% versus 3%; OR 0.5 (0.34–0.63)). Administration of adjuvant chemotherapy was lower in patients with synchronous CRC of which the most advanced tumour was stage III colon cancer (51% versus 63%; OR 0.7 (0.55–0.86)). Synchronous CRCs were independently associated with decreased 5-year OS (57% versus 66%; HR 1.1 (1.03–1.21)).

Conclusions: Synchronous CRCs are prevalent in 4.3% of CRC patients. Synchronous CRCs were associated with extended surgery, prolonged postoperative hospital stay, less adjuvant chemotherapy and a decrease in OS, but lower 30-day mortality compared to solitary CRC.

Conflict of interest: No conflict of interest.

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16 September 2016 14:00–15:30

Proffered Paper: Melanoma and Sarcoma

104. The long-term outcomes of combined therapy of adult patients with localized synovial sarcoma

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Background: Synovial sarcoma is a high-grade, malignant soft tissue sarcoma (STS) accounting for 5–10% of STS and occurring most often in young adults. This tumor is associated with high rates of local and metastatic recurrences. The aim of the study was to analyze outcomes of patients (pts) with localized synovial sarcoma treated in a single institution with uniform neo- and adjuvant combined therapy protocol.

Material and methods: One hundred and sixty patients (96 women and 64 men) with localized synovial sarcoma were treated at our institution between 1998 and 2012. Neoadjuvant and adjuvant treatment (chemotherapy with ifosfamid-containing regimen preoperatively and doxorubicin- and ifosfamid-based regimen postoperatively and preoperative radiotherapy) received 125 pts. Sixty-five (40%) pts died at the time of analysis.

Results: Median age at diagnosis was 34 years (range 18–69). The most common localization was lower limb ($n = 101$), followed by upper limb ($n = 29$). Median primary lesion size was 8 cm (range 1.5–27 cm). Sixty-four (40%) pts were referred to our institution after non-radical primary surgery and 29 (19%) pts because of clinical local recurrence. Sixty-seven cases (41%) had newly diagnoses. The median follow-up was 153 months (range 47–410). At the time of analysis, 55 (34%) pts had local recurrence (mostly patients referred to our center after initially non-radical surgery) and 72 (45%) pts developed metastases. The median time to local and distant

recurrence was 22 months (range 2–190) and 20 months (range 1–181), respectively. Overall, the median time to recurrence was 17 months. Twelve (8%) pts relapsed beyond 5 years after primary tumor resection (including six pts who relapsed after 10 years). The 5-year overall survival (OS), local recurrence-free survival (LRFS) and distant recurrence-free survival (DRFS) rates were 70%, 67% and 58%, respectively. Median disease-free survival (DFS) was 43 months (median OS was not reached). Patients older than 35 years had a higher overall recurrence rate compared to younger pts (57% vs 36%). Median DFS for patients aged ≤ 35 years was 127 months and for patients aged > 35 years 26 months ($p = 0.0278$).

Conclusions: In adult patients with localized synovial sarcoma, a long-term survival can be achieved with intensive combined therapy. Patients older than 35 years have a worse prognosis than younger patients. The wide range of recurrence intervals, with some of the patients developing disease recurrence after 10 years strongly supports the need for long-term follow-up in synovial sarcoma patients.

Conflict of interest: No conflict of interest.

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105. A negative sentinel node in melanoma patients; no need to worry?

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Background: Since its introduction, the outcome of the SLNB is one of the most important prognostic factors in melanoma patients. A negative sentinel node however, does not guarantee a recurrence-free follow-up. This study was performed to determine risk factors of regional or systemic disease recurrence in node negative melanoma patients.

Material and methods: Data concerning patients treated between 1996 and 2014 in the University Medical Center Groningen were prospectively collected. The database contained patient and tumor characteristics, follow-up, recurrence and survival data. Cox regression analyses were used to determine variables associated with systemic first site of recurrence in sentinel node negative patients.

Results: A total of 668 SLNB's were performed between 1996 and 2014. The SLNB was positive in 27.8% of the patients and negative in 68.6% of the patients. Recurrence rates were 53.2% in the SLNB positive group and 17.9% in the SLNB negative group. Thirty and a half percent of all patients recurred (204/668), 77% of these patients progressed to stage IV during the course of their disease. Multivariate cox regression analysis of factors associated with immediate stage IV recurrence in sentinel node negative patients revealed melanoma located on the head/neck (HR 3.09, p: 0.035) and the presence of ulceration (HR 2.31, p: 0.035) as significant factors. In sentinel node negative patients with a nodular melanoma the ever recurrence rate was 38/128 (29.7%), if ulceration was present the recurrence rate was 43.1%, the first site of recurrence was systemic in 64% of these patients. Analysis of ever stage IV recurrence in all patients revealed SLNB positive results of strong predictive value (HR 3.00, P: <0.001). The presence of ulceration (HR 2.03, p: 0.001) and increasing Breslow thickness (HR 1.1, p: 0.046) were also significantly associated with ever stage IV recurrence in all patients.

Conclusions: Although SLNB positivity is an important prognostic variable in predicting recurrence in melanoma patients, in SLNB negative nodular ulcerated melanoma patients, the recurrence rates approach those of SLNB positive patients. Clinicians should be aware of this and stringent follow-up is of the essence.

Table 1

Cox regression analysis of characteristics associated with immediate stage IV recurrence in sentinel node negative patients (n = 48).

Characteristic		Univariate HR, p	Multivariate HR, p (95% CI)
Sex, n (%)			
Male	32	1.02, 0.001	
Female	16		
Age ^a , mdn (range)	60.2 (19.4–79.6)	1.02, 0.027	
Site primary, n (%)			
Lower extremity	4	1.00, 0.005	
Head/neck	13	3.72, 0.001	3.09, 0.035 (1.08–8.82)
Trunk	20		
Upper extremity	11		
Histological typing, n (%)			
SSM	19	1.0, 0.012	
NM	24	2.9, 0.001	
ALM	2		
Breslow thickness ^b , mdn (range)	3.00 (1.05–20)	1.2, < 0.001	

Table 1 (continued)

Characteristic		Univariate HR, p	Multivariate HR, p (95% CI)
Clark level, n (%)			
III	9		
IV	29		
V	7	2.97, 0.010	
Ulceration, n (%)			
Yes	27	3.37, < 0.001	2.31, 0.035 (1.06–5.02)
No	20		
Mitotic rate > 1 mm ⁻² , mdn (range)	3.00 (1.00–3.00)	1.1, 0.002	

Conflict of interest: No conflict of interest.

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106. Lymph node ratio as a prognostic factor in melanoma: Results from the EORTC 18871, 18952 and 18991 studies

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Background: The aim of this study was to assess the prognostic importance of Lymph Node Ratio (LNR) in stage III melanoma after complete lymph node dissections.

Patients and methods: From EORTC randomized interferon trials 18871, 18952 and 18991, n = 2,358 patients had full information on positive and examined lymph nodes (LNs) and were included. Cox proportional hazards model stratified by trial were used to assess prognostic impact of LNR adjusted for confounders on disease-specific survival (DSS). Optimal cut-off values for LNR were calculated for each LN dissection site (axillary, inguinal and cervical).

Results: Median follow-up was three years. LNR (> vs <35%: hazard ratio 1.44, 95% CI 1.23–1.69) and number of positive LNs appeared to be of independent strong prognostic importance for DSS. Dissection sites impacted the optimal LNR cut-offs: 35% for axillary, 40% for inguinal and 50% for cervical dissections. Combining these into one 'high versus low LNR' resulted in a highly significant multivariately adjusted Hazard Ratio of 1.48; 95% confidence interval 1.26–1.74. In subgroup analyses, LNR was only significant in advanced disease (AJCC stage N2b, N3; IIIC); and was most significant for inguinal dissections, followed by axillary dissections. Due to small subgroups with high LNR, LNR seemed less useful in cervical dissections.

Conclusions: LNR is an independent significant prognostic factor in stage III melanoma patients. Our study showed higher than previously reported cut-offs that differed per dissection site. LNR could be useful as a prognostic factor in advanced disease in inguinal and axillary dissections.

Conflict of interest: No conflict of interest.

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107. Long-term results of treatment of advanced dermatofibrosarcoma protuberans (DFSP) with imatinib mesylate

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Background: Dermatofibrosarcoma protuberans (DFSP) is rare, infiltrating dermal neoplasm, characterized by indolent growth and low probability of metastases. The first effective systemic therapy in DFSP introduced into clinical practice was imatinib, demonstrating high activity in advanced cases. The aim of the study was to perform an analysis of patients with advanced DFSP treated with imatinib, with or without surgery, in routine clinical practice with long-term follow-up.

Patients and methods: We analyzed the data of 31 Caucasian patients (14 male, 17 female; median age 56 years) with locally advanced/initially inoperable and/or metastatic DFSP, who started therapy with imatinib at initial dose 800 mg daily between 12/2004 and 07/2014. All diagnoses were confirmed by FISH for the presence of specific COL1A1-PDGFB fusion using Dual Color Dual Fusion Probe, Abbott (CE-IVD). Median follow-up time was 5.3 years.

Results: Metastases were present in 15 cases (8 – lungs, 5 – soft tissues, 2 – lymph nodes). Fibrosarcomatous transformation (FS-DFSP) was confirmed in 16 patients (52%). 5-year progression-free survival (PFS) rate was 58% (median 6.8 years), 5-year overall survival (OS) rate was 64% (median time for OS was not reached). The shorter PFS and OS correlated with FS-DFSP and presence of metastatic disease. 5-year PFS rate was 93% for classic DFSP and 33% for FS-DFSP. The best overall responses were: 21 partial responses (68%, including 8 FS-DFSP, but the responses were shorter than for classic DFSP), 6 stable disease (19%) and 4 progressive diseases (13%). Thirteen patients (47%) underwent resection of residual disease and nine of them remained free of disease, although imatinib was discontinued. Median survival after progression on imatinib was 19 months, and longer survivals were observed only in cases where rescue surgery/radiotherapy was possible.

Conclusions: Our results indicate the long-term activity of imatinib in therapy of inoperable and/or metastatic cases of DFSP. Some DFSP patient initially evaluated as un-resectable/metastatic or demanding mutilating surgery turned resectable after imatinib therapy and this rational approach leading to complete remission is potentially curative.

Conflict of interest: Advisory Board: Piotr Rutkowski served as a member of Advisory Board for BMS, Amgen, Roche, MSD.

Other Substantive Relationships: Piotr Rutkowski has received honoraria for lectures from BMS, Roche, Novartis, MSD, GSK and Pfizer.

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108. The analysis of outcomes of primary cutaneous melanoma located on hand or foot undergoing sentinel lymph node biopsy

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Background: Cutaneous melanomas located on acral part of extremities (hand and foot; HF) comprise a rare group within all melanomas in Caucasians. We performed the analysis of long-term results of HF melanomas in very large one-institution series of cutaneous melanoma patients undergoing sentinel lymph node biopsy (SLN).

Methods: We analyzed the group of 198 cases of primary melanoma located on HF (8%) extracted from 2456 consecutive patients with cutaneous melanoma, who underwent SLN biopsy between 1997 and 2012 in one tertiary center. Median follow-up time was 5.2 years.

Results: Median primary tumor Breslow thickness in HF melanomas was 3.0 mm (range 0.2–90 mm) and was significantly higher than in entire population (median 1.9 mm; $p < 0.01$). 53% of primary tumors were ulcerated. Acral-lentiginous melanomas were diagnosed in 69 cases (35%). 31 cases were located on hands, 167 on foot. Metastases to SLN (SLN+) were found in 43 cases (22%), in additional 9 cases false negative same-nodal basin recurrences were detected. 8-year overall survival (OS) rate in the HF group was 64%, 76% without SLN metastases (SLN–) and 46% in group with SLN+ ($p < 0.001$). The OS was similar for cases located on fingers vs other parts of H/F, as well as for cases located on hand vs foot. Subungual melanomas had poorer prognosis as compared to other locations ($p < 0.05$). Independent prognostic factors for OS were: presence of metastases to SLN, primary tumor ulceration and higher Breslow thickness. Molecular characteristics of HF melanomas is ongoing.

Conclusions: The primary HF melanomas are characterized by poorer prognostic factors and worse outcomes as in general population. The long-term results confirm crucial prognostic significance of SLN biopsy in HF cutaneous melanoma.

Conflict of interest: No conflict of interest.

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109. Clinical prognostic markers in stage III-B melanoma

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Background: Locoregional treatment is often insufficient to guarantee long-term disease free survival in AJCC stage III-B melanoma. To improve survival, effective neo-adjuvant and adjuvant strategies are needed.

Selecting patients for these strategies requires risk stratification, for which clinical and molecular biomarkers can be used. The aim of this study was finding clinical biomarkers to identify high-risk stage III-B melanoma patients.

Material and methods: We performed retrospective analysis of stage III-B melanoma patients who underwent lymph node dissection in our institution between 2000 and 2015. SN-positive patients with ulcerated primary tumors and patients with clinically detectable nodal metastasis with non-ulcerated tumors were included, according to the AJCC definition of III-B melanoma. Baseline characteristics, melanoma specific survival (MSS) and disease free survival (DFS) were assessed and prognostic factors for recurrence and survival were analyzed using univariate and multivariate analysis.

Results: Two hundred and fifty patients were included. Median follow-up was 52 months (IQR 29–108 months). Median MSS was 141 months and median DFS was 36 months. Five-year and 10-year MSS were 59% and 52%. Five-year and 10-year DFS were 47% and 41%. Age over 50, Breslow thickness >2 mm versus ≤2 mm and N2 versus N1 disease all carried an increased risk of death by melanoma. Age over 50 years and extracapsular extension carried a greater risk of disease recurrence after lymph node dissection.

Conclusions: Age over 50, Breslow thickness >2 mm and N2 versus N1 are prognostic for poor survival in stage III-B melanoma patients. Patients with these characteristics can be considered high-risk and should be considered for adjuvant therapies (studies) that aim to improve survival.

Conflict of interest: No conflict of interest.

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110. Prognostic significance of resection margins in retroperitoneal sarcomas

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Background: The treatment of retroperitoneal sarcomas is hard to standardize due to a late presentation, the multiplicity of pathological entities with different behaviors and multiorgan involvement. There is uncertainty about the extent of the surgery and about the relevance of other therapeutic approaches. A group of patients from a single institution was analyzed in order to assess prognostic factors associated with surgical treatment.

Methods: We evaluated, retrospectively, 102 patients undergoing surgery for retroperitoneal tumors between 2007 and 2013. Regression models were used for analysis of prognostic factors.

Results: We found a median age of 61 years old and female predominance (57.8%). At diagnosis, 58.8% of neoplasm involved multiple quadrants measuring on average 15.8 cm. The first operation involved organs resection in 69.8% of cases. The mean histological size was 21 cm. The most common histology was the liposarcoma (54.9%). R0 resection was obtained in 73.3% of patients. Twenty-three patients underwent chemotherapy following surgery (particularly doxorubicin) and 17

underwent adjuvant radiotherapy. The disease specific survival at 5 years was 64%. Regarding the impact of margin status, there was no difference in disease survival in cases of minimal pseudo capsule laceration ($p = 0.73$) even in high-grade lesions ($n = 18$, $p = 0.79$) comparing to close margins or wide margins. R1 surgeries were associated with higher recurrence and a trend for worse survival compared with complete resection (59% vs 70% at 5 years $p = 0.053$). R2 margins clearly compromise disease specific survival ($p = 0.004$). Among patients who underwent complete surgical resection, the classification from the Fédération Nationale des Centres de Lutte Contre le Cancer (FNCLCC) established groups with higher recurrence ($p = 0.041$) and higher mortality ($p = 0.045$).

Conclusions: Although surgical treatment of retroperitoneal tumors involves extensive surgery and frequent multiple organ resections, in this cohort, the presence of close margins or pseudo capsule lacerations did not worsen the prognosis emphasizing the importance of complete macroscopic resection even, if needed, a compartmental one. The FNCLCC classification constitutes a fundamental tool in the assessment of prognosis and could assist the decision for adjuvant therapy as well as an indicator for a closer follow up.

Conflict of interest: No conflict of interest.

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111. Isolated limb perfusion versus isolated limb infusion: A systematic review of outcomes and morbidity

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Background: Isolated limb perfusion (ILP) and isolated limb infusion (ILI) are methods of regional administration of high dose chemotherapy to patients with advanced in transit melanoma of the limbs. ILI is a less invasive and less costly compared with ILP. Herein we aim to compare published data regarding outcomes and morbidity of ILP versus ILI.

Material and methods: A systematic review of the English literature in Pubmed from 2006 to 2015 was undertaken to identify relevant studies including more than 50 patients. Data were pooled and combined using non-parametric statistics. The search identified 19 non-randomized studies reporting on 2,158 patients.

Results: The median age of ILI patients was significantly older compared with ILP (70 vs 63 years, $P < 0.001$). The distribution of AJCC stage did not differ significantly between groups; however in 7 out of 19 studies no data regarding stage were presented. The distribution of “bulky” disease was not different between groups but there were differences in the definitions of “bulky” disease between studies. Significant regional toxicity rates was significantly more common among ILI patients. The rates of postoperative amputation resulting from complications of the procedure were higher for ILP ($P < 0.01$). Overall and complete response rates were significantly higher for ILP ($P < 0.001$).

Conclusion: ILP is significantly more effective than ILI in experienced centers. Even though overall severe regional toxicity was significantly higher for ILI patients, ILP was associated with higher rates of amputation.

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Author/publication year	Country	ILI/ILP	N	AJCC>IIIC %	Toxicity* %	OR %	CR %
Chin-Lenn L et al. 2015	France	ILI	54	17	39	56	29
Muilenburg D et al. 2015	USA	ILI	160	n.a.	32	57	34
Wong J et al. 2014	US	ILI	176	n.a.	35	72	36
Coventry B et al 2014	US	ILI	131	21	13	63	27
Reymond A et al. 2011	US	ILI	148	78	20	43	30
Barbour A, et al. 2009	Australia	ILI	74	23	10	54	24
Beasley G et al. 2009	US	ILI	128	n.a.	21	64	31

(continued)

Author/publication year	Country	ILI/ILP	N	AJCC≥IIIC %	Toxicity* %	OR %	CR %
Kroon HM et al. 2008	Australia	ILI	185	48	42	84	38
Beasley G et al. 2008	US	ILI	58	60	18	44	30
Overall ILI**			1114	48%(39)	32%(15)	57%(19)	30%(7)
Smith H et al. 2015	UK	ILP	103	38	6	82	45
Hoekstra H et al, 2014	Netherlands	ILP	57	57	37	90	45
Paulsen I et al. 2014	Denmark	ILP	84	n.a.	14	85	42
Deroose et al. 2012	Netherlands	ILP	148	53	25	89	61
Rossi R et al. 2010	Italy	ILP	112	n.a.	7	90	51
Alexander HR et al. 2010	US	ILP	91	32	4	95	69
Reymond A et al. 2011	US	ILP	144	58	23	81	55
Di Filippo F et al. 2009	Italy	ILP	113	42	5	88	63
Beasley G et al. 2008	US	ILP	59	n.a.	32	88	57
Cornett W et al. 2006	US	ILP	133	n.a.	n.a.	66	25
Overall ILP**			1044	53%(19)	14%(19)	88%(8)	55%(8)

CR, complete response, OR, overall response, n.a. not available.

*Regional Toxicity >3 according to Wieberdink scale.

**Median (interquartile range).

Conflict of interest: No conflict of interest.

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112. Safety and efficacy of isolated limb infusion in elderly patients with advanced locoregional melanoma: An Australian multicenter experience

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Background: Isolated limb infusion (ILI) offers a minimally invasive alternative to isolated limb perfusion (ILP) for the treatment of locally advanced extremity melanoma. In Australia, ILI has essentially completely replaced ILP since patients tolerate ILI better while results of both treatments are comparable. The aim of the current study was to evaluate the safety and efficacy of ILI in elderly patients in an Australian multicenter setting.

Materials and methods: The results of 316 first ILI procedures, performed between 1992 and 2008 in five Australian institutions, were collectively analyzed. All institutions used the same protocol: melphalan was circulated in the isolated limb for 20–30 min (\pm actinomycin D).

Responses were determined using the World Health Organization criteria and limb toxicity was assessed using the Wieberdink scale.

Results: One hundred forty-eight patients (47%) were ≥ 75 years (range: 75–100). The patient characteristics in both groups were similar except that older patients had significantly more lesions at the time of ILI (median 4 vs 5 lesions; $p = 0.035$) and lower limb volumes (5.4 vs 6.5 L; $p = .001$). Older patients experienced less limb toxicity after the procedure compared with younger patients (grade III/IV toxicity in 22% and 37% respectively; $p = .003$). A complete response was seen in 27% of the patients ≥ 75 years and in 38% of the patients < 75 years ($p = .06$), overall response rates were 72% and 77% respectively ($p = .30$). No difference in survival was seen with a median of 40 months for both groups ($p = .69$).

Conclusion: Our multicenter experience shows that elderly patients with advanced metastatic limb melanoma can safely and effectively be treated with the minimally invasive ILI technique. Elderly patients experience lower toxicity compared with younger patients. Complete response rates are higher in the younger patients, although not significantly, while overall responses and survival rates are similar.

Conflict of interest: No conflict of interest.

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16 September 2016 14:00–15:30

Proffered Paper: Patient Centered Treatment and Quality Assurance

113. Emergency surgery for colorectal cancer in patients over eighty

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Background: Today average life expectancy in Western Countries has reached 80 years. At the same time, colorectal cancer (CRC) ranks first on both cancer incidence and related mortality. Therefore we face the problem of treating colorectal cancer occurring in elderly patients. Over the last years, there has been growing evidence in the literature that this population

should be offered life-prolonging radical surgeries. The aim of the study is to assess clinical features and postoperative outcomes in 80 years old and older patients treated for CRC. We focused on safety (complication rates and operative mortality) and oncological results (radical excision and number of isolated lymph nodes).

Materials and methods: From September 2011 to January 2016, 540 patients for CRC with curative intent were performed. 27 palliative procedures and 12 trans-anal resection were excluded. We enrolled 494 patients undergoing resection for colon-rectal cancer. One-hundred and fifty-nine patients were over 80 years old (Group A), 335 patients were younger than 80 years (Group B). Patients' demographic, clinical and histo-

pathological parameters, as well as intra- and perioperative results were entered into a database and analysed. Statistical analysis was performed with SPSS v13.0; significance was defined as $p < 0.05$.

Results: In Group A 83 patients underwent emergency procedures (52.2%) and 76 underwent elective procedures (47.8%); conversely in Group B 104 patients underwent emergency procedures (31.1%) and 231 underwent elective procedures (68.9%) ($p < 0.001$). Significant differences between the two groups were observed regarding comorbidities, cardio-vascular comorbidities and chronic renal failure in particular, emergency presentation, intraoperative blood transfusions, laparoscopic approach and mortality ($p < 0.001$). No differences were observed between the two groups regarding the number of radical resection and number of lymph nodes isolated. However, multivariate logistic regression analysis showed that advanced geriatric age (≥ 80 years old) is an independent predictor of mortality ($p = 0.004$, OR 5.394, 95% CI: 1.7–17.2) but not an independent predictor of morbidity ($p = 0.6$, OR 1.109); in particular, old age, emergency presentation (EP) and intraoperative blood transfusions are predictive of mortality; instead the presence of cardio-vascular comorbidities and EP, are independent predictor factors of morbidity.

Conclusions: Old age (≥ 80) as such does not represent a contraindication for CRC surgical treatment though associated with an increased risk of postoperative morbidity and mortality, above on emergency procedures. In our opinion it is advisable to reduce emergency procedures with multidisciplinary approach such as enlargement of screening in old patients and stenting in CRC obstruction as a bridge to surgery.

Conflict of interest: No conflict of interest.

<http://dx.doi.org/10.1016/j.ejso.2016.06.119>

114. Surgical quality assurance in a randomized controlled trial of the conventional technique versus the no-touch isolation technique for primary tumor resection in patients with colorectal cancer: Japan Clinical Oncology Group Study JCOG1006

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Background: Surgical resection is the only curative treatment modalities for locally limited colorectal cancer. Improved outcomes are expected with the no-touch isolation technique (NTIT). We conducted a multicenter randomized controlled trial (RCT) to confirm the efficacy of the NTIT for colorectal cancer. In this RCT, we needed some quality control. We

focused on surgical quality assurance in terms of range of lymph node dissection and the order of the resection procedure.

Material and methods: Data of all 853 enrolled patients were analyzed. According to the protocol, the surgeons were required to take one or two intraoperative photographs using a designated method. We required the surgeon to send the photographs to the secretariat via e-mail within 8 weeks of the operation. In the case report form, we required the researcher to precisely describe the order of the excision procedure. In the conventional technique group, the evaluation was very simple. We evaluated whether the mobilization of the colon including the tumor and the resection of it were performed first. In the NTIT group, the evaluation was more complicated. We divided the excisional procedure into five levels: Level I, perfect NTIT; Level II, proper NTIT; Level III, moderate NTIT; Level IV, minimum NTIT; and Level V, not NTIT. These levels were determined according to the excisional procedure to be followed: #1 ligation and division of the lymphovascular bundles, #2 ligation and division of the marginal vessels on the oral side, #3 ligation and division of the marginal vessels on the anal side, #4 division of the bowel on the oral side, #5 division of the bowel on the anal side, and #6 mobilization of the colon including the tumor.

Results: An intraoperative photograph was not obtained for 30 of the 853 patients. There was memory lapse in 19 cases, 9 patients were judged ineligible during the operation, the data of 1 patient was damaged, and 1 patient was unable to undergo the prescribed surgery. The submitted photos were evaluated after every 100th cases; the results of the central photo review were announced in meetings and feedback was provided to the surgeons. After the 102nd NTIT case, the procedure level was classified as follows: Level I, 18.6%; Level II, 48.0%; Level III, 15.7%; Level IV, 15.7%; and Level V, 2.0%. In a meeting, we presented these data to the researchers and put forth the need to develop a higher quality procedure.

Conclusions: During the registration of the clinical trial, we devised methods to track and improve surgical quality.

Conflict of interest: No conflict of interest.

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115. Most important factors to achieve the best hospital performance on serious complications, 'failure to rescue' and postoperative mortality in colorectal cancer surgery

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Background: Over the past years nation-wide surgical audits have shown variation between hospitals in risk-adjusted outcomes after colorectal cancer surgery. The reasons for the observed variation are not sufficiently clear. The aim of this study is to acquire consensus on the most important factors to achieve good outcomes after colorectal cancer surgery. We explored the perspectives of colorectal surgeons participating in the Dutch Surgical Colorectal Audit.

Material and methods: A list of 86 factors associated with good outcomes on serious complications, failure to rescue and mortality in colorectal cancer surgery, was conducted based on a literature search and clinical experience. These factors were presented to Dutch surgeons in 9 categories through two online surveys and an expert meeting. To find consensus, surgeons were asked to rank items within categories (1 = highest), and to define their top 10. Importance of factors was determined by percentage of surgeons that selected a factor in their top 10 combined with the mean rank (MR) within its category.

Results: Of 130 invited surgeons, 47.6% participated, 13 surgeons working in academic affiliated hospitals, 36 surgeons in teaching hospitals and 13 surgeons in general hospitals. Results of ranking within category and percentages in top 10 were in accordance with each other; the important factors mentioned, both have highest percentages, and highest MR. Colorectal cancer surgery exclusively performed by surgeons specialized in gastro-intestinal oncology, in elective surgery, in case of emergency surgery as well as in re-operations, was selected in the top 10 by respectively 87, 60 and 62% of the surgeons. Accessibility of, and daily ward rounds by, these specialized surgeons were also ranked high, mean rank of 1.86 and 2.08 on a scale from 1 to 6. In the preoperative phase, screening for malnutrition was perceived most important (57%; MR: 3.07, scale: 1–9), postoperatively a protocol for signaling anastomotic leakage and rapid re-intervention (54%; MR: 2.96, scale: 1–6 and 49%; MR: 1.62, scale: 1–4). A structural factor considered important is procedural hospital volume (45.9%; MR: 2.42, scale: 1–6). Communication between surgeons was found more important by surgeons working in general hospitals (47%) than by surgeons working in academic affiliated or teaching hospitals (16%) ($p = 0.099$).

Conclusions: Important factors to achieve low morbidity and mortality according to Dutch surgeons are: surgery performed by specialized surgeons, preoperative screening on malnutrition followed by dietary measures, a protocol for signaling complications and rapidly acting in case of a complication. More research is needed to show whether these factors actually explain the hospital variation in outcomes of colorectal cancer surgery in the Netherlands.

Conflict of interest: No conflict of interest.

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116. Frailty status as a risk factor of postoperative anastomotic insufficiency in older patients with colorectal cancer qualified for surgery

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Background: Frailty, is a state of increased vulnerability resulting from aging-associated decline in reserve and function across multiple physiologic systems such that the ability to cope with acute stressors (also surgery) is comprised. In more than 40% of surgical patients frailty status cannot be diagnosed based on the routine format of history taking, physical examination, biochemical and imaging tests. Therefore the aim of this study was to assess the influence of frailty state on the risk of post-operative complications, particularly anastomotic insufficiency, of older patients with colorectal cancer qualified for abdominal surgery.

Materials and methods: Consecutive, elective patients aged 65 years and older were enrolled into the study at a tertiary referral hospital. The frailty status was determined using Comprehensive Geriatric Assessment including validated tools that evaluate everyday function, mobility, nutrition, co-morbidity, polypharmacy, and psychosocial domains. Outcome measure was complications, defined as any event occurring within 30 days of surgery that required treatment not routinely applied in the post-operative period, including clinically and/or radiologically confirmed anastomotic insufficiency. The severity of predefined complications was classified according to the Clavien–Dindo scale. Postoperative mortality was defined as death within 30 days after surgery.

Results: Between January 2013 and June 2015, ninety-four patients (59 male, 35 female), with median age 73.5 (range 65–93) years, were enrolled into the study. Twenty-two, 38, 23 and 11 patients had the pathological cancer stage 1–4, respectively. In 41 and 53 patients partial/total colectomy and rectum resection was performed, respectively. The prevalence of frailty as diagnosed by Comprehensive Geriatric Assessment was 50% (42% male and 63% female). The 30-day morbidity and

mortality was 52.1% (including 29.8% patients with major complications) and 6.4%, respectively. Almost all deaths occurred in frailty patients' group (10.6% vs 2.1%). There was no significant difference in the rate of 30-day morbidity (53% vs 51%). The rate of anastomotic insufficiency based on predefined criteria was 4.8% (2 patients) in the colon and 15.1% (8 patients) in the rectum resection group (including 4 patients with protective ileostomy). 90% of this group were male patients. Frailty status was confirmed only in one patient from the dehiscence group.

Conclusion: Frailty state does not increase the risk of anastomotic insufficiency in elderly patients qualified for rectum resection with primary anastomosis. However, it must be considered that most of very frail patients were qualified for tumour resection and colostomy. Moreover, loop ileostomy does not protect elderly patient from anastomotic insufficiency but from its severe complications.

Conflict of interest: No conflict of interest.

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117. Cytoreductive surgery and hyperthermic intraperitoneal chemotherapy (HIPEC) for the treatment of peritoneal surface malignancies in the elderly

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Background: Cytoreductive surgery (CRS) with Hyperthermic Intra-peritoneal Chemotherapy (HIPEC) is commonly used for the treatment of intraperitoneal malignancies. Most patients treated are young as they can cope with the physiologic stress of the radical surgery combined with intra-operative heated chemotherapy. Our study aim is to compare early post-operative outcome of patients older and younger than 65 years of age.

Material and methods: This is a retrospective study based on a prospectively maintained data base.

Between the years 2007 and 2016, 222 patients were treated for peritoneal surface malignancies with curative intent. 213 patients had complete datasets to be included in this study. Forty eight patients older than 65 years were compared to the remaining 163 patients aged 18–64. Two patients, operated at the age of 8 years, were excluded from the study.

The following parameters were compared: Extent of disease as measured by the peritoneal cancer index (PCI), duration of surgery, estimated blood loss, completeness of cytoreduction evaluated by the CC score (CC0 = no residual tumor, CC1 = residual tumor <2.5 mm, CC2 = residual tumor >2.5 mm), length of stay in the ICU, length of stay in the hospital and postoperative morbidity and mortality.

Results: The mean age of the young and the old study groups was 49.8 (± 11) years and 70.5 (± 5) years respectively ($p < 0.001$). There was no difference in the volume of disease, measured by the intra-operative PCI (15.6 vs 16.6, $P = 0.55$). There was a non-significant longer OR time in the older patient group (10% longer, 6.0 vs 5.5 h, respectively, $P = 0.25$) and there was a higher volume of estimated blood loss (550 ml and 480 ml, respectively, $P = 0.09$). Length of ICU stay was

the same in both groups, 3.8 days. Total length of hospital stay was also the same (23 vs 22 days $P = 0.78$). Despite older age, we found no difference in severe complications. However there was higher 30-day mortality in the older group (6.2% vs 2.4%, $p = 0.095$). Grade 3 and 4 complications (Clavien-Dindo classification) occurred in 33% of the younger group and in 23% of the older patients group $P = 0.21$. Results are summarized in Table #1.

Conclusion: Cytoreductive surgery + HIPEC can be performed in elderly patients with peritoneal surface malignancies. However, higher 30-day mortality should be expected.

Table #1.

	Young 18–64 years	Old >65 years	P value
Number of patients	164	48	N/A
Age (years)	49.8	70.5	0.00001
PCI (intra operative)	15.57	16.57	0.55
Duration of surgery (h)	5.5	6.05	0.25
Estimated blood loss (ml)	437.9	548.95	0.095
ICU stay (days)	3.74	3.88	0.88
Hospital stay (days)	22.96	21.95	0.78
CC0 and CC1 (%)	132 (80.9)	41 (85.4)	0.49
CC2 and CC3 (%)	31 (19.1)	7 (14.58)	0.49
Grade 3–4 morbidity (%)	33	23	0.21
30 days mortality (%)	4 (2.4)	3 (6.2)	0.095

Conflict of interest: No conflict of interest.

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118. The association between the perioperative inflammation process and postoperative cognitive decline

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Background: Postoperative cognitive decline is a major complication after surgery. Although inflammation is considered to be involved in cognitive decline, the pathophysiology remains poorly understood. Investigating the relationship between inflammatory markers and postoperative performance in distinct cognitive domains may provide more insight.

Methods: The study included 150 patients (≥ 65 years old), undergoing surgery for the removal of a solid tumor. Cognitive performance was assessed preoperatively and 3 months postoperatively with the Mini Mental State Examination (MMSE), Rey's Auditory Verbal Learning Task (RAVLT), Ruff Figural Fluency Task (RFFT) and the Trail Making Test part A and B (TMT). Test scores were divided to 3 domains, memory, executive functioning and information processing speed. Perioperative changes in interleukin-10 (Δ IL-10), C-reactive protein (Δ CRP) and lipocalin-2 (Δ Lcn-2) were determined. Logistic regression models were used to predict the influence of age, gender, preoperative MMSE score, education level, anaesthesia duration, blood loss, comorbidities, tumour and the perioperative inflammatory response on postoperative cognitive performance.

Results: The subjects had a mean age of 72.6 (6.0) years, 54.7% were women. Postoperative information processing speed and executive function were predicted by a model containing preoperative MMSE score and anaesthesia duration (information processing speed: $R^2 = .307$, $p = .001$; executive function: $R^2 = .362$, $p = .003$). Only the model for postoperative executive function improved by adding perioperative inflammation

(Δ CRP). The AUC for the model with Δ CRP was .946 (95% CI .896–.995), without Δ CRP the AUC was .908 (95% CI .821–.995).

Conclusion: The perioperative CRP response was associated with a decline in executive function 3 months postoperative, it was not associated with the other cognitive domains.

Conflict of interest: No conflict of interest.

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119. No survival benefit after centralisation of gastric cancer surgery in the eastern part of the Netherlands

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Introduction: Centralisation of gastric cancer surgery is thought to improve outcome. An annual minimum of 10 gastrectomies per hospital was introduced in 2012 and increased to 20 per hospital in 2013. This study analyses the effect of centralisation in terms of overall survival and complications in the Eastern part of the Netherlands.

Methods: All non-cardia gastric cancer patients without distant metastases who underwent a gastrectomy between 2008–2011 (pre-centralisation) and 2013–2014 (post-centralisation) were selected from the Netherlands Cancer Registry. Additional information was retrospectively registered by a single data manager. Pre-centralisation six different hospitals performed gastrectomies, after centralisation all patients were treated in one hospital. Patient and tumor characteristics and outcomes of surgery (duration of surgery, blood loss, resection margin, lymphadenectomy, complications and hospital stay, 1-year overall survival) were analysed and compared between pre- and post-centralisation. Multivariable cox regression analyses were used to identify independent factors associated with survival.

Results: 145 patients were included pre-centralisation and 76 patients post-centralisation. Patient and tumor characteristics were comparable for both study populations. Complications needing a re-intervention were similar pre- and post-centralisation (42.8% vs 39.5% $p = 0.64$). Median hospital stay decreased non-significantly from 10 to 8.5 days ($p = 0.10$). The amount of partial gastrectomies and R0-resections increased non-significantly. Patients treated with an adequate lymphadenectomy (ie. >15 lymphnodes) increased significantly (20.7% vs 90.8% $p < 0.01$). Duration of surgery increased, but this was probably due to introduction of laparoscopic surgery. Before centralisation, only 6.0% of all gastrectomies were performed laparoscopically, after centralisation this increased to 16.2% ($p = 0.059$). 30-day mortality was comparable (3.9% vs 4.1%) and 1-year overall survival was 77.8% before centralisation and 74.6% after centralisation ($p = 0.987$). Multivariable cox regression analyses showed no significant survival differences between patients treated pre- and post-centralisation.

Discussion: In this small population there was no statistically significant benefit of centralisation in terms of overall survival or complications. Post-centralisation there was a higher amount of patients with a sufficient lymphadenectomy. Further research with a larger study population will be needed.

Conflict of interest: No conflict of interest

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120. Postoperative mortality after gastrectomy for early gastric cancer – despite excellent results for younger patients still remains challenging for elderly

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Background: The number of elderly patients requiring gastrectomy for gastric cancer, including early gastric cancer (EGC), is increasing with aging population. Even though published data are showing very good results for surgical treatment of patients with EGC it could remain challenging for elderly patients. The aim of our study was to evaluate the results of gastrectomy for EGC in elderly patients (≥75 years).

Materials and methods: 220 patients with EGC underwent radical surgery at our institution between 2005 and 2015. The clinicopathologic data and postoperative morbidity with 90-day mortality rate were analyzed.

Results: 153 (69.55%) patients were less than 75 years old (group A) and 67 (30.45%) were 75 years and over (group B). Patients in group B had more severe comorbidities. Hospitalization time and time in ICU was longer in this group. Also submucosal tumor invasion and D1 lymphadenectomy were more common in B group. (Table1) Postoperative morbidity rate was not significantly different between groups (20.26% vs 22.39%, p = 0.722), despite this 90-days mortality rate was significantly higher in elderly patients group (0.65% vs 8.96%, p = 0.004). Causes of death for patients who died during hospitalization were figured out: 1 (25.00%) patient had anastomotic leakage and peritonitis. 3 (75.00%) patients died from non-surgical complications: pulmonary embolism – 1 (25.00%) case, pneumonia and sepsis – 1 (25.00%) case and acute cardiovascular insufficiency – 1 (25.00%) case.

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Table 1

Characteristics of the patients in group A and B.

		A group (<75 years)	B group (≥75 years old)	p Value
Gender (%)	Male	79(51.63%)	39(58.21%)	p = 0.382
	Female	74(48.37%)	28(41.79%)	
ASA score (%)	ASA 1 & ASA 2	102(66.67%)	26(38.81%)	p = 0.001
	ASA 3 & ASA 4	51(33.33%)	41(61.19%)	
Tumor localization (%)	Lower third	54(35.29%)	27(40.30%)	p = 0.360
	Middle third	87(56.87%)	38(56.72%)	
	Upper third	12(7.84%)	2(2.98%)	
Depth of tumor invasion (%)	Intramucosal	78(50.98%)	23(34.33%)	p = 0.027
	Submucosal	75(50.02%)	44(65.67%)	
Lymph node metastasis (%)	LNM–	123(80.39%)	54(80.60%)	p = 0.999
	LNM+	30(19.61%)	13(19.40%)	
Surgery (%)	Total gastrectomy	28(18.30%)	11(16.42%)	p = 0.849
	Subtotal gastrectomy	125(81.70%)	56(83.58%)	
Lymphadenectomy (%)	D1	11(7.19%)	13(19.40%)	p = 0.017
	D2	142(92.81%)	54(80.60%)	
Clavien-Dindo classification (%)	0	122(79.74%)	52(77.61%)	p = 0.013
	I–II	23(15.03%)	6(8.96%)	
	III–IV	8(5.23%)	5(7.46%)	
	V	0(0.00%)	4(5.97%)	
BMI (±SD)		27.05±5.78	26.21±4.37	p = 0.389
Hospitalization (days ± SD)		16.77±5.84	18.67±5.81	p = 0.027
Dissected LN number (±SD)		20.50±9.14	18.18±10.80	p = 0.102
Operation time (min ± SD)		146.93±43.96	150.75±48.39	p = 0.566

Conclusions: 90-days mortality rate was high in elderly patients group. Most causes of death were non-surgical complications. Choosing of minimally invasive approaches could be beneficial for patients over 75 years,

but it should be considered carefully with a fact that submucosal tumor infiltration is common in this group.

Conflict of interest: No conflict of interest.

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121. Follow-up with MRI of rectal cancer after transanal endoscopic microsurgery: Detection of recurrence and inter-observer reproducibility

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Background: Transanal endoscopic microsurgery (TEM) is generally used for the treatment of early rectal cancer, e.g. resection of adenomas and T1sm1 tumours. Recently, TEM has been proposed as an alternative for TME in small residual tumours after neoadjuvant treatment, in line with the increasing interest for organ preserving treatment after neoadjuvant treatment. The aim of this study was to evaluate the diagnostic perfor-

mance and reproducibility of MRI for the follow-up after TEM (with and without neoadjuvant treatment).

Materials & Methods: Patients with TEM for small rectal tumours without (neo)adjuvant treatment (group 1) and patients with a small

residual tumour after neoadjuvant therapy (group 2) were included. Patients underwent local follow-up with ERUS, MRI and endoscopy (group 1) or MRI, and endoscopy (group 2). All MRIs were evaluated by two independent readers, who evaluated morphology and signal intensity of the rectal wall and the mesorectal tissue and compared with histopathology in case of a local recurrence. Presence of a local and/or nodal recurrence was evaluated by means of a 5-point confidence level. Diagnostic performance is evaluated with ROC curves and diagnostic parameters were assessed and compared between readers. Interobserver agreement was assessed with kappa statistics.

Results: 52 patients were included in group 1 and 28 patients in group 2 (total N = 81). 293 MRIs were performed, of which 203 with DWI. 18 patients developed a recurrence. Overall AUCs for local recurrence detection were 0.71 (sensitivity 62%, specificity 96%) (R1) and 0.80 (sensitivity 62%, specificity 95%) (R2) for T2W-MRI. For DWI AUCs were 0.70 (sensitivity 46%, specificity 94%) (R1) and 0.89 (sensitivity 96%, specificity 95%) (R2). In some cases DWI showed an earlier recurrence than T2W-MRI. For nodal recurrence AUC was 0.72 (sensitivity: 43%,

specificity 96%) (R1) and 0.80 (sensitivity: 43%, specificity 95%) (R2) for T2W-MRI. An increase in AUC was seen during follow-up for both T2W- and DWI-MRI in detecting local and nodal recurrence. IOA was good for standard MRI, and moderate for DWI. The number of equivocal scores decreased over time. Isointensity of the rectal wall was a predictive factor for local recurrence.

Conclusions: Follow-up with MRI (including DWI) is a valuable tool to for follow-up after TEM for rectal cancer. Postoperative changes at first follow-up after TEM are confusing, but during follow-up diagnostic performance and interobserver agreement increase to a level high enough for clinical decision making. DWI can be of help in identifying recurrences earlier than on T2W-MRI.

Conflict of interest: No conflict of interest.

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Abstract Video Presentation

150. Minimally invasive inguinal lymph node dissection: Case presentation from Egypt

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Background: Inguinal lymph node dissection is an integral part of many surgical oncology procedures (penile, vulvar, scrotal and anal cancer, melanoma and squamous carcinoma of lower trunk and lower limb) but comes with a very high morbidity rate the most common being skin complications. In an attempt to minimize complications endoscopy was proposed in 2003. In this ongoing series we apply this technique in Egypt for the first time to test its feasibility and efficacy.

Material and methods: Procedures are performed via three ports: one at the apex of the femoral triangle, a second medial to the adductors, and the third lateral to the sartorius. No inguinal incision is needed. After developing a plane deep to Scarpa's fascia and infusing CO₂ gas at 15 mmHg, a retrograde dissection with the same limits as the standard open surgery is performed. Femoral vessels are skeletonized, and all lymphatic tissue within the femoral triangle up to the inguinal ligament are resected. Specimens are removed through the apical port via a specimen bag.

In our series twenty minimally invasive inguinal lymphadenectomies will be compared to 20 open inguinal lymphadenectomies regarding perioperative data including time, complications and length of hospital stay, number of retrieved lymph nodes.

In this video I present a case which underwent bilateral minimally invasive lymphadenectomy, footage shown here is from both sides combined, sufficient number of lymph nodes was harvested.

Results/Discussion: So far eight minimally invasive inguinal lymphadenectomies were done with similar number of retrieved nodes when compared to the open group with decrease of operative time from 270 min in the first case to 60 min in the last 2 cases denoting an easy learning curve with only one case being converted to open method due to bleeding from saphenous vein due to adherent bulky nodes which necessitates proper patient selection.

Conclusion: Minimally invasive inguinal lymphadenectomy is a feasible safe procedure.

Conflict of interest: No conflict of interest.

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151. Treatment of bronchial micro fistula with tissue adhesives after the pulmonary wedge resection for typical carcinoid in patient with long-term chronic obstructive pulmonary disease

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Background: Bronchial fistula is one of the complications that may occur after lung resections. Small fistulas can be treated endoscopically using mechanical abrasion, sclerosing agents and cyanoacrylate glue. We report a case of a patient in whom wedge resection of the left lung, due to typical carcinoid, was complicated by persistent pneumothorax, probably due to development of micro fistula. Autologous tissue adhesive was applied endoscopically for treatment of this complication.

Case report: The 77-year-old male patient with long-term chronic obstructive pulmonary disease and history of spontaneous pneumothorax was admitted to the Institute for Oncology and Radiology of Serbia for surgical treatment of a lung tumor. Computed tomography of the chest was previously done, showing a 30 × 25 mm tumor in the top segment of the left lower pulmonary lobe, with signs of pulmonary emphysema. Tumor markers were within normal ranges. Bronchoscopic biopsy was done, with findings of typical carcinoid in the superior segmental bronchus of left lower lung (LB6). After adequate preoperative preparation, wedge resection of the left lower lobe was performed. Definitive histopathological findings confirmed diagnosis of typical carcinoid with invasion of the bronchus wall. Three lymph nodes were without elements of malignancy. Postoperative recovery was compromised by subcutaneous emphysema and reduced re-expansion of the left lung on chest X-ray, and patient was re-treated with thoracic drainage three times. On the 33rd postoperative day, patient was discharged from hospital in good general condition, with complete expansion of the left lung. Three days later, patient was re-admitted with partial pneumothorax and atelectasis of the left lower lobe, and he was drained again. Due to multiple unsuccessful attempts of solving pneumothorax, it was decided to treat probable bronchial micro fistula with tissue adhesives. Bronchoscopy was done and LB6 suture was identified. Each segmental bronchus of the left lung was individually occluded with balloon catheter in order to identify the micro fistula. Thoracic drainage

system did not register significant decrease in air leakage and the procedure was continued by applying the autologous tissue adhesive on the sutured LB6 through a catheter placed into the working channel of the bronchoscope. After application of fibrin glue, significant decrease in air leakage was immediately confirmed and left lung was re-expanded. After a few days, patient was discharged from our hospital with no signs of pneumothorax on control chest X-ray. Top of Form

Conclusion: In elderly patients with associated diseases, this could be the therapy of choice in the management of bronchial micro fistula as a very effective alternative to surgical treatment.

Conflict of interest: No conflict of interest.

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152. Laparoscopic simultaneous resection of colorectal primary tumor and liver metastases

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Background: With the advance of modern laparoscopic technology, laparoscopic colorectal surgery and laparoscopic liver surgery are both worldwide accepted.

Material and methods: We present a patient with a sigmoid cancer and synchronous liver metastasis in Sg 5, who underwent a laparoscopic resection of colorectal primary tumor and liver metastasis

Results: The case of a 51-year-old man suffering from a sigmoid cancer is presented to illustrate the technique. Disease-free margins of resection of both organs were achieved. Pathology revealed a poorly differentiated colonic adenocarcinoma. The patient's postoperative course was uneventful. Nine months after surgery, he has no recurrence or distal metastasis.

Conclusions: simultaneous laparoscopic approach is technically feasible, safe, and associated with good oncological outcomes.

Conflict of interest: No conflict of interest.

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153. Endometrial cancer: Retroperitoneal lymphadenectomy for bulky disease

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Background: Cancer of the endometrium is the most common gynecologic malignancy in developed countries and the second most common in developing countries. Endometrioid carcinoma is the most common histologic subtype of endometrial carcinoma. Laparoscopic approach is an option for staging surgery.

Materials and methods: A 68-year-old female patient (FR) suffering of vaginal bleeding underwent, in June 2015, hysterectomy without endometrium evolution in another service. The anatomical pathology was of endometrioid adenocarcinoma, grade III, with 90% of myometrium invasion. The patient had no family history of malignant neoplasia. Chest and full abdomen tomography was conducted, to cancer staging, and showed 1) lymphadenopathy in the inter-aortocaval region, the largest with 3 cm, 2) mass in the para-aortic region with 6 cm and 3) lymphadenopathy in the pelvis.

The second surgery was performed in October 2015. As for the positioning of the team, on the first step (for retroperitoneal dissection), the surgeon was positioned to the patient's right side, the cameraman between

her legs, the first assistant to the patient's left, and the nurse to the patient's left as well. The monitor was also positioned to the patient's left but in a superior position. For this procedure the team used 5 trocars, three of 11 mm, and two of 5 mm. The energy used was the monopolar Hulk type and bipolar sealer and divider (LigaSure®). On the second step (pelvic dissection), the surgeon was positioned to the patient's left side, the cameraman to the patient's right, and the first assistant to the patient's right as well, nurse remained in the same position as for the first procedure. The monitor was placed to the patient's right at a lower position.

Results: Total surgery time was of 180 minutes; blood loss was estimated at 500 ml without transfusion. The patient had a good recovery after surgery. Nutrition was initiated on the first postoperative day. The patient was discharged on the fourth day of hospitalization.

The histopathological found 7 out of 20 lymph nodes damaged in the retroperitoneal. The measured mass of fused lymph nodes, in the largest diameter was of 7.8 cm. In the pelvis 20 lymph nodes were identified, 14 with endometrioid adenocarcinoma.

Patient was sent to adjuvant chemoradiation.

Conclusions: Lymph node bulky disease does not exclude laparoscopy as a choice of an access route for the surgical staging of endometrial cancer.

Conflict of interest: No conflict of interest.

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154. Modified superior pedicle with volume replacement with inferior glandular pedicle – A case report

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A 37-year-old women presented with a 3-cm invasive carcinoma in the left breast at the 2 o'clock position in the anterior axillary line. Histology showed a triple-negative breast cancer. Neoadjuvant chemotherapy was delayed by development of an abscess after the core-cut biopsy. After antibiotic therapy was unsuccessful the abscess was excised. Pathology showed dermal infiltration by the tumor. The patient received 8 cycles of neoadjuvant chemotherapy.

Partial mastectomy with removal of affected skin was achieved with a mastopexy T-incision and by transposition of the skin section in the upper outer quadrant. Surgical margins were negative. Skin and breast tissue in the upper outer quadrant had to removed, then we moved skin down from the bottom outer quadrant to the affected area in the upper outer quadrant. Incision and removing of skin and tissue in the upper outer quadrant of the left breast was done (400 g). To achieve symmetry and to cover the defect in the upper outer quadrant, deepithelialization of skin in the newly created T-incision (vertical and medial part of the T-incision) was performed. This area of skin with underlying tissue was used as a dermoglandular pedicle. After the free dissection of the dermoglandular pedicle in the inframammary fold, the defect in the upper outer quadrant was covered by rotating it from the bottom inside to the upper outer quadrant. Pathology showed tumor free tissue and negative lymph nodes.

The postoperative course was uneventful, the patient was satisfied with the esthetic results and free of disease at 3 years.

The surgical steps are presented in a video.

Conflict of interest: No conflict of interest.

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Poster Session: Breast Cancer

200. Does locally advanced breast cancer differ in Egyptian patients? F. Abou El-Kasem¹, M. Abdel-Hafez¹, H. Gamal², A. Abdul-Rahman³

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Background: Women with locally advanced breast cancer (LABC) who are breast conservation (BCT) candidates after neoadjuvant chemotherapy have the best long-term outcome and low local-regional recurrence (LRR) rates. However, young women are thought to have a higher risk of LRR based on historical data.

Study objective: A cancer registry was analyzed to determine the clinicopathologic characteristics affecting 118 locally advanced breast cancer referred to National Cancer Institute, Cairo University, Egypt from 2010 to 2014.

Material and methods: Retrospective review of patients with locally advanced breast cancer (LABC) presented to National Cancer Institute, Cairo University, Egypt; diagnosed between 2010 and 2014. Detailed clinical, surgical and pathological data were obtained from all patients. Pearson's chi(2) and Fisher's Exact tests were used for statistical analysis.

Results: There were 118 cases of LABC referred to our Institute during this period 2010 and 2014. We found a statistical significant relationship between young age group (≤ 40) and hormonal treatment ($p = 0.03$). Also, there was a statistical significant relationship between triple negative cases and local recurrence ($p = 0.001$). Our patients' age ranged from 25 to 75 years with median = 50.5 years. Eighty-eight (75.9%) cases received neoadjuvant chemotherapy. Seventy-four (66.1%) cases received adjuvant treatment. Forty-two (38.2%) cases had >3 positive lymph nodes. Eighty-one (71.7%) cases underwent MRM. Only, 5 (4.3%) cases were of ILC pathological type. T3 was identified in 53 (44.5%) cases. Grade 2 of differentiation was proved in 113 (95%) cases. Ninetytwo (77.3%) cases were ER positive. Eighty-one (68.1%) cases were PR positive. Eighty-eight (73.9%) cases were HER2/neu positive. Seventy-nine (66.4%) cases received adjuvant radiotherapy.

Conclusions: There is statistical significant correlation between young age group (≤ 40) and hormonal treatment ($p = 0.03$). Also, there was a statistical significant relationship between triple negative cases and local recurrence ($p = 0.000$). Adequate aggressive treatment is recommended for young breast cancer patients. Adjuvant radiotherapy for triple negative breast cancer patients is recommended to avoid local recurrence.

Conflict of interest: No conflict of interest.

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201. A voice for sentinel node biopsy at the time of breast surgery for non-palpable but mass-forming pure DCIS found on image-guided breast biopsy

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Background: In the era of screening programmes breast ductal carcinoma in situ (DCIS) is diagnosed more and more often, usually as mammographic microcalcifications. Asymmetric density, architectural distortion, or radiological mass are less common. The aim of this study was to assess the risk of postoperative upgrading to invasive cancer in cases of pure DCIS presenting as non-palpable mammographic mass.

Material and methods: We studied thirty-five consecutive patients treated in years 2004–2015 due to pure DCIS found on minimal-invasive image-guided biopsy (core-needle or vacuum-assisted) of non-palpable mammographic mass. When appropriate median, mean, standard deviation and range were calculated. Patients without upgraded DCIS were compared to those with postoperative upgrading to invasive cancer using Student T-test for continuous variables and chi-square test for categorical features. P-value less than 0.05 was considered statistically significant.

Results: Median patient age and lesion size (mean, SD, range) was 65 years (64.5, 11.3, 30–87) and 9 mm (9.0, 1.9, 6–14), respectively. Postoperative invasion was found in 14 patients giving 40% upgrading rate. Patients with upgraded DCIS were significantly younger (66.1 vs 70.7 years, $P = 0.007$). They had slightly, but not significantly, larger lesions (9.6 vs 8.8 mm, $P = 0.244$). More than one-third of DCIS with diameter equal or smaller than 10 mm were upgraded and more than half of larger lesions: 36% and 57%, respectively. However, the difference was not significant ($P = 0.300$), which means that DCIS forming even a small mass is a high risk lesion with regard to the presence of invasive component in postoperative specimen.

Conclusions: Pure DCIS diagnosed on image-guided biopsy of non-palpable mammographic mass is associated with important risk of the presence of invasion in surgical specimen. Thus, one-step operation that includes sentinel node biopsy is worth to be taken into account.

Conflict of interest: No conflict of interest.

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202. An oncoplastic approach to central breast tumours

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Background: Oncoplastic approach to breast cancer allows oncologically adequate tumour excision without compromising cosmetic results. However, in cases of central breast tumours to achieve these goals both remains commonly a surgical challenge.

Material and methods: Thirty-four patients operated on due to central breast tumour (malignant or benign) in the year 2014 were studied. Series covered retroareolar lesions and cases when the distance between tumour and nipple-areola complex (NAC) was up to 2 cm. Two women were not enrolled into the analysis because of the primary NAC excision with delayed reconstruction (Huemer technique). Remaining thirty-two patients underwent surgical excision after skin markings and hook-wire localisation in non-palpable tumours. Various oncoplastic techniques were used to fill the tissue defect, reshape the breast, and relocate the nipple-areola complex, if needed. Cosmetic outcome was assessed 4 weeks after surgery by the patient herself and rated as good, medium, or poor.

Results: Oncoplastic techniques included: superior pedicle technique (Pitanguy 4, Lassus & Lejour 1), inferior pedicle (2), batwing mammaplasty (7), V-mammaplasty: (2), J-mammaplasty (4), racquet mammaplasty (2), medial pedicle (Hall-Findlay 2), round-block technique (Benelli 5), Grisotti flap (2), vertical bi-pedicle technique (Pers & Bretteville-Jensen 1). In one patient wound haematoma requiring revision happened. In two women partial epidermal necrosis of areola developed (superior pedicle and round-block), successfully healed per secundam in both cases. In two other patients re-excision was needed because of positive or close margin. After four weeks from surgery cosmesis was assessed as poor in none of the cases. Cosmetic outcome was evaluated as good and medium in 30 (94%) and 2 (6%) cases, respectively. One patient with result rated as other than good determined a scar formation as a main

reason of decreased rate (racquet mammoplasty, partly in the area of decollete). The other woman was little disappointed in the volumetric asymmetry of ipsi- and contra-lateral breasts and the mediocre projection of the operated breast (resection of more than 25% volume of small and ptotic breast followed by batwing mammoplasty). Despite suboptimal outcome both patients were satisfied and upheld their decision not to undergo mastectomy with immediate reconstruction.

Conclusions: In patients with central breast tumours the choice of optimal oncoplastic technique is very important to achieve accurate local control and good cosmetic result. In decision making process tumour location, lesion diameter, breast size, tumour size/breast volume ratio as well as lesion-nipple distance, NAC projection and grade of breast ptosis should be taken under consideration.

Conflict of interest: No conflict of interest.

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203. Frozen section analysis versus imprint cytology for assessment of safety margins in breast conservation surgery

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Introduction: This cross-sectional comparative randomized study was designed to evaluate the accuracy of Intraoperative lumpectomy margins assessment in patients with early-stage breast cancer treated with Breast-conserving therapy; frozen section analysis versus imprint cytology.

Patient and methods: The study comprised 40 female patients with mean age of 47.1 ± 5.5 . The patients were randomized into 2 equal groups: frozen section group & imprint group. After adequate margins had been achieved, additional 5 mm normal breast tissues were removed all around the wound site and subjected to paraffin section examination.

Results: There was a non-significant difference in both groups as regards the need of intraoperative re-excision. The mean operative time was significantly longer in frozen section group (105.4 ± 17.4 min) compared to that recorded in imprint group (85.1 ± 16.2 min). On paraffin section examination, there was a significant higher rate of positive margin in frozen section group. The accuracy rate of frozen section analysis and imprint cytology to define positive margin was 85% & 100% respectively.

Conclusion: Both techniques were effective in reducing the need of a second operation for margin control. However, imprint cytology; in addition to saving tissue for paraffin histo-pathological examination; has the advantages of being more accurate to ensure clear margins with significant decrease in the operative time.

Conflict of interest: No conflict of interest.

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204. Value of intra-operative ultrasound in localization of breast masses during breast conserving surgery

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Background: This Prospective, controlled study was designed to evaluate the use of Intraoperative Ultrasound (IOUS) in localization of breast lesions during breast conserving surgery and correlate with pathological results for adequate negative margins.

Patient and methods: The study comprised 60 female patients. 30 patients as case study: patients undergo breast conserving surgeries with IOUS guidance and 30 patients as control: patients undergo breast conserving surgeries without IOUS guidance. Pathological microscopic examination of the specimen will be conducted to ensure adequate negative margins.

Results: Use of IOUS significantly improve the surgical outcome of breast conserving surgery via better localization, good assessment of the

safety margins and a satisfactory cosmetic results via minimizing rate of re-excision.

Conclusion: Intra Operative Ultrasound is an essential adjunct to surgery that should be experienced to obtain safety and cosmeses.

Conflict of interest: No conflict of interest.

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205. Volume displacement techniques for filling partial mastectomy defects

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Background: This prospective comparative randomized study was designed to compare between different volume displacement oncoplastic techniques in management of breast cancer as regarding oncological safety and better cosmetic outcome.

Patient and methods: The study comprised 42 female patients with mean age of 40.1 ± 6.5 . All patients underwent full clinical examination, preoperative mammography and core-cut biopsy. The patients were randomized into 3 equal groups: Local tissue rearrangement, Mastopexy approaches & therapeutic reduction mammoplasty to fill the defect of partial mastectomy. Surgical margins were assessed by frozen section analysis (FSA). Follow-up for cosmetic results and post-operative complications for one year was planned.

Results: Overall complication rates for oncoplastic reconstruction range from 15 to 30% in form of skin/flap necrosis, nipple and nipple areola complex necrosis, seroma, hematoma, infection, wound dehiscence and fat necrosis. Intra operative FSA decreases the incidence of positive margins, need for completion mastectomy and local recurrence. Oncoplastic breast reconstruction results in better aesthetic outcomes and higher patient satisfaction relative to partial mastectomy without filling the glandular defect.

Conclusion: Oncoplastic breast reconstruction at the time of partial mastectomy, either through local tissue rearrangement or mastopexy/reduction mammoplasty technique, is an extremely valuable tool in comprehensive oncologic treatment. These techniques leave patients with minimal breast deformities following proper treatment, without compromising oncologic safety. These are procedures that all reconstructive breast surgeons should be familiar with and offer their patients at the time of breast conserving surgery for breast cancer.

Conflict of interest: No conflict of interest.

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206. Pure DCIS on core biopsy of palpable breast mass: Rarely common, highly risky

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Background: Breast ductal carcinoma in situ (DCIS) is most often detected as microcalcifications in mammographic screening. Symptomatic DCIS diagnosed on biopsy of clinical mass is less common. The aim of study was to investigate when histologically confirmed pure DCIS presenting as palpable mass was postoperatively upgraded to invasive cancer.

Material and methods: Thirty consecutive patients treated in years 2004–2015 due to DCIS (without invasion or microinvasion) diagnosed on image-guided core-biopsy of mass lesions were studied. Median, mean, standard deviation and range were calculated if appropriate. Incidence and rates of postoperative invasion were analysed, impact on invasion risk was assessed using Student T-test for continuous variables and chi-square test for categorical ones with $P < 0.05$ considered statistically significant.

Results: Median patient age and lesion size (mean, SD, range) was 61.5 years (57.9, 10.7, 27–77) and 15.5 mm (20.2, 11.4, 10–60), respectively. Postoperative invasion was found in 23 patients giving the upgrading rate as high as 77%. Patients with invasion were younger, but not significantly (56.4 vs 63.0 years, $P = 0.157$). They tended to have much larger lesions (22.3 vs 13.4 mm). The difference did not reach but was close to the significant level ($P = 0.07$). All lesions >20 mm were upgraded (100%), compared to 67% of tumours up to 20 mm ($P = 0.048$). Upgrading rate of lesions >15 mm was significantly higher than smaller ones: 93% vs 60% ($P = 0.031$). Very small DCIS (up to 10 mm) was less upgraded than larger ones (50% vs 81%), however, it was not significantly safer from the risk of postoperative invasive component ($P = 0.176$).

Conclusions: In cases of palpable pure DCIS performing of sentinel node biopsy at the time of breast surgery is warranted because of very high risk of postoperative invasion.

Conflict of interest: No conflict of interest.

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207. Non-pleomorphic LCIS without imaging-histologic discordance and residual lesion may be referred to a close follow-up instead of surgical excision

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Background: There is still no consensus on the optimal management of lobular carcinoma in situ (LCIS) found on minimal-invasive breast biopsy. Particularly the need of surgical excision remains a subject of debate. The aim of this study was to assess the correlation between preoperative findings and risk of invasive cancer in postoperative specimen in patients with LCIS detected on image-guided biopsy.

Material and methods: Twenty-eight consecutive patients with LCIS found on stereotactic or ultrasound-guided breast biopsy in years 2004–2015 were studied. Patient age, lesion size, biopsy technique (core-needle vs vacuum-assisted), imaging-histologic concordance (concordant: BIRADS 4A/4B and pure LCIS without invasive cancer; discordant: BIRADS 4C/5 and pure LCIS without invasive cancer), LCIS histology (classic vs pleomorphic), and the presence of visible residual lesion were investigated. Groups of patients with and without LCIS upgrading to invasive cancer were compared using Mann–Whitney U-test. Impact of categorical variables on the risk of postoperative upgrading was assessed using chi-square test. P -value less than 0.05 was considered statistically significant.

Results: Median patient age and lesion size (mean, SD, range) was 56.6 years (56.6, 9.6, 36–74) and 15 mm (15.3, 5.8, 6–28), respectively. Postoperative invasion was found in 8 patients giving upgrading rate of 28.5%. Patients with postoperative invasion were younger (48.5 [36–71] vs 57.5 [47–74] years) and had larger lesions (17 [9–28] vs 14 [6–22] mm). These differences did not reach statistical significance, however, they were near: $p = 0.07$ and $p = 0.09$, respectively. Core-needle biopsy was associated with higher risk of upgrading than vacuum-assisted biopsy, but without statistical significance (42.9% [3/7] vs 23.8% [5/21], $p = 0.33$). Factors significantly influencing the risk of invasive cancer in subsequent surgery were: imaging-histologic discordance (77.8% [7/9] vs 5.3% [1/19], $p < 0.0001$), LCIS with pleomorphic histology (100% [5/5] vs 13% [3/23], $p < 0.0001$), and the presence of radiologically visible residual lesion (50% [7/14] vs 7.1% [1/14], $p < 0.05$). Just one of upgrading imaging-histologic concordant LCIS was of pleomorphic type and had a visible residual component.

Conclusions: When there is lack of visible residual lesion a post-biopsy surgical excision can be safely omitted in imaging-histologic concordant LCIS of classic type. Close radiological follow-up seems to be a reasonable option.

Conflict of interest: No conflict of interest.

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208. Imaging-histologic concordant breast papillomas without atypia and radiologically visible residual lesions after image-guided biopsy: A voice against the subsequent surgical excision

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Background: The management of breast papillomas without concomitant malignancy diagnosed on core biopsy remains controversial, particularly when no residual lesion is visible on imaging. The aim of this study was to investigate the incidence and risk factors of cancer in postoperative specimen from subsequent surgery of papillomas detected on image-guided breast biopsy.

Material and methods: 103 women with papillomas (without concomitant malignancy) found on image-guided breast biopsy were studied. Patient age, lesion size, biopsy guidance (ultrasound vs stereotactic), biopsy technique (core-needle with automated gun 14G vs vacuum-assisted 10G), presence of imaging-histologic discordance defined as B3 pathology in case of BIRADS category 5 (R5) lesion, and presence of atypia on core were investigated. Rates of postoperative cancer were calculated. Differences between analysed groups were determined by two-tailed Student t -test for continuous variables while by chi-square test for categorical variables, threshold for statistical significance set at $P < 0.05$.

Results: Median patient age and lesion size (range, mean, SD) was 53 years (31–69, 53.1, 8.9) and 11 mm (5–31, 12.7, 5.5), respectively. Postoperative cancer was found in 6 patients giving upgrading rate of 5.8%. There were 2 invasive ductal cancers (NST), 1 invasive lobular, 1 papillary cancer and 2 ductal carcinomas in situ (DCIS). Patient age and lesion size did not significantly differ between women with and without cancer after surgery. Core-needle biopsy (vs vacuum-assisted) and stereotactic biopsy (vs ultrasound-guided) were associated with higher risk of postoperative cancer: 12% vs 5% and 8% vs 5%, respectively. However, the differences also did not reach statistical significance. Among 6 patients with imaging-histologic discordance cancer was found in 5 cases (atypical ductal hyperplasia ADH in remaining one). When compared to concordant lesion the risk was significantly higher: 83% vs 1% ($P < 0.05$). Papillomas with atypia were associated with 62% risk of postoperative cancer (5/8, ADH in the rest) while lesions without atypia with 1% risk (1 case of large papilloma with bulky residual component). This difference was also statistically significant ($P < 0.05$).

Conclusions: In cases of imaging-histologic concordant breast papillomas without atypia and radiologically visible residual lesion close radiological follow-up instead of surgical excision seems to be a reasonable option.

Conflict of interest: No conflict of interest.

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209. Impact of dissecting tool on the post-mastectomy seroma formation in patients with obesity

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Background: Obesity is considered a significant risk factor of post-mastectomy seroma formation (SF). Although the optimal and fully efficient way of SF prevention has not been established yet. No single method has been demonstrated to be consistently and reliably effective. However, there are some techniques that have been reported to reduce the incidence

of SF, including different surgical tools used for tissue dissection. The aim of this study was to assess the incidence of SF in obese patients after mastectomy performed using various dissecting tools.

Material and methods: Twelve patients with obesity (body mass index BMI >30) operated on using monopolar electrocautery (EC; VIO300D, ERBE, Germany), bipolar coagulation (BC; BiClamp201T, ERBE, Germany), and ultrasound scalpel (US; UltraCision Harmonic Scalpel, Ethicon Endo-Surgery Europe, Germany) were reviewed. Median, mean, standard deviation and range of patient age and BMI were evaluated. SF rate was calculated and its association with dissecting tool was assessed. Student T-test was used for comparative analysis of continuous variables while chi-square test (with Yates correction when needed) for categorical ones. $P < 0.05$ was considered statistically significant.

Results: Median (range, mean, SD) patient age and BMI were: 64.5 (40–79, 62.3, 12.3) and 32.9 (30.2–36.7, 33.2, 2.0), respectively. SF was observed in 75% of patients (8/12): in 80% (4/5) operated with EC, 100% (3/3) operated with BC, and 25% (1/4) operated with US. The comparison between US and EC/BC was: 25% (1/4) vs 88% (7/8). Patient age and BMI did not significantly differ between these groups (EC/BC vs US, median, range, mean, SD): 64.5, 40–79, 62.4, 11.6 vs 64.5, 41–78, 62, 15.4, and 32.9, 30.2–36.7, 33.3, 2.0 vs 32.9, 30.6–36.2, 33.1, 2.0, respectively. Risk of SF in EC/BC group was higher with statistical significance (chi-square 4.6875, $P = 0.03$).

Conclusions: There is considerable risk of post-mastectomy SF in patients with obesity. In these cases dissecting with US can be a valuable protective factor against SF, probably because of less thermal injury and tissue damage. Due to small sample size further studies are needed involving more robust statistics and cost-effectiveness analysis.

Conflict of interest: No conflict of interest.

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210. Is the population-based mammographic screening program applicable in health care system of middle income country?

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Background: Potential benefits of screening need to be carefully balanced against the financial burden for the national health care system, particularly in emerging economies. The aim of this study was to assess the cost-effectiveness of population-based mammographic screening program in the 3-million region of Lower Silesia (Poland) in the year 2015.

Material and methods: Data were collected using the databases of the official computer system for monitoring of prophylaxis programs (SIMP), National Health Fund (Lower Silesia Regional Branch) and the Lower Silesia Cancer Registry. The amounts of expenses were obtained from the Regional Coordinating Center for Screening Programs in PLN (Polish Zlotys) and converted into EUROs (EU) and US Dollars (USD) using the database of Polish National Bank to determine exchange rates. The number of screen-detected cancers was calculated and costs of cancer detection were measured.

Results: Expenses for mammography (two-view), further assessment, invasive investigations, and invitation letters/leaflets were 8,207,820 PLN (1,926,718 EU; 2,104,569 USD), 261,440 PLN (61,371 EU; 67,036 USD), 68,100 PLN (15,986 EU; 17,462 USD), and 178,076 PLN (41,802 EU; 45,661 USD), respectively. To sum up, total expense for the screening program was 8,715,436 PLN (2,045,877 EU; 2,234,728 USD) whereas the number of cancer detected was 560. The average cost of breast cancer detection in population-based mammographic screening in the region of Lower Silesia in the year 2015 was 15,563 PLN (3,653 EU; 3,991 USD). It is considerably lower than cost of cancer detection in early years of mammographic screening in Western Europe (1991–1992,

1995–1996) expressed in 2015 USD (using the comparison of relative value of money calculated with the Consumer Price Index) that gives 11,400–12,900 USD.

Conclusions: Due to relatively low cost of breast cancer detection mammographic screening program seems to be applicable in the middle income country having strongly limited budget of its public health care system.

Conflict of interest: No conflict of interest.

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211. Skin-reducing mastectomies and immediate reconstruction: Different types of surgeries and modifications of skin incisions according to the tumor location

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Background: Breast reconstruction is an integral part of the breast cancer treatment when patients need mastectomy. Immediate reconstruction is preferable due to the better aesthetic results, lower rate of complications and the same oncological results. Skin-reducing mastectomies allow achieving good breast appearance in different types of reconstruction.

Methods: We present 9 years of experience of the first in Ukraine Breast Unit, organized according to EUSOMA criteria. All the patients were discussed on the multidisciplinary meeting according to the international guidelines. All patients were involved into decision-making process. We used skin-sparing, skin-reducing mastectomies for those, who had middle and large size of breast. We offered immediate breast reconstruction for all patients if they did not have contraindications. If patient refused immediate reconstruction, we performed goldilocks-mastectomy – Wise-pattern skin-reducing subcutaneous mastectomy with using deepdermized breast skin of the lower flap for filling defect after parenchyma's removal (Richardson, Ma, Barber 2011).

If the patient accepted reconstruction, we performed it in 1 stage (implant), 2 stage (expander/implant) or used pedicled flap. We present different types of skin incision according to the tumor location with modification of the superior and inferior skin flaps which allow avoiding additional scarring and ischemic complications. We had photos of the patients on all stages of the treatment.

Results: 58 skin-reducing mastectomies for 50 patients were performed in our Breast Unit during 2007–12.2015. Among them 23(39.7%) skin-reducing subcutaneous goldilocks-mastectomies without reconstruction were performed for 22 patients. We performed 13(22.4%) implant, 21(36.2%) expander/implant and 1(1.7%) LD-flap reconstruction. 9(18.0%) patients had bilateral surgeries. 13(22.4%) mastectomies were nipple-sparing, 3 patients had symmetrized mammoplasties. Average age was 55.5(32–76). ALND were performed in 28(48.3%) patients. SLNB – in 19(32.8%). Average weight of specimen was 685(268–2136)g, average size – 3.7(0.5–10)cm. 21(42%) patients had neoadjuvant chemotherapy, 25(50%) – had adjuvant radiotherapy. All kinds of complications were observed in 24(41.4%) cases. Mostly it was seromas (7) and small ischemic disorders (8). Only 5(8.6%) needed outpatient wound debridement and 1(1.7%) – inpatient reoperation. We had 2 implants lost. We followed up 37(74%) patients during 30.1(7–72) months and found out 1(2%) local, 6(12%) systemic recurrences and 3(6%) patients died.

Conclusion: Our experience showed that skin-reducing mastectomies, with (and even without) reconstruction, have a good aesthetic, functional and oncological results and could be successfully introduced even in less-developed countries like Ukraine.

Conflict of interest: No conflict of interest.

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212. Difficult mastectomies subsequent to unsuccessful breast conserving operations of peripheral cancers: When oncoplastic approach meets the history of surgery

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Background: Oncoplastic techniques allow adequate local control with excellent cosmetic outcomes in more and more breast cancer patients. When breast conservation approach is unsuccessful, subsequent mastectomy is performed, usually with ease. However, in peripheral cancers choosing mastectomy incision to remove tumour bed all together with scars produced by prior oncoplasty can be a surgical challenge. The aim of the study was to investigate what incisions had been used in those difficult cases.

Material and methods: We reviewed our records for the last five years to find/retrieve the patients, who underwent mastectomy subsequent to unsuccessful breast conserving surgery using oncoplastic techniques. Among them we identified those ineligible for the traditional transverse Stewart's approach. We investigated what incision had been chosen by the operating surgeon as alternative, and compared it to the primary tumour location and prior oncoplastic technique.

Results: Nine women were identified to have very peripherally localised cancers, which made the mastectomy with transverse incision unfeasible. Among them just four underwent mastectomy with the approach reported in last decades, two each (tumour location, oncoplastic technique): Y-shaped incision by Nowacki MP and Towpik E, 1988 (upper-outer quadrant, segmentectomy + rotation mammoplasty; lower-outer, J-mammoplasty) and S-scar by Kiluk JV and Cox CE, 2008 (upper-inner, parallelogram mammoplasty; lower-outer, J-mammoplasty). In the remaining five cases historic incisions were used, techniques described by: Orr TG, 1951 (lower-inner, V-mammoplasty), Jackson JN and Ogilvie JH, 1932 (superior pole, segmentectomy + rotation mammoplasty), Jennings JE, 1926 (upper-outer, B-mammoplasty), Deaver JB and McFarland J, 1918 (inferior pole, superior pedicle with inverted-T), and Meyer W, 1917 (upper-inner, segmentectomy + rotation mammoplasty). In all the cases recovery was uneventful, wounds were primarily healed, skin necrosis did not develop.

Conclusions: In peripheral cancers mastectomy subsequent to unsuccessful breast conserving surgery can be difficult but is feasible with alternative incisions. There are a lot somewhat forgotten historic techniques which can be used. However, if reconstruction is planned, it needs to be kept in mind that huge surgical scar can considerably impair cosmetic outcomes.

Conflict of interest: No conflict of interest.

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213. Short-term follow-up (early recall) in breast cancer screening programs should be avoided due to very low predictive value for malignancy

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Background: Mammographic screening is believed to reduce breast cancer mortality. Because it takes too long to become evident some operational objectives were identified to monitor the management of the program and to measure its effectiveness. One of them is an early recall rate, defined by the proportion of women who are re-screened at the interval less than the routine round length of the program. The aim of this study was to investigate how many cancers were detected in our institution in women placed in early recall.

Material and methods: Nation-wide population-based program of mammographic screening is centrally organised and targets women aged 50–69 without breast cancer history. Biennial two-view mammography is used as a standard screening test. The second level diagnostic tools are clinical examination with additional imaging. Following further assessment women with lesions categorised as R3 are referred to the early recall and screened at the interval less than the routine round length (short-term

follow-up). We reviewed the database of program, identified patients who had been referred to early recall in 2014 year and subsequently re-screened at short-term follow-up. Then we investigated the results in term of invasive procedures and cancers detected.

Results: 90,501 women were screened as program attendees during 2014 year. 727 of them (0.8%) were referred to early recall. Acceptable level recommended by the European Commission is <1% while desirable level is 0. After short-term follow-up 721 women were referred to back into the program. Just 6 women underwent invasive investigations (vacuum-assisted stereotactic biopsy due to progression of microcalcifications). In none of the cases malignant lesion was found, neither invasive cancer nor ductal carcinoma in situ.

Conclusions: Due to very low predictive value for malignancy, the practice of short-term follow-up should be avoided in screening program or strongly restricted to an absolute minimum. It can create patient anxiety, falsely reassure the woman, increase morbidity by promoting benign biopsies. Early recall should never be used to avoid a skilled radiological decision and to mask insufficient or inadequate assessment procedures.

Conflict of interest: No conflict of interest.

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214. Rotation mammoplasty following segmental breast resection: An anatomy-based oncoplastic approach to radially spreading cancers and ductal carcinomas in situ requiring axillary procedure

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Background: In the last decades numerous oncoplastic techniques have been described and published. The optimal choice should be individual and taking potential benefits as well as possible disadvantages into account. The aim of this study was to assess the usefulness of rotation mammoplasty following segmental resection in breast conserving therapy.

Material and methods: We present a simple oncoplastic approach to not centrally localised tumours requiring axillary procedure (invasive cancer or extensive/high risk DCIS). Technique is based on the excision in radial manner (similarly to some other methods, e.g. V- or J-mammoplasty) that is probably the best choice for segmentally extended cancers occupying a large portion of breast quadrant. This pattern of histological spread follows the ductal anatomy of the breast extending in a radial fashion along an axis toward and away from the nipple. A series of eighty-five women operated on using this technique followed by radiotherapy was studied. In each case follow-up was carried out carefully and special effort was made to identify postoperative complications. Cosmetic result was judged six months after radiotherapy by the patient herself and two surgeons.

Results: Operation was completed without any difficulties in all the cases. Due to convenient access to axilla both sentinel node biopsy and axillary dissection could be done with ease. Wound was healed by primary adhesion, skin or breast tissue necrosis did not develop. Neither skin necrosis nor surgical site haematoma was observed. Re-excision rate due to positive margin was 7%. The scar did not result in any impairment of arm movement. In none of the cases cosmetic outcome was scored as poor or mediocre. It was evaluated by the women as excellent and good in 73 (86%) and 12 (14%) cases, while by the surgeons as excellent, good and medium in 65 (76%), 16 (19%), and 4 cases (5%), respectively.

Conclusions: This safe and simple technique can be an interesting surgical option for oncoplastic operation of non-central breast cancers with regional distribution or large intraductal component, particularly if axillary procedure is performed at the same time. We recommend it for women with moderate or low breast projection and appropriate nipple-areola complex (NAC) position. We do not recommend this technique in cases of pendulous breast with grade III/IV ptosis (need more complex approach including breast lifting and NAC recentralisation), extensive breast projection (risk of tubular deformity), and very peripheral tumours in upper-inner quadrant (risk of visible scar in the area of décolleté).

Conflict of interest: No conflict of interest.

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215. Imaging-histologic discordance following image-guided core-needle or vacuum assisted breast biopsy – Analysis of 340 lesions of BIRADS category 4C

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Background: Subsequent surgical excision after hook wire/skin marking localisation is the preferred option in our institution when imaging-histologic discordance (IHD) is found following stereotactic or ultrasound-guided breast biopsy of BIRADS 4C lesion. The aim of this study was the analysis of IHD cases after core-needle and vacuum-assisted biopsy.

Material and methods: We reviewed the records of 340 patients who underwent stereotactic or ultrasound-guided core-needle (14G) or vacuum-assisted (10G) breast biopsy due to BIRADS 4C lesion. IHD was defined as category B1/B2 (normal tissue or uninterpretable, and benign lesion, respectively) of biopsy histology. Comparison between biopsy and final pathology was done. Rates of IHD, false negative rates and negative predictive values for cancer were calculated. Statistical analysis of categorical variables was performed using chi-square test with $P < 0.05$ as a significance limit.

Results: The overall rate of IHD was 8% (26/340). In all the patients lesion was not missed – only B2 results were reported. IHD rate was significantly higher for stereotactic biopsy when compared to ultrasound-guided: 20% (10/51) vs 6% (16/289), respectively ($P < 0.001$). Among ultrasound-guided procedures IHD was significantly more common when core-needle biopsy was performed than vacuum-assisted biopsy: 14% (14/97) vs 1% (2/192), respectively ($P < 0.00001$). There were 10 lesions of B5 category on final pathology: 2 invasive cancers (both core-needle) and 8 ductal carcinomas in situ (all stereotactic) and 6 lesions B3: lobular neoplasia (stereotactic), radial scar (core-needle) and phyllodes tumour (core-needle), in 2 patients each. 10 lesions were not upgraded on postoperative examination, including: fibroadenoma, chronic mastitis, fibrocystic change, sclerosing adenosis, duct ectasia and fat necrosis. Rate of upgrading on final pathology to category B3–B5 was 100% for stereotactic technique and 37% for ultrasound biopsy ($P < 0.01$) while rate of upgrading to category B5 was 80% and 12% ($P < 0.001$), respectively. None of the two patients after vacuum-assisted biopsy was upgraded. 43% (6/14) and 14% (2/14) of patients following core-needle biopsy were upgraded to category B3–B5 and B5, respectively. False negative rate for stereotactic, core-needle, and vacuum-assisted biopsy was 100%, 43% and 0% ($P < 0.01$), respectively, while negative predictive value for cancer 0%, 86%, and 100% ($P < 0.0001$), respectively.

Conclusions: There is a considerable risk of malignancy on final pathology in cases of imaging-histologic discordance following image-guided biopsy of BIRADS 4C lesion, particularly after stereotactic procedure. However, our results suggest that in selected patients with histologic diagnosis of benign lesion (B2) on vacuum-assisted biopsy close radiological follow-up instead of subsequent surgical excision could be safely carried out.

Conflict of interest: No conflict of interest.

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216. Clinicopathological data and predictors of PR and HER2neu positivity prior to biopsy in advanced female breast cancer, NCI experience

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Background: It is well known that presence of ER, PR or HER2neu is associated with better response to hormonal Tx & Herceptin. Looking from a different angle, we thought to detect predictors of PR and HER2neu Positivity Prior to Biopsy in advanced breast cancer (BC).

Methods: A retrospective cohort study of BC patients referred to NCI, Cairo University (2012–2014). Detailed clinicopathological and surgical data were obtained. Pearson's (X2) test, Fisher's exact tests and logistic regression model were used.

Results: Enrolled BC cases were 153 with median age 53 years (27–86). Thirty six (23.5%) cases were T3N1M0. Ninety-six (62.7%) cases were ER+ve. More than half of our cases (52.9%) were PR+ve. Her2neu was detected in 31 (20.3%) cases.

We found a statistically significant difference between young (≤ 45) and old age group in lymph node(N) metastasis with higher stages tend to be more prevalent in the later group ($p = 0.03$). Higher ER positivity was more observed in older patients ($p = 0.015$).

69 cases with full clinical data were selected for subgroup analysis to evaluate the predictors of positive PR prior to breast biopsy. 88.4% cases were PS = 1. Median number of offsprings was 3. Near 86% had –ve family history for BC. 30.4% cases had hypertension. One third were diabetic while near 50% were postmenopausal.

Peau d'orange, Nipple retraction, Mastalgia and Rt breast lump were detected in 36.2, 31.9, 31.9 and 49.3% respectively. Moderate differentiation was confirmed 69.6%. Stage T4 (53.6%), N1 (68.1%) and Stage T4N1M0 was detected in 44.9%. Breast conservative surgery was done in 2.9%.

ER+ve and PR+ve were present in 66.7% and 49.3% respectively were PR+ve. Neo-adjuvant FEC, adjuvant radiotherapy and adjuvant tamoxifen, were received in 69.6%, 79.7% and 68.1% respectively. Higher offspring number ($p = 0.009$) was the only significant predictor of PR positivity in multivariate analysis (MVA). Another Logistic regression model identified diabetics ($p = 0.018$), nipple retraction ($p = 0.043$) as predictors of HER2Neu positivity in univariate analysis while only presence of nipple retraction was significantly predicts HER2neu+ve BC cases in MVA.

Conclusions: Advanced N stage and ER positivity are significantly affecting old BC patients. Higher number of offspring could significantly predictor PR positive BC cases while nipple retraction is the only predictor of HER2neu positivity among our cohort. Young age group should be treated aggressively. Neoadjuvant hormonal Tx & Herceptin should be evaluated in patients fulfilled positive predictors for PR and HER2neu +ve BC patients respectively.

Conflict of interest: No conflict of interest.

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217. Could clinical or radiological data detect immunohistochemistry output (predictors of triple negative breast cancer prior to biopsy – NCI experience)?

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Background: Near half of metastatic breast cancer (BC) cases expressing estrogen and/or progesterone receptor (ER and PR) responds to endocrine therapy which also provides 50% reduction in the development of recurrent disease post-operatively. Many publications have focused on correlation of biomarkers, (ER, PR and HER-2/neu status), gene profiles, multigene assays and genetic polymorphisms with response to hormone therapy. Our aim is determination of clinicopathological characteristics affecting BC and identification of predictors of ER, PR and HER2neu negativity (Triple–ve) prior to biopsy.

Methods: A retrospective study of BC patients referred to National Cancer Institute (NCI), Cairo University [2012–2014]. Clinical, pathological and surgical data were obtained from all patients. Chi-square(X²) test and logistic regression were used for statistical analysis.

Results: Among 153, with median age 53 years (27–86) thirty-six (23.5%) cases were T3N1M0. ER+ve, PR+ve and HER2neu cases were 62.7%, 52.9%, and 20.3% respectively while triple negative cases were 32(20.9%). Among elderly patients (>45 years), advanced nodal (N) stage (p = 0.03), higher ER positivity (p = 0.015) were more observed. Subgroup analysis on 69 cases with full clinical data were done to identify Triple–ve BC predictors. Sixty-one (88.4%) cases were ECOG-performance status (PS) = 1. Median number of offsprings was three. 85.5% had –ve BC family history. 49.3% were postmenopausal. Peau d'orange was detected in 25(36.2%) cases. Nipple retraction was detected in 22 (31.9%) cases. Twenty-two (31.9%) cases were complaining of mastalgia. BC lump laterality was equal. More than half cases (53.6%) were T4. 68.1% were N1. Moderate differentiation was confirmed in 48 (69.6%) cases. 95.7% underwent modified radical mastectomy. Neo-adjuvant FEC, adjuvant radiotherapy and adjuvant tamoxifen, were received in 69.6%, 79.7% and 68.1% cases respectively. Higher Ejection Fraction (p = 0.027), less offspring number (p = 0.040), and higher tumor grade were significant predictors of triple–ve BC cases in multivariate analysis (MVA).

Conclusion: Advanced N stage and ER positivity are significantly affecting old BC patients. Young age group should be treated aggressively. Higher ejection fraction, less offspring number and higher tumor grade could predictor triple–ve BC and indeed hormonal and herceptin treatment response.

Conflict of interest: No conflict of interest.

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218. T-DM1 therapy for advanced or recurrent breast cancer patients in the late line

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Background: T-DM1 is the standard regimen for advanced or recurrent HER2 positive breast cancer patients in the second line. The purpose of this study is to evaluate the effect of T-DM1 therapy as the late line for HER2 positive breast cancer patients.

Patients and methods: Four patients were evaluated (age 47–76). One case was administered as fourth line and others were as six or more lines. All cases had pulmonary and/or liver metastasis. Three cases were pure HER2 type and one was luminal HER2 type.

Results: The mean duration of administrated is 6.0 months (3–11 mo.). Response rate is 25% (IPR, 1SD and 2PD). Clinical benefit is 50%. The dose was reduced by liver dysfunction or thrombocytopenia in all four patients. Survival is 12, 15, 17 months and one patient is alive at that time.

Discussion: This regimen showed relative high response rate and long term administration as the third or more line. This combination therapy may be useful for HER2 positive advanced or recurrent breast cancer patients as the late line. However we should be careful about a side effect.

Conflict of interest: No conflict of interest.

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219. Can we use frozen section analysis of sentinel lymph nodes mapped with methylene blue dye for decision making upon one-time axillary dissection in breast carcinoma surgery in developing countries?

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Background: The aim was to evaluate accuracy of intraoperative frozen section analysis (FSA) of sentinel lymph nodes (SLN) mapped using methylene blue dye (MBD) and its usefulness for selecting patients with breast carcinomas and positive axillary lymph nodes (ALN) for one-time axillary dissection.

Methods: Following 2005 ASCO guidelines, 152 female patients with T1/T2 breast carcinomas and clinically negative ALNs were selected for mapping using MBD (1%) from October 2010 to December 2011. Patients underwent FSA of mapped SLNs and ALN dissection. The accuracy of SLN-FSA was tested by comparison of these findings with definite pathohistology on SLNs, as well as on other ALNs. Sensitivity, specificity, positive and negative predictive values were calculated.

Results: There was a 98%-match between FSA and definite pathohistology findings on SLNs, which suggests the high accuracy of FSA in this series. None of 3 patients with false-negative SLNs on FSA had additional axillary metastases. One out of 20 (5%) patients with metastases in other ALNs had “clear” SLNs, both on FSA and definite pathohistology (false negative). Method's accuracy is 94.1%.

Conclusions: SLN-FSA enables adequate selection of patients for one-time axillary dissection. MBD mapping technique is cheap, feasible and enables easy and precise detection of first draining ALNs. Using FSA of SLNs mapped with MBD, patients with breast carcinoma benefit from complete surgical treatment during one hospitalization, the risk of undergoing anaesthesia twice is reduced, as well as the treatment cost, which is important for developing countries.

Conflict of interest: No conflict of interest.

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220. Silent breast cancer: Study of the disease prevalence held by image-guided biopsies on autopsy specimens (Sisyphus study)

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Background: Breast cancer epidemiological patterns vary in European countries, presenting different incidence rates. Recent data suggests that the reduction of breast cancer mortality is not due to the early detection of the disease but is, instead, the result of the advances in molecular medicine and the development of new therapies.

Materials and methods: The aim of this study is to quantify the real number of breast cancer present in both genders by calculating the prevalence of silent breast cancer in corpses. We intend to quantify the existing, but without a clinical manifestation disease that was not the cause of death of the patient performing bilateral subcutaneous radical mastectomies in corpses of both genders with age above 40 years old.

Discussion: In the international literature there are only three publications which based on medico/legal autopsies were designed to define the ‘natural reservoir’ of the disease. The present study is the first one to appraise breast tissue by imaging means thereby, orienting the biopsy incision, instead of randomly collecting samples.

Conclusions: To the best of our knowledge, the design of the present study is the first of its kind, where image-guided and not random biopsies will be used to define the breast cancer prevalence in a ‘healthy’

population. The study hopes to demonstrate that the disease reservoir is higher than we actually believe. Furthermore, it wishes to contribute to better define the disease by determining which tumour profiles and which patient groups potentially do not benefit from aggressive treatments.

Conflict of interest: No conflict of interest.

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222. L shaped nipple reconstruction: A novel technique to improve patient satisfaction outcomes

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Background: Nipple reconstruction is the final stage of breast reconstruction and performed after acceptable breast mound shape and symmetry has been achieved. This study describes an original technique of nipple reconstruction and is set to address issues such as suboptimal nipple position in transverse mastectomy scar and also measures patient satisfaction of outcomes.

Objectives: The objectives of this study are to describe an original technique of nipple reconstruction, using a combination of random flap and dermal graft; and measure patient satisfaction of outcomes. This innovative L shaped nipple reconstruction seems to be a viable alternative to traditional techniques and is set to overcome challenges of nipple reconstruction such as correct positioning, maintaining adequate projection and creating an almost inconspicuous scar.

Materials and Methods: 31 patients underwent the L-shaped nipple reconstruction between 2005 and 2011 at Liverpool Breast Unit; Linda McCartney Centre. All participants took part in outcome satisfaction survey of this technique. Complications and outcomes were analysed and compared to 59 patients who underwent traditional CV flap during the same period. The study analysed the combined data of 90 patients.

Surgical technique: "L" shaped flap is a random local skin flap. It has two arms; a long arm and a short arm. The long arm of the L shape is raised and rotated clockwise through 180 degree. The short arm of the L shape is raised and sutured in place to act as a "cap" to the neo nipple. A full thickness dermal graft is then harvested from the lower abdomen and used to create the neo areola.

Results: All 31 patients who underwent L flap nipple reconstruction were included for analysis and compared with 59 patients with CV flap nipple reconstruction. Their average age was 44 years (age range 34–58 years). There was no statistically significant difference in complication rates between traditional CV flap and L-shaped nipple reconstructions (Fishers exact test $p = 0.60$). 94% were either pleased or very pleased with their decision to have undergone nipple reconstruction and 93% would either strongly or very strongly recommend it to a friend.

Conclusions: The innovative L-shaped nipple reconstruction has positive patient satisfaction outcomes and is a very suitable alternative to traditional nipple reconstruction such as CV flap.

Conflict of interest: No conflict of interest.

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224. Lipomodelling – An initial experience in improving cosmetic outcomes in patients undergoing breast surgery

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Background: The objective of this abstract is to report our initial experience in patients who have undergone previous mastectomy with breast reconstruction (immediate or delayed; Latissimus dorsi flap [LD] or pedicled Transversus Rectus Abdominal Myocutaneous [TRAM]) procedures, with subsequent fat transfer.

Materials and methods: We analysed our collected data on all patients who have undergone lipomodelling over the last 3 years (November 2012–November 2015). Fat was harvested from suitable donor sites using low-negative pressure syringe method and centrifuged at 3000 rpm for 3 min. The purified fat was injected in 2 ml increments into multilayered microtunnels, starting from deeper layers and moving to superficial layers in the subcutaneous tissue. Patient satisfaction was assessed using telephone survey, and the results were documented in the case notes.

Results: 33 patients underwent lipomodelling, all of them had previous total mastectomy with breast reconstruction. Four had bilateral procedures and three required 3 lipomodelling sessions. twelve required 2 sessions and eighteen required a single session to achieve bilateral symmetry.

Mean volume of fat harvested 220 ml. and mean injected volume was 67 ml.

3 patients developed postoperative complications (two-bruising and one-fat necrosis).

94% patients were satisfied with the post operative outcome.

Conclusions: Lipomodelling offers an additional tool to refine breast reconstructive surgery. This study demonstrates that lipomodelling is a safe and simple technique and can be performed in a district general hospital, for sculpture optimisation and reshaping reconstructed breasts with improved softness and a natural feel.

Conflict of interest: No conflict of interest.

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225. Metastatic sentinel lymph node in early breast cancer patients: Immunological aspects

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Tumour antigens are poorly expressed, heterogeneous, they modulate rapidly. As a result, their recognition and elimination by the immune system is very difficult. There are several mechanisms by means of which the host can neutralize oncogenesis and prevent it from occurring.

The sentinel lymph node concept has brought about a change in the surgical treatment of the regional lymphatic basin while preserving the prognostic value of the regional lymph node status in breast cancer.

This prospective study included 93 women with early breast cancer with initial surgical indication in whom the sentinel lymph node technique was employed. Cell immune response was assessed prior to surgery by means of in vitro mononuclear cells blastic transformation assay (BLT), of immunoglobulin (Ig) and interleukin 2 (IL-2) measurements.

The results were correlated with tumour size, presence of positive sentinel lymph node, tumour proliferation and growth markers (Ki-67, c-erbB2, bcl-2).

Breast cancer, even in its less advanced stages, is more aggressive and associates with an increased rate of sentinel lymph node metastases in patients below 50 years of age, tumour size exceeding 20 mm, with the presence of peritumoural lymphocytic infiltrate, with positive Ki-67 and bcl-2, with an alteration of T helper (Th) lymphocytes function, increased immune suppression through IL-2 decrease, signalled by blastic transformation indexes modifications and a drop in IL-2 production ($p < 0.01$).

Table
Assessed parameters

Clinical aspects	Immune status*	Pathology	Immunohistochemistry
Age	Lymphocytes blastic transformation (BLT)	Sentinel lymph nodes status	Estrogenic and progesterone receptors (ER and PR)
Hormonal status	Serum IgG, IgA, IgM	Tumour size and Histopathological grade (G)	Her2 oncogene
Tumour diameter	IL-2	Peritumoural tissue invasion Lymphocytic peritumoural infiltrate	Ki-67 proliferation markers bcl-2 protein

Conflict of interest: No conflict of interest.

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226. Primary neuroendocrine carcinoma of the breast: A rare entity **D. Dahiya**

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Background: Primary neuroendocrine carcinoma (NEC) of the breast is a rare entity and accounts for less than 5% of all breast cancers. It was first recognised and reported in the literature in 1963. World health organisation (WHO) defined mammary NEC in 2003 as having >50% neoplastic cells expressing neuroendocrine markers in the tumor tissue.

Biological behaviour and treatment of this entity has not been studied in detail unlike infiltrating duct carcinoma or other rare tumors of the breast (tubular, mucinous or medullary carcinoma). In the absence of any large series the optimal treatment is uncertain. Herein we retrospectively analysed NEC of breast who were treated at our centre.

Material and methods: We retrospectively analysed cases of NEC of breast who received treatment between January 2012 and December 2015 in the Department of Surgery (unit III) at Post Graduate Institute of Medical Education and Research (PGIMER), Chandigarh.

Patients were diagnosed to have NEC of breast if pathological examination of tumor revealed the presence of >50% of invasive tumor cells with cytoplasmic immunoreactivity for synaptophysin, chromogranin, or CD56.

Results: We operated 170 cases of carcinoma breast between January 2012 and December 2015 in the Department of Surgery (unit III) PGIMER, Chandigarh. In two patients (1.17%) final histopathology came as NEC of breast based on WHO criteria having >50% neoplastic cells expressing neuroendocrine markers in the tumor tissue.

Age of these females was 35 and 61 years. There was no definite PET evidence of abnormal somatostatin receptor expressing lesion anywhere in the body; which was performed postoperatively after obtaining the final histopathology report. They received adjuvant chemotherapy, radiotherapy and hormone therapy. Both these patients are doing well on 18 months post surgery with no evidence of local or systemic recurrence.

Conclusion: NEC of the breast is a pathological entity. Surgery with adjuvant treatment for NEC of breast appears as a viable treatment option.

Conflict of interest: No conflict of interest.

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227. Retrospective clinicopathological follow-up of very young women (under 35 years old) with breast cancer in Hungary

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Aims: A dramatic increase in the number of breast cancers diagnosed in premenopausal women has been reported, suggest a number scientific, oncologic and clinico-social question to discuss.

Patients and methods: In the National Institute of Oncology between 2000.01.01. and 2015.01.01, we performed diagnosed under 35 years and multidisciplinary treated, through followed-up oncologically a number of 300 very young patients with breast cancer retrospective following, took the data base of the Department of Breast and Sarcoma Surgery basis. From the same data base and same period we set a number of multidisciplinary treated, through followed-up oncologically 300 patients aged between 35 and 40 against this group of very young patients. The average age of the very young patients was 33 years (range 14–35), the interval time was 36 months (range 12–174). The parameters of the clinical processing patients: individual and familial anamnesis, the menstrual term, the number or pregnancy and childbearing, the interval of the lactation, contraception, diagnostical screening procedures, fine-needle aspiration cytology and core biopsy, TNM, neoadjuvant therapy, pathological parameters, the number and types of the operations, adjuvant and locoregional treatments, reconstructive surgery, overall and disease free survival.

Results: We found significant difference about the overall and disease free survival between these two groups, put the very young patients at a disadvantage. We would like to review the results of the clinicopathological investigation and the statistical analysis about these patients.

Conflict of interest: No conflict of interest.

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228. Phase II study on radiofrequency ablation in early breast cancer **S. Imoto, T. Ueno, H. Isaka, H. Ito, K. Miyamoto, M. Kitamura**

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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, 18:130-4, 2009). Complete ablation was found in 26 patients (87%) from the pathological diagnosis of tumor specimens stained with hematoxylin-eosin and nicotinamide adenine dinucleotide diaphorase. Thus, we conducted a phase II study to evaluate the safety and reliability of RFA alone in BC (UMIN000020805).

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 due to RFA, which was calculated from ratios of the length from nipple to several points measured in affected breast and unaffected breast before and after RFA. Secondary endpoints were adverse events, ipsilateral breast tumor recurrence (IBTR) and QOL assessment of FACT-B.

Results: Although 29 patients were required for statistical significance, 20 patients agreed to undergo RFA between May in 2009 and February in 2013. Their mean age was 63 years old. It took from 4 to 24 min for ablation time. No severe adverse events were observed except pain control with NSAID administration. Most patients received breast irradiation and hormonal therapy. Breast deformity had been small between pretreatment and 12 months after RFA (n = 12). Total outcome index, FACT-G and FACT-B total index had been not changed at the time of pretreatment, 6 months and 12 months after RFA (n = 16). The median follow-up was 63 months. One patient had contralateral non-invasive BC, but IBTR and distant organ metastasis had not been observed in all patients.

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

Conflict of interest: No conflict of interest.

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230. Validation of Memorial Sloan Kettering Cancer Center nomogram to detect non-sentinel lymph node metastases in a U.K. cohort

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Background: Axillary lymph node dissection remains the standard of treatment for all node-positive breast cancer patients. However, this approach is associated with long-term morbidity. Here, we assessed the risk prediction ability (validity) of Memorial Sloan Kettering Cancer Center (MSKCC) nomogram for non-sentinel lymph node metastases in a UK (United Kingdom) based cohort and also analysed the outcome of patients with sentinel node metastases.

Materials and methods: All operable early breast cancer patients with sentinel node macro metastases (size more than 2 mm) who underwent axillary dissection from April 2009 to March 2015 were considered eligible. The risk of non-sentinel lymph node metastases was calculated using an online MSKCC calculator, and accuracy was determined based on the area under the receiver-operating characteristic curve (AUC-ROC). The characteristics of their tumours, disease free and overall survival were also analysed as secondary end points.

Results: During the study period, 117 patients had positive sentinel nodal metastases and 114 were eligible for the study. Seventy-six of these patients did not have any non-sentinel node metastases (50.7%). The AUC-ROC was 0.66 suggestive of lesser accuracy in prediction but was statistically significant (P -value = 0.005). During follow up, one patient had contralateral breast cancer; four patients had metastatic disease of which two patients died. One patient died of general illness and two patients lost to follow up. Hence the disease free survival was 86.4% and overall survival rate was 88.4%.

Conclusions: The MSKCC nomogram was unable to accurately predict the risk in our cohort of patients. These findings are in consistent with other European studies. This study thus highlights the need for modified prediction model for European cohorts. However this cohort of patients had an excellent disease free and overall survival and more than half of the patients could have avoided axillary dissection.

Conflict of interest: No conflict of interest.

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231. The effect of preoperative breast MRI on the surgical management of ductal carcinoma in situ and the risk of contralateral breast cancer

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Background: In patients with ductal carcinoma in situ (DCIS) of the breast, optimal estimation of the size and growth pattern of the DCIS is crucial for planning surgical treatment and minimizing involved margins in patients treated with breast conserving surgery. Over the past years, MRI has been used increasingly for this purpose. However, until now its benefit has not been proven.

We analyzed the use of MRI in patients with DCIS and its impact on surgical treatment in the Netherlands.

Patients and methods: All patients who underwent primary surgery for DCIS between 2011 and 2013 were identified through the Netherland Cancer Registry.

The following data were documented: use of MRI, year of diagnosis, age at diagnosis, hospital type and volume, histological grade, multifocality in the resection specimen, margin involvement and type of surgery.

We analyzed whether the use of MRI was related to the type of surgery, surgical margin involvement and diagnosis of synchronous contralateral breast cancer.

Results: Between 2011 and 2013, 6151 patients were diagnosed with DCIS of the breast in the Netherlands. In 1359 (22%) a breast MRI was performed preoperatively.

In the multivariate analysis, patients <50 years of age compared to patients aged 70 years or older (OR 4.25, 95% CI 3.38–5.36), patients with high grade DCIS (OR 1.66, 95% CI 1.36–2.03) compared to patient with low grade DCIS and patients with multifocal disease (OR 1.90, 95% CI 1.57–2.30) compared to those with unifocal disease, were more likely to undergo MRI.

Patients with DCIS undergoing MRI were more likely to undergo primary mastectomy than those without MRI (OR 2.28, 95% CI 2.00–2.60). Surgical margin involvement was equal in the MRI group compared to the non-MRI group (OR 1.06, 95% CI 0.87–1.29) and slightly more secondary mastectomies were performed in the MRI group, although this was not statistically significant (OR 1.38, 95% CI 0.99–1.93).

Patients who underwent MRI were 4 times more likely to be diagnosed with contralateral breast cancer compared to those with mammography only (OR 4.66, 95% CI 3.37–6.45).

Conclusion: Although studies showed a higher sensitivity of MRI for the detection of DCIS in comparison to mammography, adding MRI to mammography does not improve surgical outcome. In the MRI group, twice as many patients were treated with mastectomy and margin involvement after breast conserving surgery was not lower.

On the other hand, MRI detected four times more contralateral breast cancers than mammography.

Conflict of interest: No conflict of interest.

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232. Role of axillary ultrasound with nodal biopsy for early breast cancer: Should it change in the post Z 0011 era?

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Background: The combination of axillary ultrasound and core biopsy or fine needle aspiration cytology in patients with breast cancer has re-invented the treatment of metastatic disease. By identifying potential candidates for a direct axillary lymph node dissection, patients can avoid a two stage surgical procedure. However, the results of the American College of Surgeons Oncology Group (ACOSOG) Z0011 trial indicate that a certain group of patients may have been over-treated with axillary dissection. Our aim was to analyse the nodal burden of patients identified by ultrasound and to determine the proportion of patients who could have foregone axillary dissection based on the findings of the Z0011 trial.

Materials and methods: A retrospective analysis of patients with diagnosed breast cancer who underwent axillary ultrasound was performed. Demographics and tumour characteristics were analysed, and patients were further sub-grouped into two groups (extensive if >2 nodes positive and minimal if <2 nodes positive) based on nodal metastases and compared. Patient eligibility for the Z0011 study was also determined.

Results: All patients suspected with breast cancer underwent axillary ultrasound from April 2009 to March 2015. Of these, 197 patients confirmed metastatic disease from fine needle aspiration or core biopsy and were eligible for study. One hundred and twenty one patients (61.4%) had extensive and 76 patients (38.6%) had minimal nodal metastases. Of the latter, 37 patients (18.8%) satisfied the criteria for the Z0011 study.

Conclusion: This study demonstrated that one third of our patients had minimal nodal involvement (38.6%), in contrast to the results published in the literature. In addition, a significant number of patients could have

avoided axillary dissection (18.9%) based on the Z0011 criteria. Thus, the role of axillary ultrasound needs to be redefined to avoid unnecessary axillary dissection.

Conflict of interest: No conflict of interest.

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233. The impact of surgical wound fluids after intraoperative radiotherapy on the epithelial to mesenchymal transition program

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Background: Breast cancer is the most common cancer in women. The conventional conservative treatment for early breast cancer includes a wide local excision with adjuvant radiotherapy. Clinical data suggest, that perturbations induced by surgery and the subsequent wound fluids, which are rich in cytokines and growth factors, may stimulate residual disease. Numerous studies demonstrate, that 90% of the local recurrence after surgery occur in the same quadrant as the primary cancer. One of the new possibilities in conservative cancer treatment is intraoperative radiotherapy (IORT). IORT delivers high dose of radiation as one single fraction at the time of surgery. It was previously reported, that IORT alters the tumor microenvironment through the modulation of wound healing response. Moreover it was shown, that the growth kinetics of breast cancer micro metastasis were modified by surgery, representing a perturbing factor in the process of relapse or metastasis development. A critical role in promoting metastasis in epithelium-derived carcinoma plays a developmental program termed epithelial-mesenchymal transition. A tumor microenvironment (inflammatory cells infiltrating the tumor) and cancer stem cells (CSC) present in the tumor microenvironment may be the inducers of EMT in tumor cells. Thus we wondered, whether wound fluids can induce the EMT program and whether IORT plays inhibitory role in this process.

Material and methods: Wound fluids from patients which underwent IORT (IR-WF), as well as control group without radiotherapy treatment (WF), were collected 24 hours and one week after the surgery. Two human cancer cell lines with different molecular status (basal – MDA-MB-468, luminal – MCF7) were then incubated with wound fluids (WF, IR-WF) in complete culture medium (10%).

Results: Flow cytometry and RT-qPCR analysis revealed, that wound fluids from patients who received IORT decreased the phenotype of cancer-stem cells in the basal (MDA-MB-468) and luminal subtype (MCF7) of cancer cell lines compared to IORT-untreated patients. Moreover, we also confirmed, that WF and IR-WF affects the EMT program in analyzed cell lines

Conclusion: In group of patients who underwent IORT we observed changes in phenotype of cancer-stem cells.

Conflict of interest: No conflict of interest.

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234. Quality of life during fiberoendoscopy in patients with pathological nipple discharge: A ten-year Polish experience

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Background and aims: Breast cancer is one of the most common cancers in women in the world (23%) and is the most common cause of death (14%). The most common symptoms of breast cancer are: lumps (36%), pain (3–5%) as well as nipple discharge (5–10%). Pathological nipple discharge (PND) may be an early symptom of non-invasive form of breast cancer. Although the problems and reasons for PND have been known for many years, new diagnostic methods are still searched for. Galactoscopy and HD scan characterized by low sensitivity are replaced with FDS. The aim of the project was to assess role of regional anesthesia (RA) and quality of life of the patients during fiberoendoscopy (FDS).

Material and methods: The material consists of 214 patients treated in the Department of Surgical Oncology of Medical University in Gdańsk. Patients with pathological nipple discharge (PND) were qualified to this research. The discharge was defined as spontaneous, unilateral discharge from a single mammary duct. In FDS the own classification of the intraductal lesions was used. Approximately 15 minutes prior to FDS, the examined site anesthetised by Lidokaine spray. After FDS examination in patients with PND the pain level and the level of distress were assessed by VAS (Visual Analog Score).

Results: Mean age, weight, height and BMI came to 49.8 (years), 67 (kg), 164 (cm) and 24.6 (kg/m²). Average duration of FDS in 214 patients was 26.5 min and mean was 25 min (FDS duration: 10–65 min). Among 214 patients qualified for FDS only 7 (3.6%) had complications. Early complications (discovered during FDS) in the form of damage of mammary duct were confirmed in 2 patients (1.2%). Both complications were noted in the first stage of introducing FDS in clinic. Later complications noticed during follow-up visits after FDS in the form of local inflammation in the place of cannulation of mammary ducts were found in 4 (2.4%).

In patients who had FDS performed in RA pain was assessed by means of VAS scale. Mean of pain intensity among examined patients was 1.5 (mean 1.6) according to VAS scale. Pain was experienced by 55 (42.9%) patients. Mild and moderate pain was in 49 (38.3%) and 24 (18.8%) respectively.

Mean level of distress was 1.6 (mean 1.7). In 60 (46.9%) examined patients with PND no level of distress or discomfort caused by FDS was noted. In 52 (40.6%) patients a slight level of distress was noted. Only in 16 (12.5%) examined patients a moderate level of distress was noted.

Conclusions: FDS is a safe method both in diagnostic tests and when used as an auxiliary tool in surgery of patients with breast cancers.

The use of RA is an optimal method of preparation patients prior to FDS. The application of lidocaine spray onto the nipple before FDS is a good method to alleviate the post-operative pain and lower the distress of the patient.

Conflict of interest: No conflict of interest.

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235. Axillary node metastatic disease after neoadjuvant chemotherapy: Biological indicators of possible complete response

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Background: Conversion of patients who need a mastectomy to breast conservation is the advantage of neoadjuvant chemotherapy [NAC]. Other observation is, NAC down grading the positive axilla patients into a node negative status. Many surgeons use only sentinel lymph node biopsy [SNB] after chemotherapy. In this paper we will try to find out any patient or tumour factors related to down staging of positive axilla after NAC. Also we will assess the association between the change in initial tumour size and the negative conversion of lymphadenopathy.

Material & methods: In the period between 01/01/2014 28/02/2016, 40 cases diagnosed with breast cancer associated with axillary metastatic disease were enrolled. Axillary disease was confirmed with fine-needle aspiration, core biopsy and sentinel lymph node biopsy. All had ultrasound assessment before NAC to measure tumour size and assess the lymph node status. All had axillary clearance after NAC. Postoperative tumour size, and lymph nodes status was evaluated.

Results: Mean age at diagnosis 44 years, 25% achieved complete pathological response in the axilla [CPR], No lymphovascular invasion found in CPR cases.

Conclusion: High histological grade and absence of LVI were associated with CPR.

Conflict of interest: No conflict of interest.

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236. Does the presence of sentinel lymph node macrometastases among breast cancer patients require adjuvant axillary lymphadenectomy – A single center study

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Background: According to the current guidelines on treatment of breast cancer patients, identification of metastases in the sentinel lymph node (SLN (+)) is not an absolute indication for axillary lymph node dissection (ALND). In our publication we present long-term outcomes of treatment among SLN (+) patients referred for conservative treatment.

Material and methods: 3145 breast cancer patients subjected to sentinel lymph node biopsy (SLNB) between 11.2008 and 6.2015. Presence of SLN metastases were identified in 719 patients (22.9%) – macrometastases in 83.2% of cases, micrometastases in 16.3% of patients, isolated tumor cells (ITC) in 0.6% of subjects.

Cases of disease recurrence were taken into consideration – local recurrences (surgical scar, axillary fossa) and distant metastases. In the course of patient qualification to adjuvant treatment (chemo-, radio-, immuno-, and hormonal-therapy) we conformed to the generally accepted therapeutic standards in breast cancer management. Mean follow-up time for patients after ALND was 36.2 months (6–74 months), for patients without ALND – 34 months (6–74 months).

Results: Adjuvant ALND was performed in 626 of SLN (+) patients. Conservative treatment was applied in the remaining 93 cases (37 patients with macrometastases, 54 patients with micrometastases, 2 – ITC).

In 221 patients (39.4%) subjected to ALND due to the presence of SLN macrometastases we found metastatic lesions in the non-sentinel lymph nodes (the proportion was 7.7 for micrometastases/ITC; $p < 0.0001$).

Among SLN (+) patients without adjuvant ALND there was 1 case of disease recurrence (local recurrence in the post-mastectomy scar in a patient with an SLN micrometastasis). We did not identify any cases of recurrence involving axillary lymph node or dissemination of metastatic disease (general proportion of cases of recurrence in the SLN (+) group without ALND – 1.07%).

In a group of patients without SLN metastases disease recurrence was noted in 32 patients (1.32%). Among SLN (+) patients diagnosed with macrometastases it concerned 2.01% of analyzed cases (all subject to ALND). There were no recurrences among SLN (+) patients with micrometastasis/ITC (patients after ALND). All identified differences failed to demonstrate statistical significance ($p > 0.05$).

Conclusions: Lack of radicalization of surgical treatment in breast cancer patients in the presence of metastatic lesions identified in sentinel lymph nodes (regardless of their size) did not lead to worsening of long-term therapeutic outcomes (local remissions, distant metastases). In case of macrometastases to the sentinel lymph node relinquishing adjuvant axillary lymphadenectomy might constitute an alternative to current management. However, it would require continuation of current research studies, preferably involving a clinical trial.

Conflict of interest: No conflict of interest.

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237. How we can effectively implement the ‘scientific and practical know how’ from the ACOSOG Z0011 randomized trial of axillary node dissection into the clinic? A single-center analysis of 1349 patients diagnosed with breast cancer

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Background: One of the still most interesting and still subjected for discussion topics related to the current breast cancer professional and evidenced treatment belongs the data published in ACOSOG Z0011 randomized trial of axillary node dissection. Some of authors directly suggest how to effectively use the selected conclusions and recommendations and other authors directly present how to professionally without any of misstatement use this knowledge in standard clinical procedures performed daily in several breast cancer units all across the world.

Material and methods: In this work we have analyzed the 1349 cases of patients qualified for sentinel lymph node biopsy (SLNB) procedures performed in our center. The aim of this work was to present the potential consequences of withdrawal from intraoperative pathological verification of removed lymph nodes and evaluation of the “scientific and practical know how” influencing from the ACOSOG Z0011 randomized trial which could be used to improve the general therapeutic outcome. We have compared two groups of patients. First observed between July 2013 and June 2014 in which we performed intraoperative diagnostic SLN procedure in all cases, and second observed between July 2014 and June 2015 treated using breast conserving therapy (BCT) method in which final decision related to the intraoperative assessment of routinely performed SLN depend individually upon the surgeon during surgery.

Results: In 71.5% of patients the BCT has been performed. The remaining group of patients undergone the total mastectomy. SLN metastasis was diagnosed in 318 (23.6%) patients (macro-metastases in 277 patients and micro-metastases in 41 patients). In second evaluated group treated using BCT method the intraoperative diagnostic analysis of SLN procedure has been performed in 20.2% of patients, in remaining group (388/486) the intraoperative SLN analysis was not performed. In 28% of patients with diagnosed (due to the SLN) metastases the radicalization of surgery was abandoned (vs 15.4% before the implementation of procedure modification). In the group treated using BCT method, were the metastases were confirmed due to the SLN the percentage of patients treated conservatively has considerably increased (from 5.3% to 23.1%) and was statistically significant.

Conclusions: In our analysis we have proven that the proper selection of histological verification using SLN diagnostic tool, influence directly onto the decision making process related to the potential surgical radicalization. Following the resignation of routine intraoperative SLN we found a statistically significant increase of decisions related to the withdrawal of additional axillary dissection. Prospectively the creation of specific guidelines and recommendations for conservatively treatment options for patients with macro-metastases diagnosed in SLN is needed.

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238. Risk reducing surgery in BRCA positive population – A single-center experience

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Introduction: BRCA 1 and BRCA 2 mutation carriers are at increased risk of developing breast and/or ovarian cancer compared with the general population. Options to reduce the incidence of cancer and/or subsequent mortality include regular surveillance with imaging studies, chemoprevention and risk reduction surgery (RRS), i. e. risk reduction mastectomy (RRM) and risk reduction salpingo-oophorectomy (RRSO). There is a great variation in uptake of RRS in different countries. The aim of our study was to evaluate the uptake of RRS in Slovenian BRCA 1 or 2 mutation carriers with and without breast cancer. Furthermore, among patients that chose RRM the proportion and type of breast reconstruction was analyzed.

Patients and methods: Altogether 2877 individuals were counselled and 919 were tested for BRCA 1 and 2 and other high penetrance gene mutations at our institute until May 2015. 586 individuals tested positive. Male patients, patients lost from follow up and patients with the malignancy other than breast were excluded from the current analysis. 383 patients were included in this study and were divided in two groups: women with and without breast cancer. Chi square test was used to compare the proportion of RRS, RRM and RRSO between groups.

Results: Of 383 patients included, 213 (55.6%) had breast cancer and 170 (44.4%) didn't have. 112 of 213 (52.6%) patients with and 38 of 170 (22.4%) patients without breast cancer underwent RRM ($p < 0.0001$). Of 213 patients with breast cancer, 129 (60.6%) chose RRSO, while in patients without breast cancer the proportion of RRSO was 64/170 (37.6%) ($p < 0.0001$). Uptake of any type of RRS was 157/213 (73.7%) and 75/170 (44.1%) in patients with and without breast cancer, respectively ($p < 0.0001$). Of 150 patients that underwent RRM, 121 (80.7%) had breast reconstruction. The majority (88/121, 72.7%) had implant based reconstruction. Autologous reconstruction was performed in 28/121 (23.1%), while 5 patients (4%) had combination of implant based and autologous reconstruction.

Conclusions: Patients with breast cancer significantly more often choose to undergo RRS than patients without breast cancer. The uptake rate of RRS in both groups is comparable to the rate in developed countries. The majority of patients that undergo RRM also choose breast reconstruction.

Conflict of interest: No conflict of interest.

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239. Technical feasibility and validity of sentinel lymph node biopsy after ipsilateral breast tumor recurrence

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Background: Ipsilateral breast tumor recurrence (IBTR) after breast-conserving surgery is reported approximately 10% of breast cancer patients. However, the role of sentinel lymph node biopsy (SLNB) in patients with IBTR still remains to be elucidated. The aim of this study was to evaluate feasibility and validity of sentinel lymph node biopsy for ipsilateral breast tumor recurrence (second SLNB).

Material and methods: A prospective database of 1172 patients with clinically node-negative breast cancer who underwent SLNB from January 2005 to December 2013 was analyzed and 35 patients with IBTR underwent SLNB. Lymphatic mapping was performed using a combined method of blue dye and radioisotope. ICG fluorescence imaging was performed in cases with failure of identification by blue dye and radioisotope.

Results: Twenty-two (62.9%) and eight (22.9%) patients had a history of previous SLNB and axillary lymph node dissection (ALND), respectively. Another five (14.3%) patients had no previous axillary surgery for

primary tumors. Preoperative lymphatic mapping by lymphoscintigraphy was successful in 15 of 25 patients (60.0%). The identification rate by lymphoscintigraphy among patients with previous SLNB, ALND, and no previous axillary surgery was 56.3% (9/16), 57.1% (4/7) and 100% (2/2), respectively ($P = 0.682$). Overall, SLNs were successfully identified in 28 (80.0%) of 35 patients during surgery. The identification rate in patients with previous SLNB, ALND and no axillary surgery was 81.8% (18/22), 75% (6/8) and 80% (4/5), respectively ($P = 0.52$). In each patient after previous SLNB and ALND, SLNs were identified only by ICG fluorescence. Aberrant drainage outside the ipsilateral axilla was found more frequently in patients with previous ALND compared with previous SLNB and no axillary treatment (37.5% vs 4.5% vs 0%, $P = 0.048$). Among two (7.1%) patients with SLN metastases, one with previous SLNB had macrometastasis at the ipsilateral axilla and ALND found a positive non-SLN (1/21). The other with previous ALND had micrometastatic SLN at the contralateral axilla, identified by ICG fluorescence, and underwent no further axillary treatment. After second SLNB, systemic treatment including chemotherapy, endocrine therapy and trastuzumab was performed for 12 (34.3%), 27 (77.1%) and five (14.3%) patients, respectively. No axillary recurrence was observed after a median follow-up of 40.3 months from surgery for IBTR.

Conclusions: Second SLNB is technically feasible and may avoid complications from unnecessary ALND for IBTR. Furthermore, it could improve risk prediction for IBTR and provide valid information for deciding adjuvant therapy.

Conflict of interest: No conflict of interest.

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240. Short-term outcome and QoL in 108 patients after immediate breast reconstruction with implants and acellular dermis

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Background: In postmastectomy breast reconstruction acellular dermal matrices are used for tissue support, implant positioning, rapid revascularization and esthetic results.

Material and methods: We assessed peri- and post-operative results and quality of life (QoL) in 108 breast cancer patients undergoing immediate postmastectomy breast reconstruction with implants and acellular dermal matrices between 2012 and 2015. The EORTC QLQ C30, EORTC QLQ BR23 and BRR31 QoL questionnaires were used.

Results: The median follow-up of the 108 patients was 14 months. 7 patients had preoperative irradiation. 14 patients had a prophylactic skin-sparing mastectomy. The median hospital stay/drainage was 5 days. Complications occurred in 9 cases: wound healing problems (4), implant dislocation (1), seroma (1), hematoma (4), infection (2). Three implants had to be removed (all in patients after radiation therapy). QoL and satisfaction data were similar to those in a healthy population (reference data).

Conclusion: Our results are consistent with previously published data. Complications and reoperations were more common in patients after radiation therapy. Despite better materials and operative technique, prior radiation therapy is a risk factor at immediate breast reconstruction.

Conflict of interest: No conflict of interest.

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241. Electrochemotherapy as palliative treatment in patients with skin metastases

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Abstract:

Background: Electrochemotherapy (ECT) is a ablation method based on reversible electroporation combination with concurrent chemotherapy (intravenous administration or into the tumor). This method has been used in the treatment of primary skin tumors (carcinomas, melanomas) and secondary malignancies (eg. breast cancer metastases) unfit or unresponsive to a different type of treatment. It is a palliative method aimed at improving the quality of life.

Material and methods: Between 02.2015 and 02.2016 fifteen patients with metastatic breast cancer to the skin and subcutaneous tissue, and two patient with recurrent melanoma in the skin underwent the ECT procedure.

Results: Seventeen patients treated by ECT, a total of 19 procedures for 95 target lesions. Fourteen patients underwent one course, two patients received two course, one patient received three courses because of extension of the lesions. In 57.9% of the patients complete response was observed. In 79% of patients good local effect as complete or partial response was achieved. In 21% of patients progression of disease was observed. The main complications observed included: ulcers persisting more than four weeks (53% lesions – ≤ 3 pts CTCAE – Common Terminology Criteria for Adverse Events v3.0), and neuropathic pain (37% of patients – ≤ 2 pts CTCAE). Patients remain in close observation and control.

Conclusions: Electrochemotherapy is a method with documented efficacy in palliative treatment of patients with metastases to the skin from breast cancer or with unresectable recurrence of melanoma. The local effectiveness of this method allows for significant improvement in the quality of life of patients in whom local tumor spread resulted in the formation of ulcerated, bleeding, exophytic tumors which at the same time were not eligible for resection or did not respond to systemic treatment. Thanks to its simplicity, while targeting exclusively the local growth of tumor in the skin, this method can be used repeatedly and also in patients with history of internal diseases.

Conflict of interest: No conflict of interest.

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242. The role of core biopsy in the preoperative classification of breast cancer according to the prognostic factors: A prospective study
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Background: For the proper management of breast cancer (BC) it is essential to collect preoperatively as much data as possible in order to define the best management plan. Molecular classification seems to be a useful prognostic and decision tool. Based on immunohistochemistry (IHC) we can classify the tumors in 4 distinct subtypes (luminal A, luminal B, Her2+ and triple negative) using the estrogen (ER) and progesterone (PgR) receptor status, the C-erb-B2 status and the Ki67.

This prospective study aimed to assess the reliability and accuracy of core biopsy (CB) in classifying the tumours preoperatively according to the prognostic factors.

Material and methods: 122 breast cancer patients with a mean age of 59.14 years (SD = 13.31) underwent CB before the final operation. We compared the pathology results obtained from the CB specimen with those obtained from the final histology.

Results: 69.7% of the patients were postmenopausal and 78% had children while most (88%) never used contraceptives or hormone replacement therapy. There was family history of BC in 1/4 of the patients. One third of the patients were diagnosed during screening. The mean tumour size was 26.8 mm and the majority of the cancer was NST/IDC (75.4%). Most tumours were grade 2 (50%), half of them were node negative and two-thirds were ER positive. One quarter was CerbB2 positive.

There was perfect agreement between the histological type on core biopsy and the final histology (K = 1). There was also substantial agreement between the estimated and actual grade (K = 0.766). There was almost perfect agreement for the estrogen (K = 0.872) and substantial agreement for progesterone receptor status (K = 0.759) between the 2 methods. There was almost perfect agreement for the Her2 positivity (K = 0.899) and for the Ki67 status (high vs low). The quantitative analysis showed that there was almost perfect agreement for quantitative values of ER, PgR, Ki67 and p53 (R > 0.870). Finally, when we classified the tumours into the 4 most common molecular subtypes (based on IHC) the agreement was almost perfect (k = 0.81).

Conclusion: CB can be a reliable, safe and cost effective means of classifying the tumours based on prognostic factors. CB can accurately classify the tumors based on IHC and contribute to the decision making.

Conflict of interest: No conflict of interest.

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243. Correlation of MRI findings with the actual disease in patients with breast cancer. Are there any differences between the different molecular subtypes: A prospective study

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Background-aim: MRI has a debatable role in the workup of many patients with breast cancer. Since for the ideal management of breast cancer (BC) we need preoperatively as much data as possible, it is essential to assess if the value of the MRI is different for the different molecular types of breast cancer Immunohistochemistry (IHC) can classify the tumors in 4 distinct subtypes (luminal A, luminal B, Her2+ and triple negative) in a practical and economical way. A simple and reliable classification is based on the estrogen and progesterone receptors, on the C-Erb-B2 status and on Ki67.

This prospective study aimed to assess the reliability and accuracy of MRI for the different molecular types of breast cancer.

Materials and methods: 72 breast cancer patients with a mean age of 54.2years (SD = 11.48) had MRI during the preoperative workup. We compared the findings of the MRI with the pathology results.

Results: 55.6% of the patients were postmenopausal and 72.2% had children while most never used contraceptives or hormone replacement therapy. There was family history of BC in 1/4 of the patients. One third of the patients were diagnosed during screening. The mean invasive tumour size was 19.77 mm and the majority of the cancer was NST/IDC (64.8%) while 13% had DCIS. Most tumours were grade 2 (63.8%), 60.7% were node negative and two-thirds were ER positive. 19% were CerbB2 positive.

The overall agreement for the size of invasive tumour between MRI and histology was not good (R = 0.410). For the presence of multifocality

there was a moderate correlation ($K = 0.572$). The sensitivity of MRI to find multifocality was 67.4% but the specificity was 96%.

Overall the sensitivity of MRI to predict the need for mastectomy was 72.3% and the specificity 81% with a low agreement ($k = 0.476$) with the actual need for mastectomy based on the size and the multifocality in the final histology.

The subgroup analysis showed that MRI was more reliable to identify multifocality for the Luminal B tumours ($k = 0.611$) with a specificity of 100%. Nevertheless the actual size of the tumour was better predicted for luminal A tumours ($R = 0.658$).

Conclusion: MRI seems to be a useful tool to exclude multifocality especially for luminal B tumours. For luminal A tumours it seems to be able to predict the actual size of the tumour accurately.

Conflict of interest: No conflict of interest.

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244. Subcutaneous mastectomy with reconstruction of a pregnant woman – A case report

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Background: Pregnancy-associated breast cancer is defined as breast cancer that develops during or within 1 year of pregnancy. It is found in about 1–3 cases in every 10,000 women and comprises 0.2–4% of all breast cancers.

Material and methods: We present a case of 30 years old female diagnosed with breast cancer in 18th week of pregnancy (II trimester). The nodule was noticed during breast self-examination. She was subsequently referred to outpatient clinic and underwent standard diagnostic pathway. Core needle biopsy showed ductal carcinoma in situ (DCIS) with components of invasive cancer. She underwent skin-sparing mastectomy with immediate reconstruction using Becker prosthesis. The fetus was monitored closely in perioperative period. Afterwards, the patient was consulted in Center of Oncology in Warsaw and received adjuvant chemotherapy (6 courses of NA chemotherapy). We did not observe any adverse event during surgical and adjuvant treatment. Pregnancy was completed in 37 weeks by caesarean section. The child received 10 points in Apgar's scale. In follow-up we observed very good cosmetic effect of breast after childbirth.

Results/Discussion: Skin-sparing mastectomy with immediate reconstruction is an interesting alternative to standard surgical approach. It enables removal of entire breast tissue with satisfactory cosmetic results and minimalizes the need of radiation.

Conclusions: The presented approach allows the surgeon to fulfill the complex breast cancer treatment during one hospital stay, one surgical procedure and under one general anesthesia.

Conflict of interest: No conflict of interest.

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245. Can triple assessment, using the conventional imaging, identify correctly the suitable patients for breast conserving surgery? A prospective study

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Background: Breast conserving surgery (BCS) is the treatment of choice for early stage breast cancer (BC). Nevertheless, mastectomy (MX) remains the option for many patients. One of the reasons is the failure of BCS to achieve clear margins mostly because of the underestimation of the preoperative workup.

This prospective study aimed to assess the reliability and accuracy of the triple assessment (clinical examination, imaging and biopsy) in predicting the correct tumour characteristics and the feasibility of BCS.

Material and methods: 193 breast cancer patients with a mean age of 60.23 years (SD = 13.9) were assessed with triple assessment and were classified in candidates for BCS (unifocal tumour with a size <3 cm and no extensive intraductal component). We compared the findings of clinical examination, the biopsy and the imaging with the final histology. Failure to obtain clear margins on BCS led to further resections and eventually completion mastectomy.

Results: The mean estimated tumour size was 25.8 mm (SD = 22.51) for clinical, 19.21 mm (SD = 13) for US and 18.56 mm (SD = 15.6) for mammogram while the actual size was 24.56 mm (SD = 18.7).

As it was predicted from the core biopsy (perfect agreement, $k = 1$) the majority of the cancer was NST/IDC (71.5%). Most tumours were grade 2 (48.9%), while half of them were node negative and two-thirds were ER positive.

There was strong correlation (for US ($R = 0.581$) and clinical size ($R = 0.587$)) and moderate correlation (for the mammogram size ($R = 0.415$)) with the actual size ($p < 0.001$). Clinical size (ICC = 0.733) and US size (ICC = 0.712) had better agreement than the mammogram size (ICC = 0.580).

Triple assessment predicted that 58.2% of the patients were suitable for WLE while eventually 41.5% had a successful WLE. There was a substantial agreement with the final outcome (MX or BCS) ($k = 0.603$) with a sensitivity of 68% and specificity of 96% of predicting the correct operation.

Conclusion: Triple assessment using the conventional imaging and workup still has a low sensitivity in identifying the suitable patients for BCS. Overall, clinical examination and US seem to assess better than mammogram the actual size of the lesion.

Conflict of interest: No conflict of interest.

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246. What type of oncoplastic surgical techniques do Egyptian patients prefer for breast cancer, contralateral symmetry or ipsilateral contour?

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Background: Oncoplastic surgery (OPS) is a marvelous method of breast cancer surgery today in Egypt. The main goal of OPS these days is to make a good contoured breast even after surgery, some types of OPS done either alone or combined with the contralateral breast mastopexy. Majority of Egyptian women did not like to have surgery for the other healthy breast due to the cultural and socioeconomic factors.

• This study discuss the patients' satisfaction and surgery preference in patients with breast cancer.

Methods: We underwent OPS in 186 breast cancer patients at MISR Cancer Center, between February 2014 and January 2016. Mean age at presentation was 35 (29–61). We performed different kinds of OPS after breast conserving surgery, patients are divided in two groups:

1. OPS to the operated breast only using in most of cases lateral, medial and periareolar mammoplasty with contour preserving in 123

women. Mean age was 39 (35–61), married and divorced and widowed females.

2. OPS with the same setting contralateral breast reduction of the other breast in 63 women of which 16 unmarried females and 47 was married. Mean age at presentation was 36 (29–52).

Survey was carried out to identify patients' satisfaction and surgery preference. Each question was scored 1 for poor and 5 for excellent, and one or two for the surgery type decided by the patient preoperatively. We divided cosmetic outcomes into three categories; Good, Fair, and Poor.

Good: Very satisfactory cosmetic outcomes only with little asymmetry.

Fair: Relatively satisfactory cosmetic outcomes with either mild asymmetry.

Poor: Requiring corrections due to severe asymmetry.

Results: Most patients were satisfied with OPS, scoring more than fair. (Poor: 13%, Fair: 53%, Good: 34%, total 87%) we gave more cosmetic credit on group two than group one.

Although the unilateral surgery alone showed more preference and accepted satisfaction, they also had less cosmosis and symmetry.

In general, patients' satisfaction and surgery preference correlated with doctors' cosmetic perception. Patients tend to prefer better preserved general contour despite asymmetry. (Age and marital status affects the preference: good contour 54.3% vs. symmetry 21.4%)

Conclusion: OPS delivers an excellent techniques showing great cosmetic satisfaction in breast cancer. The ipsilateral surgery OPS could be suitable technique showed accepted cosmetic outcomes for most Egyptian women regarding the cultural and socioeconomic factors.

Conflict of interest: No conflict of interest.

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247. Usefulness of telepathology for partial breast resection in breast cancer

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Background: When surgeons perform a partial breast resection in a breast cancer operation, it is concerned that some cancerous tissue may remain in the residual breast. Therefore, surgeons should inspect the surgical margin of the partial resection during the operation, and it is very important that surgeons secure a margin negative result without any cancer remaining. However, we have previously been unable to diagnose the surgical margin, because our hospital did not have an on-site pathologist. By cooperating with an off-site pathology laboratory, we have built a telepathology system for the diagnosis of the surgical margin. In this study, we analyze the telepathology results in the breast cancer operations that we performed, and examine the usefulness of using a remote pathological examination.

Methods: 114 breast cancer cases were performed using the telepathology for analysis of the surgical margins during the operations in our hospital. We counted the number of cases, in which we performed additional resection because of positive margin to achieve negative margin. We also verified the concordance between the telepathology results by intraoperative cryosection and the postoperative pathological results using formalin fixation method.

Results: Resections of 81 cases were negative margin. 29 cases underwent additional resection because the first resected surgical margins were diagnosed positive. For 4 cases with also positive margin, the surgery method was changed from the partial resection to the mastectomy. Therefore, 33 cases (28.9%) underwent additional resection or mastectomy because of the positive margin result using telepathology. As for 110 cases with first or final margin diagnosed negative by the telepathology, all of them were also verified to be margin negative by the postoperative

pathological examination. The concordance rate between the intraoperative telepathology and the postoperative pathological examination was 100%.

Conclusion: The telepathology has proven to be very useful for the intraoperative surgical margin diagnosis for the breast partial resection. For the hospitals that have no on-site pathologists, building a partnership with an off-site pathological laboratory for responsive telepathology enables far better surgical outcomes.

Conflict of interest: No conflict of interest.

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248. Preoperative evaluation by B mode ultrasound of axillary lymph nodes in cases of carcinoma breast for lymph node metastasis

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Background: Breast cancer is one of the commonest known malignancy of mankind. Once the diagnosis of breast cancer has been made, appropriate treatment planning involves evaluating the extent of disease both locally in the breast and regional nodes and at distant sites. Axillary lymph node metastases are the single most important prognostic factor in patients with breast cancer in the absence of distant metastasis. UCG has increased the amount of information that can be obtained during the examination of the lymph nodes. The diameter of lymph node and hilum, centric echogenicity, thickening of cortex and length/width ratio were evaluated with USG. The aim and objective of study is to find the role of pre-operative B-mode ultrasound axilla in evaluation of axillary lymph node metastases in carcinoma breast patients and its histo-pathological correlation.

Methods: Single center, prospective analysis. All patients underwent a B-mode Ultrasonographic evaluation of the ipsilateral axilla. The sonographic findings were co-related with the histo-pathology of nodes respected during subsequent axillary dissection.

Results: We studied a total of 30 patients from January 2012 to March 2013. Ultrasound axilla was found to have sensitivity and specificity of 87.5% and 78.57% with positive predictive value and negative predictive value of 82.35% and 84.62% respectively. The sensitivity and specificity of USG were impacted by suspicious axillary palpation and no. of affected lymph nodes ($p < 1.05$).

Conclusion: Since axillary nodal staging is used for disease management, axillary USG is an important diagnostic modality for breast cancer patient. Suspicious axillary lymph nodes and no of affected lymph nodes increases the diagnostic performance of this modality.

Conflict of interest: No conflict of interest.

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249. Oncoplastic breast surgery in Egypt: The impact on the breast multidisciplinary team service and on the patients' pre- and postoperative peace of mind as a multicenter experience

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Background: Oncoplastic Surgery (OPS) is becoming more popular in Egypt increased by 29% last year. What is the impact of OPS on the NHS and subsequently Breast services in today's financial difficulties? What's the impact on Breast Cancer Patients (BCP)?

Methods: 468 BCP undergone OPS from May 2012 to June 2015. Mean age at presentation was 43 years (29–63), the commonest OPS procedure was volume replacement $n = 304$ (65%) and a contralateral mamoplasty dermo-glandular rotation in 58 BCP, dermo-glandular advancement

in 148 BCP and glandular displacement in 98 BCP, $n = 90$ (19%) needed Silicone implants and $n = 74$ (16%) needed volume replacement by latissimus dorsi flap.

Results: Excellent to good cosmetic outcome was more than 92% in 3 type of OPS and patients are satisfied. The rate of poor cosmetic result was less than 10%. The significant factors affecting cosmetic outcome were long scar, hypertrophic scar, pain and itching. Progressively increased number of cases last year due to the raised awareness and acceptance of the OPS and prevalence of such surgeries. Brought peace of mind for breast cancer patient about the cosmetic results of surgery. Together with the outstanding patient expectation which demand a more advanced training of the assigned dedicated team. The high rate increase in flow rate year by year, Recorded cases at June 2013 was 96 cases, June 2014 was 146 cases and by June 2015 was 226 cases, with increased financial demands and shortage in the resources

Conclusion: In this study, assessing the impact of OPS on the three National breast centers' MDT service, we have seen an additional work load over the past three years with a challenging cosmetic demands. The increase in OPS is likely to have cost implications on limited resources which should be addressed. An urgent alarm mandating recruiting and giving new chances for training new oncoplastic surgeons. Also, it's considered a strong motive among Egyptian women to encourage early management and increased the annual number of cases seeking advice and care with no more fear of the cosmetic outcomes as known in the past.

Conflict of interest: No conflict of interest.

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250. Towards omitting breast cancer surgery in selective patient groups: Assessment of pathologic complete response after primary systemic treatment using multiple biopsies 'The MICRA trial'

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Background: With the advent of targeted neoadjuvant therapies such as trastuzumab and pertuzumab as well as the individualized chemotherapy regimens, increasing rates of pathologic complete response (pCR) are achieved. In triple negative and Her2-positive subtypes, pCR rates as high as 40–75% are described. In case of a pCR, no residual invasive tumour cells are present. In these patients, surgical resection of (part of) the original tumour area is not likely to contribute to locoregional control, and is performed solely to confirm the absence or presence of residual tumour. Previous studies already investigated whether surgery can be omitted in patients with a clinical complete response, which was defined by the absence of palpable tumour and/or absence of residual tumour on mammography and/or ultrasound. Results however showed a higher rate of local recurrences. The current higher pCR rates and modern imaging modalities such as MRI lead to a renewed and justified interest to downsize locoregional treatment following PST. Therefore, we propose the MICRA trial: Minimally Invasive Complete Response Assessment of the breast after primary systemic treatment using multiple biopsies, to select a group of patients in whom surgery of the breast can be omitted.

Methods: The MICRA trial is a multi-center prospective cohort study. In all breast cancer patients receiving PST, a radioactive iodine seed will be placed in the center of the tumour area prior to the start of PST. In patients with a radiologic complete response (rCR) on MRI after completion of PST, eight ultrasound-guided biopsies will be obtained at various distances from the iodine seed (central and peripheral), while the patient is

already under general anaesthesia. Immediately hereafter, surgical resection of the area surrounding the iodine seed will be performed, which may consist of breast conserving surgery or mastectomy. Pathology results of the biopsies and resected specimens will be compared, to assess whether a pCR can be reliably determined with post-PST biopsies.

Results: In total 258 patient will be included in this study. The sensitivity, specificity, negative and positive predictive value of the post-PST biopsies will be calculated. We will perform a multivariable analysis using data on MRI findings, pre-PST pathology parameters and post-PST biopsy results to determine what the most reliable method is to assess pCR and how many biopsies are needed for this purpose. With use of this information, we aim to select patient groups in whom surgery of the breast can be omitted.

Conclusion: With the MICRA trial we aim to select a group of breast cancer patients in whom surgery of the breast after PST can be omitted, by predicting the presence of a pathologic complete response solely on biopsies.

Conflict of interest: No conflict of interest.

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251. Prognostic significance of progesterone receptor in luminal B breast cancer

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Background: Breast cancer is now identified as a heterogeneous assembly of different diseases with various clinical characteristics. At least five distinct breast cancer subtypes have been identified based on gene expression studies. Five are as follows; luminal A, luminal B, HER2 over-expressing, basal-like and normal breast. Many studies have demonstrated that protein expression analysis using immunohistochemistry could surrogate the definition for identification of the molecular subtypes. We investigated prognosis in 507 women with breast cancer defined as luminal B tumor [estrogen receptor (ER) positive and/or progesterone receptor (PgR) positive, and Ki-67 $\geq 14\%$ or HER2 positive] by immunohistochemistry classification. We especially sought to compare outcome of four subgroups within the luminal B subtype according to PgR status and HER2 status.

Materials and methods: A retrospective review was conducted. ER, PgR, and Ki-67 were assessed by immunohistochemistry. The threshold for ER and PgR positivity was 1%. HER2 status was assessed by HERCEP test or FISH. Being 3+ on HERCEP test or amplification on FISH, it was defined as positive. Luminal B subtype was defined as tumors with ER positive and/or PgR positive, and Ki-67 $\geq 14\%$ or HER2 positive. Patients with stage IV and bilateral breast cancers were excluded from this study. A total of 507 women with luminal B breast cancer, treated at Fujita Health University Hospital between 2003 and 2014, were included in this study. Distant metastasis-free survival curves and overall survival curves were generated using the Kaplan-Meier method and survival comparisons were made with the log-rank test. PASW Statistics18 software package was used for statistical analysis.

Results: The median age of the patients was 55 years (range, 22–90). 71% ($n = 360$) of the luminal B tumors were ER+/PgR+/HER2- subgroup, 12% ($n = 61$) were ER+/PgR-/HER2- subgroup, 10.3% ($n = 52$) were ER+/PgR+/HER2+ subgroup, and 6.7% ($n = 34$) were ER+/PgR-/HER2+ subgroup. The median follow-up time was 4.59 years (range, 0.08–12.37). The 5-year distant metastasis-free survival rates were 86.9% for the patients with ER+/PgR+/HER2- tumor, 80.3% for ER+/PgR-/HER2-, 100% for ER+/PgR+/HER2+, and 81.0% for ER+/PgR-/HER2+ ($p = 0.003$). The 5-year distant metastasis-free survival rates of the patients with PgR+ ($n = 412$) tumors and PgR- ($n = 95$) tumors were 88.8% and 80.6%, respectively ($p = 0.006$). HER2 status and histological grade did not affect the risk of distant metastasis. The 5-year overall survival rates were 93.3% for the patients with ER+/PgR+/HER2- tumor, 82.8% for ER+/PgR-/HER2-, 100% for ER+/PgR+/

HER2+, and 86.2% for ER+/PgR-/HER2+ ($p = 0.017$). The patients with PgR+ tumors showed better overall survival rate than those with PgR- tumors ($p = 0.019$).

Conclusions: The absence of PgR in luminal B breast cancer was at higher risk for distant metastasis and death.

Conflict of interest: No conflict of interest.

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252. Electron IORT APBI: What does the data tell us at 5 years?

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Background: Several accelerated partial breast irradiation (APBI) techniques have emerged with the aim of reducing the overall time of treatment without compromising oncologic results or cosmesis. APBI approaches can be divided into intraoperative (IORT) APBI where all the radiation is given at the time of the surgery, or post-operative APBI, when definitive nodal and margin assessment pathology are available. IORT APBI has been criticized because final pathology to assess risk is not available at the time of treatment. This study reviews the results of mature APBI studies to determine if suitable patients can nevertheless be identified for whom IORT APBI can provide equivalent results to post-operative APBI and standard breast treatments.

Material and methods: The primary source of data for randomized controlled APBI trials (RCT) were the trial publications themselves. The NSABP39 RCT (MammoSite balloon catheters, 3D conformal and multi-plane brachytherapy) has finished accrual, but has not released results. The RAPID RCT (3D Conformal APBI trial) has released cosmetic results only. So, a comprehensive review of the peer reviewed published literature was conducted to also assess non-RCT APBI results. Clinical studies using APBI techniques that were published prior to October 2015 were reviewed. Studies involving 30 or more patients followed for a minimum of 60 months median follow-up were analyzed for efficacy, patient restrictions, and complications.

Results: The ELIOT Trial, with a median follow-up of 5.5 years, achieved a 5-year ipsilateral breast tumor recurrence (IBTR) of 4.4% vs. 0.4% for the EBRT arm ($p < 0.0001$), but a low-risk ELIOT patient group was identified that had a 5-year IBTR of 1.5%. In addition, ASTRO Suitable IORT APBI patients achieved a 1.5% IBTR, equivalent to the EBRT ASTRO suitable patients. In the most recently published RCT multi-plane brachytherapy trial, the 5-year IBTR was 1.4% for APBI patients and 1.0% for the EBRT patients, but varied as high as 4.7% for other mature non-RCT APBI studies. In MammoSite treated patients, the 5-year IBTR varied between 2.5% and 4%. We could find no published 5-year data for 3D conformal APBI delivered in 10 fractions, but a RCT 3D conformal study with a modified fractionation schedule resulted in a 5-year IBTR of 1.5% vs. 1.4% for the EBRT treated patients.

Conclusions: At 5-years, in properly selected low risk women, Electron IORT APBI results in equivalent local recurrence, overall survival, and cosmesis, compared to published post-operative APBI approaches and low risk EBRT treated women. Longer-term results of Electron IORT APBI will determine if these promising 5-year results are maintained. Until that time, all Electron IORT APBI patients should be treated only under strict institutional protocols.

Conflict of interest: No conflict of interest.

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253. Breast radial scar: Is it possible to avoid surgery?

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Background: The approach of breast radial scar remains controversial. The need for surgical excision is supported by the concern of an associated high-grade lesion or a malignant compound missed in the initial biopsy that can be identified in the surgical specimen. The aim of this study is to identify the risk factors for histologic up-grade and determine the need for surgery after a histological diagnosis of radial scar.

Material and methods: This is a retrospective study of the consecutive radial scars diagnosed histologically from January 2010 to December 2015.

Results/Discussion: 113 cases of radial scar were diagnosed during the study period, 15 (13.3%) of which associated with atypia. There was an histologic up-grade in 22 (19.5%) cases, 8 of them to atypical ductal hyperplasia, 9 to carcinoma in situ and 5 to invasive carcinoma. The risk factors for up-grade in this study were the presence of calcifications in preoperative exams, the type of biopsy performed (vacuum-assisted vs core), the number of fragments obtained in the biopsy, the largest fragment size and the presence of atypia on initial histology ($p < 0.05$). The diagnostic biopsy was vacuum-assisted in 25 (22.1%) cases and in the remain 88 (77.9%) was performed a core biopsy. The up-grade rate in the group of vacuum-assisted biopsies was 4.0%, and in the core-needle group was 17.1% ($p = 0.041$).

Conclusion: The risk of up-grade after a radial scar diagnosis depends on the presence of calcifications in imaging, the type of biopsy performed, the number of fragments obtained, the largest fragment size and the presence of atypia in initial biopsy. The risk for up-grade remains high in the patients undergoing core needle biopsy and surgery appears to be a reasonable approach. When biopsy is vacuum-assisted this risk is substantially decreased and the need for surgery in this group seems to be unnecessary.

Conflict of interest: No conflict of interest.

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255. Breast and ovarian metastasis of gastric adenocarcinoma: Rare but there

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Background: Gastric adenocarcinoma is the 5th most common type of cancer and the 3rd deadliest. Metastatic disease usually manifests itself in the liver, lung or peritoneum. Other locations as ovaries are rare (<2%).

Material and methods: The purpose of this paper is to describe an unusual case of breast and ovarian metachronous metastasis of gastric adenocarcinoma.

Results: Woman, 48 years old. History of Bilroth II subtotal Gastrectomy in 2002 for antrum high grade adenoma. In 2009 submitted to Y Roux Degastrogastrectomy for gastric adenocarcinoma (pT3 pN1 (4/7) R0 cM0). Underwent adjuvant chemotherapy and radiotherapy. At 62 months of follow-up a 3 cm nodule in the right breast and a 5 cm painful hypogastric mass were identified. Breast ultrasound and MRI showed no evidence of disease on the right breast. Abdomino-pelvic CT scan revealed an 11 × 5 cm mass in the dependency of the right ovary. Both breast and ovarian biopsies showed metastasis of gastric adenocarcinoma. PET-FDG

with involvement of pelvis and right breast. Proposed for chemotherapy (2nd line) and surgery. Submitted to right oophorectomy and right skin sparing mastectomy with immediate reconstruction with silicone prosthesis. Histology confirmed both metastasis and ascitic fluid cytology was negative. Post-operative period with no intercurrent. Proposed for chemotherapy. At 4 months of follow-up without clinical or imagiological recurrence.

Conclusions: Breast metastasis of gastric carcinoma are rare (41 cases described in the literature) and metachronous breast and ovarian metastasis even rarer. To our knowledge, there are 10 cases described of breast metastasis from gastric carcinoma associated to metastasis in other organs, and 4 cases of breast and ovarian metastasis, without metastasis in other locations. The majority of cases was diagnosed synchronously with the primary tumor and >80% of patients die within the 1st year.

This case is unique not only because of the type of metastasis but also due to the time required for its manifestation.

Conflict of interest: No conflict of interest.

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256. A prospective study comparing conventional investigation and PET-CT scan for staging in locally advanced breast carcinoma

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Background: Multiple organ based imaging has been the conventional way of assessing the distant metastasis in locally advanced breast carcinoma. Desire to have a single accurate investigation, which can image multiple organs simultaneously and precisely cannot be overstressed for patient's convenience. This study is designed to evaluate the role of single 18 FDG positron emission tomography and computerized tomography (PET-CT) scan in comparison to multiple organ directed conventional investigations as a staging tool in locally advanced breast cancer to detect regional and distant metastasis.

Materials and methods: A comparative prospective study which includes fifty six patients of locally advanced (Stage III) breast cancer was conducted in breast cancer clinic of a tertiary care oncology centre in north India. All eligible patients were subjected to undergo conventional imaging investigation (Contrast enhanced computerized tomography to assess lung and liver metastasis and bone scintigraphy to assess bone metastasis) followed by a single PET-CT scan. All PET-CT detected metastatic lesions were considered positive if they were multiple and typical appearance of metastasis (multiple lung nodules or lytic lesions in skeleton) else they were confirmed by histopathology (MRI in case of skeletal metastasis) or by clinical/imaging follow up.

Results: 18 FDG PET-CT detected metastasis in 25 (44.64%) patients while Conventional imaging could identify metastasis in 19 (33.9%) patients. FDG PET-CT detected N3 disease in 17(30.3%) patients (supraclavicular lymphadenopathy in 7(12.5%) patients and internal mammary lymphadenopathy in 11 (19.6%) patients). Overall FDG PET-CT upstaged 26 (46.4%) patients (to stage IV in 12 (21.4%) patients and within stage III in 20 (35.7%) patients) as compared to conventional imaging which upstaged the patients in 19 (33.9%) only. Overall concordance between PET-CT and conventional

imaging was 74% (96.5% for contra-lateral breast, 91% for lung metastasis, 86% for skeletal metastasis and 91% for liver metastasis). Overall PET-CT changed the management plan in 6 (10.7%) patients.

Conclusion: The present study shows the superiority of PET-CT scan over multiple organ directed conventional investigations in staging of locally advanced breast cancer patients and it's potential to change the management.

Conflict of interest: No conflict of interest.

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257. Subcutaneous mastectomy with immediate reconstruction – Pros and cons

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Background: Operation subcutaneous mastectomy is increasingly popular among surgeons and patients suffering from breast cancer and BRCA carriers. Popularity subcutaneous mastectomy/SSM/ and nipple-areola complex sparing mastectomy/NSM/ increases also based on the improvement of surgical techniques, improvement of breast prostheses and the possibility of shortening the treatment of cancer by giving up radiotherapy. Cosmetic effect is as important as its oncological radicality.

Material and methods: In the Department of Oncological Surgery recovering in the years 2004–2015 1985 patients diagnosed with breast cancer. During this period, 132 women/7%/ qualified for subcutaneous mastectomy with immediate reconstruction, 7 patients underwent procedures bilateral/139 operations/. Indications for surgery: the diagnosis of breast cancer T1/T2/N0; multifocal or multicentric; DCIS and LCIS, mammography image with extensive microcalcifications, and BRCA1/2 mutation carriers. Additionally considered: ratio the size of the tumor to the size of the breast, contraindications to radiotherapy and the patient's preferences. The patient were eligible for subcutaneous mastectomy/SSM/ and nipple-areola complex sparing mastectomy/NSM/. The loss of tissue was supplemented with silicone prosthesis or Becker expander/mammary prosthesis. The size of the prosthesis was chosen when planning a treatment, or by measuring the volume of the gland. The choice of skin incision was forced by the location of the tumor and/or surgeon preference. The prosthesis was placed under the pectoral muscle, which stabilized soluble sutures or titanized polypropylene mesh.

Results: Early complications/7%/: hematoma, skin necrosis, infection. Late complications/11%/: relapse of cancer/4%/ and the need for the coverage of the prosthesis/7%/. Patients evaluated the effect of treatment: 65% – good; 20% – very good; 15% – bad.

Conclusions:

1. Subcutaneous amputation of concurrent reconstruction is an established method of surgical treatment of breast cancer. Survival and the number of local recurrence after surgery is not different from other surgical procedures.

2. The ability to withdraw from radiotherapy significantly reduces the healing time, lowers its cost and is well accepted by patients.

3. Risk factors for complications and the coverage of the prosthesis: cutting on the border of the areola, the size of the prosthesis >500 ml, smoking, chemotherapy started to 4–6 weeks from surgery, diabetes and vascular disease.

4. The cosmetic results are not always satisfactory. Qualifying patients for surgery must be careful.

Conflict of interest: No conflict of interest.

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Poster Session: Cancer in Older Patients

275. Role of immunohistochemical expression of AMACR as a prognostic and predictive biologic marker in advanced prostatic carcinoma

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Background/purpose: Prostate cancer is the second most common cancer in men worldwide. Many studies have focused on the significance of AMACR expression as a diagnostic marker for prostatic carcinoma. Similar studies relating immunohistochemical detection of AMACR in prostatic cancer tissue and the prognosis are much more lacking. We aimed at exploring immunohistochemical expression of AMACR as prognostic and predictive marker in prostatic carcinoma.

Methods: We performed immunohistochemical staining of AMACR on tissue core biopsies of 49 patients with advanced prostatic carcinoma and evaluated its expression in relation to Gleason's score, initial PSA level, nadir PSA level and biochemical failure to androgen deprivation therapy.

Results: Statistically significant relation was obtained between high AMACR expression and high Gleason's score. There was a trend of patients with high AMACR expression to present with higher level of PSA and bone metastasis. A trend was detected for patients with AMACR score 7 to have higher nadir PSA. Patients with AMACR Score 7 experienced biochemical failure in 71.4% of cases, while none of patients with AMACR score less than 7 experienced biochemical failure.

Conclusion: Our preliminary results highlighted the role of AMACR immunoexpression as a poor prognostic indicator of prostatic carcinoma being associated with high Gleason's score as well as initial PSA level. Also our results highlighted the possible role of AMACR expression as predictive marker of hormonal therapy.

Conflict of interest: No conflict of interest.

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276. Geriatric assessment of older patients with colorectal cancer qualified for emergency abdominal surgery

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Background: The aim of this study was the feasibility and efficacy of different forms of geriatric assessment (GA) in patients qualified for emergency abdominal surgery due to colorectal cancer.

Material and methods: Screening tests (Vulnerable Elderly Survey-VES-13; Triage Risk Screening Tool—TRST; Geriatric-8-G8; Groningen Frailty Index-GFI; Rockwood, Balducci score), Fried's frailty criteria and full GA were evaluated in a prospective group of 57 consecutive

patients ≥ 65 years of age with colorectal cancer. All patients were treated surgically within 24 hours after admission to surgical unit. Outcome measure were feasibility and accuracy of these scales in predicting frailty and 30-day postoperative morbidity and mortality.

Results: Between 2013 and 2015, 29 female and 28 male patients were enrolled into the study. Patients' median age was 76 (65–92) years. The most common indication for surgery was ileus (84.2%), followed by peritonitis (12.3%) and bleeding (3.5%). In 7 (12.3%) patients it was not possible to perform any assessment due to severe condition. The 30-day morbidity and mortality was 61.4% (including 43.9% with major complications) and 28% (incl. 38% within first five postoperative days), respectively. The prevalence of frailty, as diagnosed by screening methods, the Fried's frailty criteria and the full GA, were: 66–77% (Rockwood-Balducci), 63.6% and 84.1%, respectively. In predicting frailty based on the full GA and the Fried's frailty criteria, the area under the curve (AUC) was 0.7–0.92 (TRST-VES13/aCGA) and 0.66–0.82 (VES13-GFI), respectively. In predicting 30-day morbidity and mortality, the AUC of different screening tools, the Fried's frailty criteria and the full GA were 0.55–0.76 and 0.65–0.83, 0.67 and 0.84, 0.76 and 0.79, respectively. The predictive possibility of 30-day morbidity of the screening tests and the Fried's frailty criteria were insignificantly better among patients assessed in the postoperative period (AUC: 0.64–0.9 and 0.8, respectively). The predictive possibility of full GA was significantly better when carried out on the first postoperative day (AUC: 0.76 vs. 0.9).

Conclusion: In most of the patients, it is possible to perform different forms of geriatric assessment in older patients with colorectal cancer qualified for emergency abdominal surgery. The frailty screening tools and the Fried's frailty criteria are easy to perform, short and well acceptable by the patients. The full Geriatric Assessment is more demanding and time consuming but also possible to perform. These instruments possess good morbidity and mortality predictive value and may offer physicians' additional information that can be used in the intra- and post-operative optimization of the treatment of these high-risk groups of patients. Their application on the first postoperative day needs further investigation.

Conflict of interest: No conflict of interest.

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277. Mesh reconstruction of anterior/posterior pelvic and sacrococcygeal compartments in oncologic patients with major surgery: Early results

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Aim: Both sacral and perineal hernias are uncommon defects developing through the pelvic floor following major surgery as abdominoperineal resection or sacrectomy in patients with anorectal or sacral tumors. Repair of this hernia is a challenging surgical problem. Various methods of repair have been proposed and include an abdominal, perineal, sacral or combined abdominoperineal approach to the hernia. Wound complications after chemoradiotherapy for these patients occur in up to 60%. The aim of this study is to describe the results of mesh reconstruction of the pelvic floor and sacrum in oncologic patients with large defects after aggressive surgery.

Patients & methods: Seven male and two female, totally nine patients with anterior/posterior pelvic reconstruction due to cancer were analyzed. The mean age and follow-up were 64 years and 13 months.

Results: Tumor excision with sacrectomy were performed in patients with sacral chordoma. Anteropelvic and perianal excision or abdominoperineal resections were performed in 4 cases. All patients underwent prosthetic graft reconstruction with or without advanced skin flaps of either posterior pelvic or anterior pelviperineal compartments. Whereas two patients received neoadjuvant CRT, others had received adjuvant therapy. Four recurrences were seen in two patients with sacral chordoma. Overall mortality and morbidity rates were 0% and 22.2%.

Conclusion: Total or partial sacrectomy with or without perineal resections often required to treat cancers involving the sacrum, such as chordomas, chondrosarcomas, giant cell tumors, osteosarcomas, and recurrent or invasive rectal cancer. Anterior and/or posterior pelvic graft reconstruction should be considered in oncologic cases with major surgery of this field but long term results should clearly be analyzed.

Conflict of interest: No conflict of interest.

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278. Synchronous multivisceral resections in metastatic or locally advanced cancers: Early results of one centre

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Aim: Multi organ invasions are really problem in advanced cancers. Multivisceral resections in advanced cancers play role in local control of primary disease.

Patients & methods: All patients were analyzed for primary tumor etiology, surgical therapy, demographic parameters, follow-up, mortality and morbidity retrospectively.

Results: 59 male and 53 female, totally 113 cases were enrolled between 2009-March 2016. Mean age and follow-up were 59.4 years and 19 months. Primary tumor had origin of colorectal (n = 50), stomach (n = 24), retroperitone (n = 10), gynecologic (n = 11), pancreas (n = 2), renal (n = 5), adrenal (n = 4), sacralchordoma (n = 4), bladder (n = 1), duodenum (n = 1), gallbladder (n = 1). Synchronous resections were as colon and rectum (n = 59), small bowel (n = 41), splenectomy (n = 28), liver segmentectomy/wedge (n = 21), gastrectomy (n = 21), nephrectomy (n = 2), TAH + BSO (n = 14), abdominal wall (n = 8), cyctectomy (n = 8), ileostomy (n = 17), colostomy (n = 12), vaginal reconstruction (n = 2), adrenalectomy (n = 5), 3–4 quadrant peritonectomy (n = 7), cholecystectomy (n = 18), sacrococcygeal amputation (n = 6), ureter excision (n = 2), distal pancreatectomy (n = 1). Whereas 5-year survival was 63.1%, morbidity and mortality rates were 17.3% and 7.76%.

Conclusion: Synchronous multiorgan resections should be considered with accepted local control outcomes in surgical management of locally advanced cancers.

Conflict of interest: No conflict of interest.

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279. Age as a decisive factor for surgery – Is that true for gastrectomies?

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Background: Gastric carcinoma is the 5th most common type of cancer and, although the world incidence has declined, it is still the 3rd deadliest. The increase in life expectancy generates a higher probability of this cancer in older people. The purpose of this paper is to evaluate the feasibility of gastrectomy for old patients (≥80 years old) comparing clinicopathological features and surgical outcomes.

Materials and methods: Retrospective analysis of all patients with histologic diagnosis of gastric adenocarcinoma between January 2009 and December 2014 at a regional hospital. Statistical analysis using SPSS.

Results: A total of 144 patients submitted to gastrectomy (with curative intent) were included. 37 patients were excluded due to stage IV disease at diagnose. Median age of 71. Patients divided into 3 groups: young (<65 years old), young-old (66–79 years old) and old-old (≥80 years old) with n = 55, n = 53 and n = 36 respectively. 44% had comorbidities and 14% with ≥2 comorbidities, with high blood pressure and diabetes being the most frequent. The higher percentage of comorbidities was found in the old-old group (53%; p = NS). Median of preoperative hemoglobin of 11.6 g/dL and human albumin of 3.5 g/dL with lower values in the old-old group. The most common tumor location was the antrum (65%) and the majority of patients underwent Bilroth II subtotal gastrectomy (57%), both without statistical differences amongst age groups (p = NS). Regarding pathologic staging (TNM): 28% had stage I, 38% stage II, 27% stage III and 7% had stage IV. When comparing stage with age group, advanced stages (III and IV) occurred more frequently in the young group (40%; p < 0.05). Overall complications diagnosed in 33%, and Clavien-Dindo complications ≥III observed in 28%, with increasing percentage with the advancing age (p < 0.05). 29% developed recurrence, more frequent in the young group (p = NS). When analyzing mortality rates, we verified 44% of global mortality, 42% of disease related mortality, the latter being higher in the old-old group (p = NS). Operative mortality (death within 30 days of surgery) was 10%. Median follow-up time was 19 months (0–81) with an overall survival at 3 years of 43% in the old-old group compared to 69% in the young-old group (p < 0.05). Statistical significance was also observed in disease free survival amongst age groups.

Conclusions: This casuistry clearly reveals that mortality in gastric cancer is related to stage and age, with higher complication rates in the old-old group.

Despite the small number of cases, this study suggests that age constitutes a relevant factor in preoperative decision making.

Conflict of interest: No conflict of interest.

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280. Colorectal cancer in patients over 70 year old: Laparoscopic surgical treatment

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Background: Open colorectal surgery in elderly is associated to high mortality and several complications. Laparoscopic surgical treatment in patients over 70 y.o. can offer wide advantages in the treatment of colorectal cancer.

Material and methods: 16 women and 14 men of 70 y. or greater with colorectal tumors treated laparoscopically.

Results: Mean age: 78(70–87) years old, 55.3% are women, 85.3% have a biopsy of colorectal adenocarcinoma. ASA II was grade of the classification for anesthetic risk in 56.3%. In 15 % an endoprosthesis was required in the evolution of disease. Surgical mean time was 213 minutes. In 15 patients the reconstruction was manual. Conversion to open surgery was necessary in 7 patients by tumoral adhesions. Some kind of complication (wound infection, urinary infection, etc) was identified in the 40%. Five reoperations was realized for complications and one was initially laparoscopic and conversion later. Three patients dead, one of Aspirative Pneumonia and two by tumoral recurrence.

A diagnosis of colorectal adenocarcinoma was made in 85.3%. Mean number of resected lymph nodes was 22 (11–56). All specimens have free surgical margin. Dukes (Modified Astler-Coller) more frequent was

B2 with a 31.3%. Oral intake oral was begin in the first 24–48 hours after surgery in 78.6%. Only 18.8% patients presented a recurrence of initial tumor.

Conclusions: An important alternative in patients over 70 years old and greater is the approach laparoscopic surgery with colorectal cancer because offer several advantages.

Conflict of interest: No conflict of interest.

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Poster Session: Colorectal and Anal Cancer

300. High or low ligation of the inferior mesenteric artery during curative surgery for rectal cancer

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Background: In rectal cancer surgery, the position of arterial ligation can affect genito-urinary function, bowel function, oncological outcomes, and the incidence of anastomotic leakage in low ligation preservation of the autonomic nerve, increased blood supply, decrease in anastomotic leakage. Oncological safety and tension-free anastomosis remain drawbacks. High ligation decrease perfusion and innervation of the proximal limb allows for enbloc dissection of the node metastases at and around the origin of the IMA. No conclusive evidence to improved survival.

Objective: Compare complication and oncological outcomes between high and low tie of IMA.

Methods: A retrospective analysis of 114 patients who were operated on for rectal cancer during the period of 5 years [1 January 2007–31 December 2011] at the south Egypt cancer Institute of Assiut University. In 38 patients (33.3%), a high ligation 76 patients (66.7%) were treated low IMA ligation in which the fatty tissue and metastatic nodes at the root of the inferior mesenteric are removed (Dumpy). The pathologic grade and stage of tumors was quite similar in both groups.

Results: Nine patients (24%) in the high tie (HT) group and twenty patients (26%) in the LT (low tie group) group received a defunctioning stoma. The mean number of lymph nodes harvested in the high tie group was 21 in the LT group, 18 ($p = 0.35$). The mean number of positive lymph nodes in the high tie group was 4 in the LT group, 3 (1–5); ($p = 0.32$). Two patients had positive lymph nodes at the root of IMA, one in the High tie group (2.7%) and one in the LT group (1.3). Urinary dysfunction (7.9%) in Low tie group and (10.5%) in high group p value (0.73), Sexual Dysfunction (10.5%) in LT group (13.2%) in a high group (0.76), Gastrointestinal Dysfunction (3.9%) in LT group, (5.3%) in a high group p value (1.0) and Anastomotic leakage (5.3%) in LT group (7.9%) in a high group p value (0.68). Five years overall survival in low IMA = $78.2 \pm 2.7\%$ versus $79.7 \pm 3.3\%$, p value = 0.98 (NS) Five years recurrence free survival in low IMA = $86.2 \pm 4.0\%$ versus $86.3 \pm 6.1\%$, p value = 0.82 (NS) Recurrence (11.8%) in LT group, and (10.5%) in high group. Mortality occur in (2.6%) in LT group, and (2.6%) in high group.

Conclusion: High ligation of the IMA does not significantly improve the survival, when high ligation is not necessary, we prefer low ligation. With the fatty tissue and metastatic nodes at the root of the IMA are removed.

Conflict of interest: No conflict of interest.

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301. Total mesorectal excision for the treatment of rectal cancer

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Abstract:

Introduction: In surgical treatment of rectal cancer, a clear circumferential resection margin and distal resection margin should be obtained. The aim of this study was to determine the morbidity, mortality, survival

outcome, and local failure after total mesorectal excision (TME) in surgical treatment of rectal cancer.

Methods: This retrospective study conducted on 101 patients treated for rectal cancer using low anterior resection (LAR) or abdominoperineal resection (APR). Hartmaan's operation with all operative procedures were associated with total mesorectal excision (TME) in the period from November 2000 to April 2011 in south Egypt Cancer institute (SECI) of Assiut university (Egypt). Neo-adjuvant therapy was given to those patients with serosal infiltration, lymph node involvement, sexual and urinary function impairment. Local and distant recurrence optimal distal resection margin in sphincter-saving procedure. Data were analyzed using IBM-SPSS version 21, and survival rates were estimated using Kaplan Meier method.

Results: 101 patients were evaluable (61 male, 40 female). Regarding operative procedure: (APR), LAR, Hartmaan's: 15.8%, 71.3%, 12.9% respectively. 30-day mortality 3%. Regarding postoperative morbidity 25%, anastomotic leaks (5.9%), urinary dysfunction 9.9%, Sexual dysfunction 15.8%. Regarding safety margin median distances were **distal/radial margin**, 23/12 mm. **Distal limit** 7 cm. Median **lymph nodes** harvest 19 nodes. **Primary tumor locations** were anteriorly 23.8%, laterally 13.9%, posteriorly 38.6% circumferential 23.8%. Protective stoma 16.8%. Primary Tumor TNM classification (T1,T2,T3,T4: 3%,28.7%, 55.4%,12.9% respectively). Nodes Metastases (N0, N1, N2 57.4%, 31.7%, 10.9% respectively). TNM staging (I,II,III,IV: 15.8%, 29.7%,46.5%, 7.9% respectively). Chemotherapy was administered to 67.3% of patients. **Radiotherapy** (Shortcourse neoadjuvant, Long course neoadjuvant, Adjuvant postoperative used in 33.7%, 20.8%, 19.8% of patients respectively). **Rate of Recurrence** local/distant, both 6.9%, 18.8%, 3% of patients respectively. Survival 5-Years **CSS** was 73% and 5-years **RFS** 71%. Mean operative time 213 minutes. Average amount of intraoperative **blood loss** was 344 mL.

Conclusion: Total mesorectal excision (TME) represents the gold-standard technique in rectal cancer surgery. It is safe with neoadjuvant chemoradiotherapy provides both maximal oncological efficiency (local control and long-term survival and maintenance of a good quality of life).

Conflict of interest: No conflict of interest.

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304. Prognostic significance of serum levels of VEGF on survival in patients with colorectal cancer – Localization does it matter?

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Background: A series of factors of angiogenesis determine local progression and metastatic potential of several carcinoma. However, their prognostic role in clinical practice remains unclear. The aim of our study was to evaluate the prognostic significance of preoperative serum levels of

vascular endothelial growth factor (VEGF) in patients with colon and rectal cancer.

Materials and methods: For the period of 2011–2013, we analyzed preoperative VEGF serum levels in 64 patients with sporadic colorectal carcinoma (CRC) treated at the Surgical Clinic of the University Hospital – Stara Zagora. Of them 41 were men and 23 – women. Mean age in group was 68.9 ± 8.6 years. The results obtained in the patients group were compared with those of 40 healthy controls. According to the TNM classification – 10 (15.6%) were in stage-I, 39 (60.9%) – in stage-II, 8 (12.5%) – in stage III, and in the IVth stage were 7 (10.9%) patients. 3 years overall survival in the group was 75%.

Results: The measured levels of VEGF in patients with CRC were significantly higher than those in healthy controls (mean 585.74 ± 462.95 – patients; mean – 327.32 ± 132.64 for healthy controls; $p = 0.014$). Serum levels of VEGF were significantly higher in patients with IIIth and IVth clinical stage ($p=0.017$; $p=0.014$). Patients with colon cancer and high preoperative levels of VEGF have been a significantly worse overall survival ($p = 0.001$ Kaplan-Meier), while we didn't find such statistical association in these with rectal cancer ($p = 0.547$ Kaplan-Meier).

Conclusions: Preoperative serum levels of VEGF are clinically applicable, independent prognostic marker that is associated with advanced clinical stage and a worse prognosis in patients with colon carcinoma.

Conflict of interest: No conflict of interest.

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305. Comparative analysis of the prognostic role of preoperative levels of VEGF with standardly used tumor markers in patients with colorectal cancer

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Background: CEA and CA 19-9 are established markers for prognosis and dynamic monitoring of patients with colorectal cancer (CRC). Dynamic searching of specific (target) therapy in these patients defined discovery and validation of number of indicators which play a specific role in the local progression and cancer metastatic potential. The aim of our study was to determine the prognostic significance of preoperative serum levels of vascular endothelial growth factor (VEGF) and compare with the approved CEA and CA 19-9.

Materials and method: For the period 2011–2013 we analyzed 64 patients (41-male; 23-female) with mean age 68.9 ± 8.6 years with diagnosed sporadic CRC. In all cases, by ELISA, were determined preoperative serum levels of VEGF, CEA и CA 19-9 and their prognostic significance about clinical stage, lymph node metastasis and differentiation of the tumor. The results obtained in the patients group were compared with those of 40 healthy controls. According to the TNM classification – 10 (15.6%) were in stage-I, 39 (60.9%) – in stage-II, 8 (12.5%) – in stage III, and in the IVth stage were 7 (10.9%) patients. According to the pathological differentiation – well differentiated 4 (6.3%); moderately differentiated 46 (71.9%); poorly differentiated 14 (21.9%) of patients.

Results: The preoperative serum levels of VEGF in patients with CRC were significantly higher than those in healthy controls (mean 585.74 ± 462.95 for patients; mean 327.32 ± 132.64 for healthy controls, respectively; $p = 0.014$). Preoperative levels of VEGF, CEA and CA 19-9 were significantly higher in patients with IIIth and IVth clinical stage ($p = 0.017$; $p = 0.001$; $p = 0.007$) and pathological data for lymph node metastasis ($p = 0.025$; $p = 0.012$; $p = 0.036$). Only the preoperative serum levels of VEGF had significant association with poor differentiated tumors ($p = 0.041$, $p = 0.093$; $p = 0.182$, respectively). In the comparative examination of the three evaluated markers we detected significant positive

correlation of serum levels of VEGF with that of CEA ($r = 0.321$) and CA 19-9 ($r = 0.380$).

Conclusions: Preoperative serum levels of VEGF are comparable prognostic marker with previously approved CEA and CA19-9 in patients with CRC. High preoperative levels of VEGF are associated with local and systemic advanced process with poorly differentiation

Conflict of interest: No conflict of interest.

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306. 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 analyze factors of prognostic significance.

Methods: We included 61 patients with pathological/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 Sugarbaker's principles in all patients with $PCI \leq 20$ and only 3/61 (4.92%) patients with $PCI > 20$. HIPEC (41 °C Oxaliplatin in 2000 mL isotonic solution) was performed using RanD Performer® HT perfusion system during 30–60 minutes. Cox proportional hazard regression was used to determine significant factors for OS and DFS.

Results: Follow-up period was 1–83 months. Median OS was 51 (>22) months. Median DFS for patients without residual disease (57/61, 93.44%) was 23 (>16) months. One-, two- and six-years OS (DFS) were 78.6% (68.3%), 58.7% (46.7%) and 50.5% (38.1%), respectively. By the end of the research, 55.74% of patients are still alive. Cox multivariate analysis indicated PCI-score as parameter of prognostic significance for patients treated with CRS + HIPEC. Patients with $PCI < 13$ (vs. $PCI \geq 13$) have longer OS and DFS, also confirmed for PCI-subcategories ($PCI < 7$ vs. $7 \leq PCI < 13$ vs. $PCI \geq 13$). All patients with $PCI < 7$ are still alive.

Conclusion: Our research 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.

Conflict of interest: No conflict of interest.

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308. Immunohistochemical expression of Mucin 1 (MCU1) and Mucin 2 (MUC2) in inflammatory and neoplastic lesions of the colon

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Background: The mucus layer coating the gastrointestinal tract is the front line of innate host defense. MUC2 is the major secretory mucin synthesized and secreted by goblet cells, whereas goblet and absorptive cells express membrane-bound mucins such as MUC1 in the apical membrane. MUC1 plays a role in tumorigenesis through changes in intracellular signaling, adhesion and migration and by increasing resistance to apoptosis. MUC2 gene product either functions as a tumor suppressor or contributes to the function of a tumor suppressor.

Aim: To investigate the expression profile of MUC1 and MUC2 in normal, inflamed and neoplastic lesions of the colon and also to analyze the immunohistochemical expression of MUC1 and MUC2 and their

relationship to the site, histological differentiation and stage of colorectal carcinoma.

Patients and methods: Thirty patients with colorectal carcinomas underwent surgical resections, 15 patients underwent endoscopically resected colorectal adenoma, 15 patients subjected to endoscopic biopsy specimens of ulcerative colitis and a 10 control cases of colorectal specimens taken from the free resection margins of colectomy specimens were included in this study. All tissue specimens were subjected to MUC1 and MUC2 immunohistochemical staining using monoclonal antibodies.

Results: The positive expression rates of MUC1 and MUC2 in colorectal carcinoma were 76.7% and 60% respectively. MUC1 immunoreactivity was detected in 33.3% of colorectal adenomas whereas MUC2 expression was observed in 93.3% of cases. MUC2 expression was noted in all cases of ulcerative colitis (100%), while MUC1 was expressed in 40% of cases. The expression rates of MUC1 and MUC2 in control cases were zero and 100% respectively. MUC1 expression was significantly higher in carcinomas as compared with UC and adenomas, while MUC2 expression was significantly lower in carcinomas as compared with UC and adenomas. MUC1 expression was significantly higher in colorectal adenocarcinomas, whereas MUC2 was significantly expressed in mucinous carcinomas ($P \leq 0.05$). No significant correlation was found between expression of MUC1 or MUC2 and histological grade ($P > 0.05$). High significant association was found between advanced tumor stage and MUC1 expression ($P \leq 0.05$), while MUC2 expression was significantly correlated with lower tumor stages. No significant correlation was found between expression of MUC1 or MUC2 and tumor location ($P > 0.05$).

Conclusion: We conclude that, Up-regulation of MUC1 and down-regulation of MUC2 expression could be involved in carcinogenesis and progression in colorectal tumors and reflect the prognosis to a certain extent. However, further studies of mucin changes in cancer and inflammation are warranted not only as diagnostic and prognostic markers but also as therapeutic targets.

Conflict of interest: No conflict of interest.

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309. Early surgical complications of extra-levator abdominoperineal excision for low rectal cancer

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Background: Extra-levator abdominoperineal excision (ELAPE) has been introduced to avoid high rates of inadvertent bowel perforation and positive circumferential resection margin encountered with conventional abdominoperineal excision (APE) and possibly improve oncological outcome. The aim of this study was to analyze early surgical complications of ELAPE in the prone position.

Material and methods: This study included 37 rectal cancer patients (28 males and 11 females) who underwent ELAPE in prone position between March 2011 and November 2015. Mean patient age was 56 (range 39–81 years). Preoperative radiotherapy received 20 patients with 50 Gy and 3 patients with 5×5 Gy.

Results: 12 patients (32.4%) had early surgical complications. Laparotomy wound infection was found in 2 (5.3%) patients, perineal wound infection had 4 (10.5%) patients, perineal wound dehiscence and skin necrosis occurred in 3 (7.9%) patients. Ileus of the small intestine due to adhesions in small pelvis was verified in 3 patients (7.9%).

Conclusion: This study demonstrated the most common early postoperative complications in patients who underwent ELAPE. Although one third of patients had complications, most of them were minor. Surgeons

should make special attention to pelvic floor closure in order to avoid small bowel obstruction and perineal wound dehiscence.

Conflict of interest: No conflict of interest.

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310. Next-generation sequencing miRNA profiling in stool and plasma samples of patients with colorectal cancer or precancerous lesions

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Background: MicroRNAs (miRNAs) are key gene regulators in most biological and pathological processes, including colorectal cancer (CRC). miRNAs may be potential molecular classifiers, early detection biomarkers, and therapeutic targets for CRC. The possibility of using circulating or fecal miRNA expression as non-invasive early detection biomarkers open interesting possibilities about their potential clinical utility. In this respect, diet and other lifestyle factors may also modulate miRNA expression and need to be explored in the context of search of biomarkers for disease stratification. A pilot study on stool/plasma from healthy volunteers with different dietary habits has revealed a differential expression of miR-92a among vegans, and subjects with omnivorous diet.

Material and methods: We report our investigations on the search of CRC biomarkers in surrogate specimens which includes: A) an implementation of the methodology and pipeline of analysis for detection of microRNAs by Next-Generation Sequencing (NGS) in stool and plasma (exosome) samples; B) a concomitant evaluation of miRNA expression profiles in plasma and stools samples from healthy subjects and patients with CRC or precancerous lesions; C) a parallel investigation on the role of diet, lifestyle and other factors in influencing miRNA expression.

Results: Preliminary results on a set of 48 samples show that several miRNAs are dysregulated in patients with precancerous lesions and inflammatory diseases in comparison with healthy subjects, after correction for multiple testing comparisons. Interestingly, some of the differentially expressed miRNAs are repeatedly observed among different disease categories (mir-124-1, mir-607, mir-611, mir1180) and some previously not described miRNAs emerged from miRNA sequencing.

Conclusions: The present study shows the importance to use high-throughput techniques and complex computational analyses to globally define miRNA signatures involved in colorectal carcinogenesis in surrogate specimens.

Conflict of interest: No conflict of interest.

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311. Selection criteria for definitive chemo-radiotherapy (CT-RT) in low rectal cancers: A preliminary data from a single centre, India

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Background: Organ conservation is now the norm in surgical oncology. Definitive CT-RT for selected patients can obviate the need for an abdomino perineal resection with a permanent colostomy.

Material & methods: From Jan 2011–Dec 2015, a total of 38 consecutive patients with low rectal cancer were morphologically grouped as 1) Proliferative, non obstructive lesions (N = 30), 2) Stenotic, infiltrative & obstructive lesions (N = 8) based on clinical, endoscopic & CT scan studies. Patients with pararectal extension of the primary lesion &

significant pelvic nodes were excluded. Therapy consisted of 4 cycles of chemotherapy followed by RT (45 Gy). Concurrent CT-RT was avoided to prevent significant rectal & bladder symptoms. Final therapeutic response was evaluated 6–8 weeks post therapy. Outcome of CT-RT was defined as complete response (CR): no disease on clinical, endoscopy, biopsy and imaging, partial response (PR): significant but incomplete reduction in the size of the tumor or no response (NR): no significant change in tumor. Those patients with PR, NR or recurrences were subjected to surgery. Patients were followed up for a mean of 23.8 months (8 to 55 months).

Results:

	CR	PR	NR
Grp1 (N = 30)	16(53.3%)	12(40%)	2(6.7%)
Grp2 (N = 8)	–	4(50%)	4(50%)

In grp1: 4/16(25%) with a CR had a local recurrence within a mean of 18.2 months (7–36 months), 12/16 (75%) have remained disease free till date.

Conclusion: Definitive CT-RT in proliferative & non obstructive low rectal cancers should be considered as the therapy of choice.

Whereas stenotic, infiltrative and obstructive lesions should be subjected to primary surgery.

Conflict of interest: No conflict of interest.

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312. A single centre experience with failed early discharges following elective uncomplicated colorectal resections

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Introduction/Background: Enhanced Recovery after Surgery (ERAS) consists of a series of care bundles the aim of which is to enhance patients' recovery following surgery by optimizing preoperative organ function and reducing the stress response to surgery. ERAS has been shown to shorten a patient's in-hospital stay and is almost universally used for elective colorectal operations throughout the UK. The aim of this retrospective study was to review the causes of prolonged postoperative stays following uncomplicated elective colorectal resections in a UK University Hospital, employing an ERAS programme.

Methods/materials: Data were collected retrospectively from a prospectively maintained database. Those patients who underwent elective uncomplicated colorectal resections between 2012 and 2014 and with postoperative stays longer than 5 days were selected. Demographics, clinical and postoperative data regarding stoma training, physiotherapy training and occupational therapy assessment (date of referral and discharge) were collected.

Results: Twenty-two patients were randomly selected from the available pool. Median age was 73 years (range-56–90). Seventeen patients (77.3%) had open resections compared to five (22.7%) who underwent laparoscopic surgery. Nine patients had a distal colorectal resection with a covering loop ileostomy, 8 had an abdominoperineal resection, 3 had a Hartmann's procedure and 2 patients had a right hemicolectomy. The majority of operations (91%) involved a stoma and specific stoma training was requested on the 2nd post-operative day after return to the ward from Level 2/3 unit. This training lasted a median of 8 days (range 3–14). Nineteen patients (86.4%) had physiotherapy with the median time to discharge being 4.5 days (range 1–11). Four patients (18%) had occupational therapy assessment, with the median time to discharge being 5 days (range 2–7).

Conclusions: Most elective uncomplicated colorectal operations that experienced long postoperative courses involved a stoma. Stoma and physiotherapy trainings represented a significant portion of the postoperative in-hospital stay in these patients. Future protocols should now be developed in order to improve this service in the preoperative and eventually postoperative period.

Conflict of interest: No conflict of interest.

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313. Prognoses and treatment strategies for synchronous peritoneal disseminations of colorectal carcinoma

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Background: Peritoneal metastases (PM) are found in 4%–10% of patients with primary colorectal cancer (CRC) and are well-known as a poor prognostic factor. Objective evaluations of degrees of PM are required to determine the criteria for therapeutic interventions and to compare treatment outcomes among institutions and treatment strategies. We devised a dichotomous classification system and assessed its reproducibility and objectivity as an indicator of treatment strategies for patients with PM of CRC.

Patients and methods: We included 67 patients with peritoneal metastases of CRC and classified them according to largest lesion sizes (5mm \geq , 5–20 mm, 20mm \leq), numbers of lesions (3 \geq , 4 \leq), and numbers of regional PM. Oncology data were recorded and compared. 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.

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 (5mm \geq : 11.9%, 5–20 mm: 34.9%, 20mm \leq : 28.6%). The prognosis was significantly better in the patients with 3 \geq disseminated lesions (3ySR: 45.2%) than in 4 \leq 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%). Multivariate analyses identified resection of primary tumor and PM in only 1 region as factors that favorably affect survival. According to multivariate analysis, patients with PM in only 1 region were included in the localized group and the others in the nonlocalized group. Prognoses were significantly better in patients who received primary tumor resection (3ySR, 8.4%) than in those who did not (3ySR, 0%) among patients of both nonlocalized (p = 0.01) and localized groups (p = 0.0004).

Conclusion: 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.

Conflict of interest: No conflict of interest.

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314. Total mesorectal excision with water-jet dissection in patients with rectal cancer: Surgical and morphological results

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Background: The total mesorectal excision TME technique includes mobilization of the rectum under visual control within the mesorectal fascia, along with preservation of the pelvic vegetative nerves. Surgeons across the world traditionally use scissors, coagulators, and, lately, harmonic scalpels for this kind of mobilization. This publication will describe our own initial (the first in Russia) experience of using the ERBEJET[®] water-jet dissector during surgical interventions for rectal cancer.

Materials and methods: We used the water-jet dissection technique to obtain tissue specimens in 20 patients with rectal cancer. The mean age of these patients was 56.1 ± 11.2 years (range, 44–78). The group consisted of 8 men and 12 women. The T2/T3a tumors were either in the middle part (14 patients) or in the lower portion (6 patients) of the rectum. We also used two reference groups consisting of 20 controls each; the rectum was mobilized in them using a monopolar coagulator and a harmonic scalpel. The study groups were comparable with regard to gender, age, tumor sites and spreading. All surgical interventions were performed by the same team of surgeons. Low anterior resections were performed in all 60 patients. Additionally to the routine morphological examination, we performed microscopy of the circumferential resection margin to assess the intensity and depth of damage to the mesorectal tissue.

Results: The mean duration of the surgical operation was 138 ± 36.1 minutes (range, from 100 to 190). There was no postoperative morbidity and mortality. On morphological examination, the quality of mesorectal excision was found to be good (Grade 3) in all 60 patients. The following data were obtained with regard to depth of tissue damage along the lateral margin of the excised tissue. There was virtually no tissue damage (in the fascia and cellular tissue) in patients in whom the rectum was mobilized by means of water-jet dissection. The worst lateral resection margin damage (as a result of the thermal impact, sometimes including foci of coagulative necrosis) was observed following the use of a monopolar coagulator – 1.7 to 3.0 mm deep. Lateral tissue damage was less pronounced when the rectum was mobilized with the harmonic scalpel, as compared with the monopolar coagulator. The maximal depth of tissue damage along the lateral resection margin was between 1.0 and 1.5 mm in this group.

Conclusion: Our initial experience in the use of the water-jet dissector in the process of total mesorectal excision indicates that this technique is safe and effective. The absence of lateral thermal tissue damage (primarily the pelvic vegetative nervous system elements) permits use of this type of dissection in the “critical points” of mesorectal excision without any risk of damage to the specified structures.

Conflict of interest: No conflict of interest.

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315. Diverting ileostomy versus no diversion after low anterior resection for rectal cancer: A prospective, randomized, multicenter trial

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Background: This study sought to determine whether a protective diverting ileostomy improves short-term outcomes in patients with rectal resection and colonic J-pouch reconstruction for low anastomoses. Criteria for the use of a proximal stoma in rectal resections with colonic J-pouch reconstruction have not been defined sufficiently.

Material and methods: In a multicenter prospective study, rectal cancer patients with anastomoses below 8 cm treated with low anterior resection and colonic J-pouch were randomized to a defunctioning loop ileostomy or no ileostomy. The primary study endpoint was the rate of anastomotic leakage, and the secondary endpoints were surgical complications related to primary surgery, stoma, or stoma closure.

Results: From 2004 to 2014, a total of 166 patients were randomized to 1 of the 2 study groups. In the intention-to-treat analysis, the overall leakage rate was 5.8% in the stoma group and 16.3% in the no stoma group ($P = .0441$). However, some patients were not treated according to randomization and only 70% of our patients with low anastomoses received

a pouch. Therefore, we performed a second analysis as to actual treatment. In this analysis, as well, leakage rates ($P = .044$) and reoperation rates for leakage ($P = .021$) were significantly higher in patients without a stoma. In multivariate analysis, male gender ($P = .0267$) and the absence of a stoma ($P = .0092$) were significantly associated with anastomotic leakage.

Conclusion: Defunctioning loop ileostomy should be fashioned in rectal cancer patients with anastomoses below 6 cm, particularly in male patients, even if reconstruction was done with a J-pouch.

Conflict of interest: No conflict of interest.

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317. Quality of life changes during the adjuvant chemotherapy in colon cancer patients

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Background: The survival of advanced colon cancer patients has increased due to the development of surgical techniques and adjuvant chemotherapy. The administration of adjuvant chemotherapy after curative resection is generally accepted as a standard of care. The primary endpoint of chemotherapy should include not only tumor response and survival, but also impact on the quality of life (QoL). We evaluated changes in QoL during adjuvant chemotherapy in patients with colon cancer.

Material and methods: Between October 2009 and February 2012, 56 patients with stage II and III colon cancer received the combination adjuvant chemotherapy 5-fluorouracil/folinic acid with oxaliplatin (FOLFOX). Patients were asked to complete the quality of life questionnaire QLQ-C30 version 3 before and after 6 cycles of adjuvant chemotherapy.

Results: There was no significant difference in the QoL between the start of chemotherapy and after the completion of 6 cycles. After completion of 6 cycles, global QoL was worse in patients >70 years of age. The functional scale score was low in patients with chemotherapy schedules delayed more than 2 times due to adverse events. Patients with body weight increases greater than 5% scored higher on symptom scales. Interestingly, patients with peripheral neuropathy scored higher on symptom scales.

Conclusions: QoL changes during adjuvant chemotherapy did not show significant differences. After the sixth chemotherapy, QoL was affected by age, body weight gain, delay of the scheduled chemotherapy, and peripheral neuropathy. Therefore, the proper attitude of physicians focused on reassurance and education of patients is very important during chemotherapy.

Conflict of interest: No conflict of interest.

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318. Hematologic toxicity associated with neoadjuvant chemoradiotherapy for patients with rectal cancer – Review

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Background: Unsatisfactory results from surgical treatment alone of rectal cancer led to the search for additional methods such as preoperative radiotherapy and chemoradiotherapy. Neoadjuvant chemoradiotherapy has a proven effect on local tumor control, reduced three times the incidence of local recurrence. Despite the benefits of chemoradiotherapy there is significant toxicity as well as some bias in terms of the effect on the physical status, intestines, bladder, urinary and sexual dysfunction.

Methods: We've searched PubMed database, critically reviewing the hematologic side effects of treatment for rectal cancer, using the medical subject headings "rectal cancer", "neoadjuvant chemoradiotherapy", "toxicity".

Results: Hematologic toxicities include anemia, neutropenia, leukopenia and thrombocytopenia. These side effects are a cause of morbidity and reduced efficacy of the antitumor drug treatment due to reduction in the relative intensity of the dose. Total mortality from febrile neutropenia (temperature above 38.5 C in absolute neutrophil count below 0.5 g/l) in solid tumors is about 5%, while low-risk patients, about 1%. Toxicity profile of the two main regimes FOLFIRI and FOLFOX differs: incidence of grade 3–4 neutropenia is higher in FOLFOX6. The use of FOLFIRI regime shows a higher incidence of grade 3–4 neutropenia, and at FOLFOX6 frequency of grade 3–4 neutropenia and thrombocytopenia are higher. In a retrospective analysis on FOLFOX4 frequency of grade 3–4 hematologic toxicity was 39%. In nonrandomized patients with rectal cancer treated with FOLFIRI, the most common hematologic toxicity was neutropenia grade 3–18% and grade 4–13%.

Conclusions: Long-course preoperative chemoradiotherapy (chemo-RT) improves outcomes for rectal cancer patients, but acute side effects during treatment may cause considerable patient discomfort and may compromise treatment compliance. Chemoradiotherapy regimes with risk for febrile neutropenia >20% require prophylaxis with granulocyte colony stimulating factors (G-CSFs). Administration of G-CSFs reduces the risk of febrile neutropenia of 45% and early mortality by 40%, increases the relative density of dosage, but on the other hand increases the incidence of musculoskeletal pain. The future researches should report not only acute but also chronic toxicity, and include analyzes of quality of life. The benefit of the appended therapies must exceed their toxicity and adverse effect on the quality of life.

Conflict of interest: No conflict of interest.

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319. Association of KRAS mutation with multi-site metastasis and lung-specific metastasis in advanced colorectal cancers

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Background: KRAS mutational analysis is used in metastatic colorectal cancer to predict susceptibility to anti-EGFR therapy. Besides conferring resistance to targeted therapy, there is evidence that KRAS mutant tumours metastasise differently than KRAS wild-type tumours. This study aims to characterise the metastatic profile in KRAS mutant tumours.

Methods: A retrospective analysis of patients with metastatic colorectal cancer treated in a single institution from 2010 to 2014 was conducted. KRAS mutation status was correlated with demographics, number and location of metastatic sites. Patients without KRAS analyses were excluded.

Results: 899 patients with metastatic colorectal cancer were included in the study. 380 patients (42.2%) had KRAS analysis available, of which 135 (35.0%) were tested positive for KRAS mutation. Patients with 3 sites metastases (50.0%) had a greater rate of KRAS mutation compared to patients with 2 (40.6%) or 1 site metastasis (32.9%, $p = 0.30$). In patients with single-site metastasis, the highest rate of KRAS mutation occurred in patients with lung (51.1%), followed by peritoneal (46.3%), then liver metastasis (25%, $p = 0.00$). Patients with dual-site metastases showed similar findings with higher frequency of KRAS mutation in lung-peritoneal (75%) and lung-liver (47.1%) compared to liver-peritoneal metastases (29.0%. $p = 0.15$).

Conclusions: In our cohort, KRAS mutation was found in 35% of metastatic colorectal cancers, which concur with reported figures in other studies. In addition, tumours with KRAS mutation exhibited a strong correlation with single-site lung metastasis. Though these cancers also have a tendency to metastasise to multiple sites, with a predilection for the lungs in dual-site

metastases, the association was not found to be statistically significant, and larger studies may be needed to further evaluate its clinical value.

Conflict of interest: No conflict of interest.

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320. Comparison of robotic and open colorectal surgery – a prospective study

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Background: Adoption of robotic technology in the field of colorectal surgery is slow but continues to increase. The advantages of robotics over laparoscopy involve lower rates of conversion and a steeper learning curve. Typically, what is published on robotic surgery are the results of expert robotic teams with vast experience in minimally invasive surgery.

The goal of this study was to compare outcomes of robotic colorectal operations (RCS) performed by novel robotic team to open operations (OS) performed by experts.

Material and methods: The study was planned as a prospective non-randomized comparison. From March 2013 to June 2015, 79 patients with colorectal cancer were enrolled in the study. Patients receive RCS or OS according to their preferences after the discussion with an operating surgeon. The primary outcome measure was the length of hospitalization. Secondary outcomes were duration of surgery, morbidity and quality of the pathological specimen.

Results: Of 79 patients, 41 underwent OS and 38 had RCS. Age, sex, ASA score, BMI and tumor location were similar in both groups. The mean length of hospital stay was shorter in RCS (5.7 vs. 6.7 days, $p = 0.176$). The duration of surgery was longer in robotic group (222 vs. 141 min, $p < 0.001$). There were three conversions to open approach. Major complication occurred in 6 patients (7.6%) and there was no significant difference between groups ($p = 0.111$). Wound infections were less frequent in RCS (10.5% vs. 29.3%, $p = 0.039$). The number of harvested lymph nodes was similar in two groups (15.5 vs. 14.7, $p = 0.596$).

Conclusion: In summary, our results have confirmed that novel robotic team can safely introduce robotic colorectal operations in their practice. Comparing to open approach robotic colorectal surgery reduced the length of hospital stay and rate of surgical site infection but took significantly longer OR time.

Table 1

Characteristics of study population and perioperative parameters.

	Open surgery (n=41)	Robotic surgery (n=38)	P value
Sex distribution [F/M]	20/21	11/27	0.106
Age [yrs.]	68.4 (66–71)	66.3 (62–70)	0.371
BMI [kg/m ²]	27.1 (25.5–28.7)	27.1 (25.6–28.6)	0.982
ASA: 1 2 3	8 27 6	8 24 6	0.969
Tumor location:	13 9 19	8 15 15	0.218
left colon right colon rectum			
Length of surgery [min], mean (range)	141 (50–290)	222 (85–360)	<0.0001
Complications (Clavien III/IV), n (%)	5 (12.2%)	1 (2.6%)	0.111
Wound infections (all), n (%)	12 (29.3%)	4 (10.5%)	0.039
Length of stay [days], mean (range)	6.7 (4–20)	5.7 (3–15)	0.032
Lymph nodes harvest, mean.(range)	15.5 (3–33)	14.7 (5–43)	0.596

Conflict of interest: No conflict of interest.

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322. Comparative gene mutations between primary and peritoneal metastatic lesions of colorectal cancer

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Background: While colorectal cancer is gradually getting better treatment results in the development of various treatment methods, metastasis occurs in about 30% and that eventually leading to death. Difference of the genetic characteristics between primary and metastatic lesion in the treatment of metastatic colorectal cancer is important, because it can different targeted therapy and chemotherapy, depending on the difference between the two lesions. Although genetic characteristics studies on liver and lung metastasis were reported, there is no study on peritoneal metastasis. Therefore, we performed study about difference of genetic variations between primary tumor and peritoneal metastasis.

Material and methods: We selected 6 patients tissue sample who's underwent surgery for peritoneal metastasis and primary colorectal cancer at the same time in Dankook university hospital, and we do not use clinical data in patients. After tissue sample DNA extraction and quality controlled, we performed targeted gene sequencing using by next generation sequencing. (NGS) And next, filtration of the analysis variants in five steps and analyzed in pairs to evaluate the mutation difference between primary cancer tissue and peritoneal metastatic tissue.

Results: There are over 1000 variants developed each cancer tissues, and we filtered meaningless variants and paired analyzed. KMT2C, THBS1 gene variant were found all cases of both tumor tissues. PDE4DIP gene variant was found except 1 case of peritoneal metastasis. PER1 gene variant was found 4 pairs cases, and one primary only and the other was metastatic tissue only. Other frequently mutations were LTF, CRIC1, ARID1A, CASC5 genes, and over 2 pair common mutations were RNF213, BRAF, MEN1, TIMP3 genes. It showed hotspot mutation in TP53, KRAS, BRAF genes that known to be reflect development and progression of colorectal cancer. The known variants (COSMIC) of total ones showed that the mutant allele frequency differences, but it appeared same both primary cancer and peritoneal metastasis.

Conclusions: Total genomic variants differ from primary and peritoneal metastasis are 30% except meaningless variants. But gene mutations in known variants are identical between primary and peritoneal metastatic lesions from colorectal cancers.

Conflict of interest: No conflict of interest.

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323. Cytoreductive surgery and hyperthermic intraperitoneal chemotherapy: Risk factors for morbidity and postoperative outcome

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Background: Cytoreductive surgery (CRS) followed by hyperthermic intraperitoneal chemotherapy (HIPEC) represents a treatment option for peritoneal surface malignancies. Even if it has been reported that this new approach improved survival of selected patients, it's still associated with high morbidity and mortality rates.

Material and methods: From October 1995 to December 2015, 400 patients affected by peritoneal carcinomatosis (PC) underwent in our Institute CRS associated with HIPEC. For this preliminary analysis we considered 300 patients presenting PC of different origin: pseudomyxoma peritonei (PMP, n = 98), epithelial ovarian cancer (EOC, n = 87), peritoneal mesothelioma (DMPM, n = 49) and colorectal cancer (CRC, n = 66). Postoperative morbidity and mortality were studied in order to identify possible risk factors.

Results: The morbidity rate was 36.3% in all procedures (109/300). According to Dindo – Clavien Classification, 67 cases (22.3%) were associated with grade I–II complications and 35 cases (11.7%) with grade III–IV. Surgical and medical complication rates were 8.3% (25/300) and 11.3% (34/300), respectively. The mortality rate was 2.3%. Reoperation was needed in 28 patients (9.3%). The operative time, the number of anastomosis, of peritonectomy procedures, of visceral resections performed and the PCI value resulted the most statistically significant factors influencing postoperative morbidity and mortality.

Conclusions: The risks of perioperative morbidity and mortality after CRS and HIPEC are analogous to any other major gastrointestinal surgery. CRS and HIPEC should remain a treatment option for highly selected patients in whom a curative or life prolonging treatment is a pursuit and should be performed in high volume specialized institutions.

Conflict of interest: No conflict of interest.

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324. Sensitivity and specificity of fractal analysis to distinguish between healthy and pathological rectal mucosa microvasculature seen during colonoscopy

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Background: The current methods for colon screening lack satisfactory sensitivity and specificity for ideal population screening. Conventional endoscopy relies on the skills of the surgeon to recognize and assess pathology. Newer methods seek to increase the objectivity of the qualitative analysis of changes in gastrointestinal tract in order to obtain a more objective diagnosis of pathology. Fractal analysis of blood vessels has been employed in organs, such as the retina, but never before to supplement colonoscopy. The aim of this study was to assess whether it is possible to differentiate between healthy and pathological rectal mucosa, based on fractal analysis of the mucosal microvascular architecture seen during colonoscopic examination.

Methods: Three hundred consecutive patients, 133 females (44.3%) and 167 males (55.7%) with a mean age of 49.1 ± 11.3 years, undergoing a colonoscopy were included in this prospective study. Images of the mucosal microvasculature of the rectum were taken during the procedure and analyzed using COLON software to obtain the fractal number, the peak value (branching number – describing the maximum number of vessel branches in the analyzed box), and the mean vessel length.

Results: The fractal analysis correctly differentiated healthy rectal mucosa and any pathological changes- neoplasia, polyps, colitis ($p < 0.0001$). The sensitivity of fractal analysis to diagnose rectal neoplasia was 92.8–96.4%, while the specificity was 91.9–98.5% depending on the fractal parameter. The sensitivity of fractal analysis to diagnose rectal colitis was 84.2–92.1%, while the specificity was 95.0–96.0%, depending on the fractal parameter.

Conclusions: The sensitivity and specificity of fractal analysis parameters found in this study demonstrate the strong utility of fractal analysis as a clinical tool that should be considered to supplement colonoscopic examination used in diagnosis of neoplasia or colitis.

Conflict of interest: No conflict of interest.

Ownership: Andrzej Gryglewski, Marian Mrozek and Marcin Żelawski are the creators and owners of COLON software. However, fractal analysis, such as described and used in this study, can also be performed using software programs other than COLON.

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325. The prognostic value of serum levels of CCL2 and CCL5 in colorectal cancer

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Chemokines are the chemotactic cytokines. They play an important role in induction and maintenance of immune reactions by regulation of migration of immunocompetent cells, angiogenesis and migration of stem cells. They have also been shown to regulate other processes such as cancer progression and cancer cell migration. The aim of the study was to determine the prognostic role of serum levels of CCL2 (chemokine (C-C motif) ligand 2) and CCL5 (chemokine (C-C motif) ligand 5) in case of patients with colorectal cancer. The study involved 45 patients with colorectal cancer. The serum concentration of CCL2 and CCL5 was measured before the surgery. Calculated optimal cut off points based on ROC curve were 103.6 pg/ml for CCL2 and 11933.2 pg/ml for CCL5. An analysis of survival and multivariate analysis of prognostic factors were performed.

The five-years survival for a group with low levels of CCL 2 was 57.5% and was significantly higher compared to the group with high levels of CCL2 23.8% ($p = 0.028$). In the case of CCL five-year survival for group with low levels of CCL5 was 18.3% and for a group with a high level of CCL 5 was 49.3%, which was not a statistically significant difference. In the Cox proportional hazard model, radicality of resection ($p = 0.001$) and serum level of CCL2 ($p = 0.029$) were independent prognostic factors.

In the analysed group of patients serum level of CCL2 was a prognostic factor. This observation may indicate that inflammation associated with colorectal cancer is a negative prognostic factor.

Conflict of interest: No conflict of interest.

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326. Malignant tumors of the small bowel – A 10 year cohort

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Background: Small bowel malignancies are rare, histologically diverse tumors that comprise 3–5% of gastrointestinal cancers with an increasing incidence. Although its relative proportions are changing, the most frequent histologic types are adenocarcinoma, carcinoid and sarcoma. Diagnosis is usually late mostly due to its vague and sparse symptoms. Our aim was to review all cases of small bowel malignant tumors.

Material and methods: Retrospective analysis of patients admitted in our institution with small bowel primary malignancy in the last 10 years.

Demographic data, tumor characteristics, surgery information, neo-adjuvant or adjuvant therapy, recurrence, morbidity and mortality were reviewed.

Results/Discussion: 14 patients were included (11 males, 3 females) with a median age of 65 (SD 13.8). Most common symptoms were abdominal pain, vomiting and gastrointestinal bleeding. The most frequent histologic subtype was adenocarcinoma (50%, $n = 7$), followed by gastrointestinal stromal tumors (42.9%, $n = 6$) and carcinoid (7.1%, $n = 1$). According to location, 57.1% were located in the duodenum (5 adenocarcinomas, 2 GISTs e 1 carcinoid); 28.9% in the jejunum (2 adenocarcinomas, 2 GISTs) and 14.3% in the ileum (2 GISTs). Distribution of stage at diagnosis was: Stage I – 2; Stage II – 8, Stage III – 3, Stage IV – 1. Most of the patients ($n = 12$) underwent curative surgery. In regard to adjuvant therapy, 50% GIST ($n = 3$) were treated with imatinib and 43% of adenocarcinomas ($n = 3$) were treated with chemotherapy. Disease recurrence was identified in 3 patients with adenocarcinoma and in 1 with GIST. Overall survival was better in the GIST group in comparison with adenocarcinoma (28 vs 36 months).

Conclusions: As expected, duodenal adenocarcinomas were the most common tumors. However we found a higher incidence than expected of small bowel GISTs. Overall early stage at diagnosis allowed curative surgery in most patients. However, our findings are extremely biased due to the small sample. Hopefully, multicenter studies will provide some consensus, particularly in the adenocarcinoma group.

Conflict of interest: No conflict of interest.

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327. Sleep apnea is prevalent among patients scheduled for surgery of colorectal cancer

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Background: Age and obesity are risk factors for both colorectal cancer and sleep apnea, but the prevalence of sleep apnea is unknown in patients with colorectal cancer.

Aim: To investigate the prevalence of sleep apnea among patients scheduled for surgery of colorectal cancer.

Methods: 68 patients with colorectal cancer mean age 70 ± 11 years, 22 women, BMI 26 ± 4 were investigated with polysomnography (Embla) including continuous recordings of respiration, breathing movements, oxygen saturation, EEG, EOG, chin EMG, ECG and body position sensor at hospital during the night before surgery. They were also investigated with STOP-BANG, Epworth sleepiness scale, height, weight and Mallampati score.

Results: Eight-one percent had sleep apnea with 5 or more apneas and hypopneas per hour of sleep i.e. AHI > 5 . 38% had mild sleep apnea with AHI 5–15 sleep, 28% had moderate sleep apnea and 15% severe sleep apnea with AHI > 30 . Patients slept on average 43% of the time in the supine position. In the supine position, they had an AHI of 28 ± 24 versus 8 ± 9 in the lateral position. Mallampati score and age were related to sleep apnea, while gender, body mass index, Epworth sleepiness scale, STOP-BANG and a history of snoring was not.

Conclusions: Sleep apnea is prevalent among patients who undergo surgery for colorectal cancer. Age, sleeping in the supine position and a high tongue according to Mallampati score were risk factors for sleep apnea.

Conflict of interest: No conflict of interest.

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328. Emergency surgery for colorectal cancer

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Background: Acute conditions requiring emergency surgery may complicate the natural history of colon cancer. The primary challenge of surgery for colon cancer presenting as an emergency is the control of the complication but a proper oncologic technique should not be missed when bowel resection is feasible. In elective surgery, recommended oncologic criteria include en-bloc resection of invaded organs and structures, free margins and an adequate number of lymph nodes yielded. Aim of this study is to analyse which of the above criteria are met in emergency surgery.

Materials and methods: From September 2011 to January 2016, 540 resections for CCR with curative intent have been performed. 27 palliative procedures and 12 transanal resection were excluded. We enrolled 494 patients undergoing resection for colon-rectal cancer. One hundred and seventy-seven (group A) presented as emergencies (obstruction $n = 109$, perforation $n = 32$, hemorrhage $n = 36$) and were analyzed for tumor stage, need for enlarged resection, distal free margin, lymph node yield, mortality and morbidity. Results were compared with those observed in the 317 patients operated electively (group B). Statistical analysis was performed with SPSS v13.0; significance was defined as $p < 0.05$.

Results: Group A patients had a more advanced cancer stage (stage III/IV 51.4% vs. 36.0%, $p = 0.0002$), but the need for enlarged resection was not significantly different in the two groups. The number of radical resections (R0) was greater for elective patients (group A: 79.7%; group B: 93.4%, $p < 0.001$), but the number of free distal margin was similar between the two group (group A: 93.2%; group B: 96.5%, $p = 0.1184$). The number of excised nodes was similar in two groups (means, group A: 17.99 ± 8.94 nodes; group B: 18.46 ± 10.02 nodes, $p = 0.6039$). Compared with group B, emergency procedures resulted in higher morbidity (34.2% vs. 31.9%, $p = 0.6756$) and mortality (12.4% vs. 1.3%, $p < 0.001$). Multivariate analysis showed that emergency presentation is an independent predictor both for mortality and morbidity (OR 7.6 95%CI: 2.3–24.9 $p = 0.0001$; OR 1.7 95%CI: 1.1–2.7 $p = 0.0220$ respectively). Furthermore emergency presentation is an independent prognostic factor for R0 resection (OR 3.5 95%CI: 1.6–7.8 $p = 0.0002$) but is not an independent prognostic factor for distal margins involved ($p = N.S.$). The cancer stage, in particular T, is an independent factor of lymph node harvest (OR 1.5 95%CI: 1.1–2.1 $p = 0.0030$).

Conclusions: In conclusion, adherence to guidelines for colo-rectal cancer surgery is safe and feasible also in emergency setting. However, emergency presentation is an independent factor for postoperative morbidity and mortality and is associated with lower R0 resection rate.

Conflict of interest: No conflict of interest.

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329. Prospective phase II study of preoperative short-course radiotherapy for rectal cancer with twice daily fractions of 2.5 Gy to a total dose of 25 Gy

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Background: To evaluate clinical outcome after preoperative short-course radiotherapy for primary resectable rectal cancer with twice daily fractions of 2.5 Gy to a total dose of 25 Gy and adjuvant chemotherapy for pathological stage UICC (6th edition) \geq II.

Material and methods: A total of 230 consecutive patients (median age 62.5 years; male:female ratio 1:1) with pathological proven primary resectable adenocarcinoma were treated with preoperative pelvic radiation therapy with single fractions of 2.5 Gy twice daily (interval 4–6 h between fractions) to a total dose of 25 Gy within one week. Surgery was performed immediately in the following week with total mesorectal excision (TME). Adjuvant 5-FU based chemotherapy was planned for pathological stage UICC \geq II.

Results: Sphincter sparing surgical procedures were done in 170 out of 230 patients (74%). Perioperative mortality was 1% (three patients) and perioperative complications were observed in 27% of the patients. Anastomotic leakage occurred in 14% of 169 patients with primary anastomosis. Postoperative histology revealed UICC stage I in 19%, stage II in 32%, stage III in 38%, and stage IV in 11% of the patients. After median follow-up of 43 months (52 months for surviving patients), the four-year local-recurrence rate was 8%, overall recurrence 23%. Overall and disease-free survivals at 4 years (excluding IV) were 75% and 73% respectively.

Conclusions: Preoperative short-course radiotherapy with twice daily fractions of 2.5 Gy to a total dose of 25 Gy, TME and adjuvant chemotherapy for pathological stage UICC \geq II achieved excellent local control and favorable survival.

Conflict of interest: No conflict of interest.

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330. Rectal neuroendocrine tumors: 10 year experience

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Background: Rectal Neuroendocrine Tumors (RNET) represent a rare entity (<14% of all NET) with growing incidence. They are characterized by the expression of chromogranin A and synaptophysin and the majority is asymptomatic. Resection can be endoscopic or surgical with lymphadenectomy reserved for large tumors (>2 cm) or N+. The role of chemotherapy and radiotherapy is restricted to metastatic disease.

The purpose of this paper is to review the casuistry of this unusual tumor and to evaluate the results of its treatment.

Materials and methods: Retrospective analysis of all patients with histologic diagnosis of RNET between January 2005 and June 2015 at a central hospital. Statistical analysis using SPSS.

Results: 35 patients included. Homogeneous gender distribution. Median age of 54 years. The most common symptom was rectal bleeding. Average distance to anal margin of 6 cm. 34 were staged with somatostatin scintigraphy and 21 also with CT scan. 29 underwent dosage of chromogranin and/or urinary acid 5-HIAA. 27 patients with stage I, with 2 N+ patients and 5 M1 patients. Median tumor size was 0.85 cm. 29 fell in the NET G1 category. 24 expressed chromogranin and 30 synaptophysin. 11 underwent polypectomy with 3 R1 resections and no recurrence. 23 underwent endoscopic resections with 7 R1 resections and 1 recurrence (34 months). One patient submitted to surgery. 4 patients performed somatostatin analogues, 4 chemotherapy (and 1 radiotherapy simultaneously) and 27 were proposed for surveillance. Average follow-up was 40 months. Mortality rate of 11%. Global survival rate of 90%. M1 as an independent prognostic factor ($p < 0.01$). No statistical significance was found between R1 and recurrence ($p = 0.225$). The relation between chromogranin and

differentiation showed statistical significance ($p = 0.013$) and no relation was found between seric and tumoral chromogranin ($p = 0.686$).

Conclusions: The casuistry presented fits in the literature. The majority of cases were diagnosed in early stages, reinforcing the effectiveness of endoscopic procedures with curative intent. M1 was confirmed as an independent prognostic factor and R1 resection didn't show any statistically significant connection with recurrence. The global survival rate is high (90%) except for those patients with metastatic disease at time of diagnosis.

Conflict of interest: No conflict of interest.

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331. Rectal stump insufficiency and vacuum assisted closure: Is the presence of a functional sphincter a contraindication?

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Introduction: Many reports in literature show the benefits of a conservative therapy with a vacuum-assisted closure system (VAC) for anastomotic leakage after colorectal surgery. However, the development of recurrent abscesses after primary successful VAC treatment has been reported. No experience is available in the treatment of rectal stump insufficiency after Hartmann procedure.

Materials and methods: A 56-year-old man underwent an Hartmann's procedure for rectal cancer (pT0N0) in January 2013 after neoadjuvant radio-chemotherapy, and readmitted in June 2013 for a purulent secretion through the anus. MRI and TC scan showed a presacral collection extending at L5-S1 level with signs of spondylodiscitis. Endoscopy revealed a disruption on the top of the stump. For 6 weeks endoVAC system was set in place and reapplied 3 times a week initially and then twice a week until a complete cleaning of the sinus was achieved. However, few weeks later purulent secretion restarted: a pelvic MRI demonstrated a fistula between the bladder and the rectal stump. An exenteratio pelvis with radical cystectomy and a Bricker ileal conduit was so performed. The perineal cavity was left open. 4 weeks after surgery the perineal cavity was clean and reduced in volumen.

Discussion: Literature does not support prolonged or late onset VAC to treat chronic pelvic abscesses, as evidence is available only for early treatments. The appropriate duration of VAC therapy in rectal stump dehiscence is not clearly stated at this time. A late onset of anastomotic leakage is associated to an high probability of recurrent abscess formation. Preoperative radiotherapy has an aetiological role in the impaired healing; moreover the impaired drainage of the rectal stump by a functional internal sphincter may probably explain the high rate of pelvic sepsis recurrence after a low Hartmann's procedure. Based on these pathophysiological mechanisms, surgical treatment should include resection of the rectal stump, thorough debridement of the sinus and fistula tracks with excision of all fibrotic tissue and filling of the cavity with well-vascularized non irradiated tissue.

Conclusion: Endosponge/VAC are not indicated in case of late onset of a rectal stump insufficiency, in presence of a functional sphincter.

Conflict of interest: No conflict of interest.

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332. Complete mesocolic excision with central vascular ligation compared to standard surgery for right colon cancer: A retrospective study of surgical and oncologic outcomes

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Background: Complete mesocolic excision with central vascular ligation (CME + CVL) has been proposed as a technique of paramount importance for the management of colon cancers, because it maximizes lymph node yield and avoids interruption of lymphatic drainage. Impressive outcomes have been reported, however, direct comparisons with the classic procedure are lacking. In this retrospective study, the surgical and oncologic outcomes of complete mesocolic excision with central vascular ligation were compared to standard surgery for right colon cancers.

Material and methods: Forty seven patients who underwent CME and CVL right hemicolectomy, in our department, during the last 5 years were enrolled in the study. Fifty nine patients with right-sided colon cancer operated in the previous 5 years with classic approach constituted the control group. Operating time, blood loss and postoperative morbidity and mortality assessed the safety of the procedure. Primary end-points for oncological adequacy were recurrence and 5-year survival rate, whereas secondary end-points were the number of lymph nodes examined, plane of surgery, the distance between the tumor and closest arterial high tie and the distance between the nearest healthy bowel wall and the same high tie.

Results: Postoperative morbidity and mortality did not differ between the two groups. However, the CME + CVL right hemicolectomy was significantly associated with longer operating time and blood loss ($p < 0.05$). Number of harvested nodes, length of vascular ligation (high tie) and plane of surgery were shown to be significantly better in the CME group ($p < 0.05$). Locoregional recurrences were never experienced in CME patients ($p < 0.05$), who had better survival rate, although not significant compared to control group.

Conclusion: This study shows that CME with CVL is a safe and effective surgical approach for right colon cancer, thus confirming the previously reported oncological adequacy. The procedure was shown to significantly decrease local recurrences and to improve the survival rate, particularly in node-positive patients.

Conflict of interest: No conflict of interest.

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333. Local recurrence after neoadjuvant radiotherapy resectable locoregional advanced rectal cancer

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Background: Rectal cancer is the most common malignancy in western countries, and its treatment is still discussed.

Material: Between 2001 and 2008, 365 patients with primary cancer in I–III stages WHO were radically treated in the Chair of Surgical Oncology, Collegium Medicum Nicolaus Copernicus University, Oncology Centre in Bydgoszcz.

Patients with resectable T3/T4 tumors and/or N+ in preoperative examinations, were irradiated by short course preoperative radiotherapy (5×5 Gy).

Results: In 214 patients after neoadjuvant radiotherapy, anterior resection, abdominoperineal resection and Hartmann procedure was performed.

In 5 years follow-up, among 214 patients after neoadjuvant 5×5 Gy radiotherapy, loco regional control rate was 4.2% (9 patients).

5 local recurrence was diagnosed with connection in time with distant metastases, 4 was isolated.

All localisations was described: axial 3(3 isolated): anastomotic 1(1), perineal 2(2); anterior 3(0); presacral 2(1); lateral 1(0). The median survival after recurrence was 15.4 months in cases with distant metastases and 20 when local recurrence was isolated in all group.

Conclusions: Short course neoadjuvant radiotherapy and correct surgery are ways to minimize the probability of local recurrence.

In about half cases, locoregional recurrence is diagnosed with distant metastases.

After neoadjuvant radiotherapy most recurrences will develop outside the colon.

Conflict of interest: No conflict of interest.

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334. Does the number of lymph nodes detected in postoperative material in patients with rectum cancer have clinical importance?

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Background It is commonly known that recommended number of lymph nodes in postoperative material after rectal cancer resection is 12.

Material: 908 rectal resections done from January 2001 to December 2012 were analysed in Oncology Center in Bydgoszcz. Preoperative radiotherapy was applied in patients with resectable tumors cT3-4 and/or cN+ (sRT, 5 × 5 Gy and surgery after 7 days, 'short course') and in patients with unresectable or questionably resectable tumors cT3-4 tumors (CRT, 50.4 Gy and surgery after 6–8 weeks)

Results: 614 anterior resections (AR) and 257 abdominoperineal resections (APR) and Hartmann's operations (HART) were done. The average number of resected lymph nodes was 11.98 (median 11). In I–IV staging (pTNM) there were (average): 10.47; 11; 13 and 12 lymph nodes. After AR and APR respectively (average): 12 and 11. In patients irradiated preoperatively (sRT, CRT) and unirradiated before the surgery respectively 12, 11 and 12 lymph nodes (average). On outpatient basis 304 patients have remained in observation for 5 years.

Conclusions: Lower number of lymph nodes in material was not connected with worse prognosis in operated patients in the whole analysed group. Radiotherapy and preoperative radiochemotherapy did not influence the number of detected lymph nodes.

Conflict of interest: No conflict of interest.

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335. The importance of the location of the tumor in patients with resectable advanced cancer of the rectum

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Background: The localization of rectal cancer plays key role in the choice of therapy and radical surgical procedure.

Material: Between January 2001 and December 2012 in Oncology Center in Bydgoszcz 355 patients with rectum cancer cT3-4 and/or N+ were analysed, qualified and radically treated. Surgical resection procedure was done after prior radiotherapy short course 5 × 5 Gy. Kaplan Meier survival analysis was used for calculating survival outcome.

Results: 218 anterior resections (AR), 124 abdominoperineal resection (APR) and 13 anterior Hartmann's resections (HART) were made.

The average distance from the entrance of anal canal was 6 cm and it was varied in patients with AR and APR (average: 8.1 and 3.1 cm, respectively).

The number of local recurrence was 6% in the whole group. 5 years overall survival was 78%.

Low localization of tumor (<3 cm) and APR was connected with poorer prognosis (p < 0.05). Also, lower localization of tumor was connected with a bit more frequent local recurrence without statistical significance (p > 0.05).

Localization of tumor lower than 6 cm was connected with statistically significant higher frequency of reoperations in postoperative period (p < 0.05).

Conclusions: Localization of tumor near anal canal in patients with resectable cancers cT3-4 and/or N+ treated pre-operative with short course of radiotherapy (5 × 5 Gy) statistically doesn't influence frequency of local recurrence and patients prognosis, provided AR, while it does significantly influence probability of reoperation in post-operational period.

Very low localization (<3 cm) influenced poorer prognosis, what is probably connected with APR.

Conflict of interest: No conflict of interest.

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336. The role of postoperative chemotherapy in patients after radiochemotherapy because of initially unresectable rectal cancer

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Background: Preoperative radiochemotherapy (preCRT) gives possibility of rectal cancer local control. This therapy is especially justified in locally and regionally advanced cancers. In our times the role of postoperative chemotherapy (postCT) in these patients is being discussed.

Material: From January 2003 to December 2012 in Oncology Center in Bydgoszcz 75 patients with irresectable tumours cT3-4 and/or N+ after preCRT were radically operated. In 32 patients postCT was applied simultaneously, which stands for 43%, in 43(57%) patients only pre CRT was applied.

Results: 20 abdominoperineal resections (APR), 50 anterior resections (AR) and 5 Hartmann's operations (HART) were done in the whole group (n = 75), with patients in which systemic therapy after operation was applied standing respectively for 30%, 46% and 60%.

Based on HP postoperative result (n = 75) in 32 patients (43%) WHO staging grade III was detected, in 22 patients (29%) staging grade II was detected and in 15 patients (20%) staging grade I was detected. There was total pathological response (pCR) in 6 patients (8%).

In 13 (41%) patients with preCRT+postCT and 19 (44%) patients with preCRT staging grade III was confirmed.

Three year survival was observed in 43 patients, respectively 25 (58%) patients were treated only preCRT and in 18 (56%) patients in which postCT. Five year survival was observed in 26 patients respectively: 19 (44%) and 7 (22%).

No Kaplan Meier's differences in five year OS were detected after preCRT and preCRT+postCT.

Conclusion: Based on material analysis and in the context of up-to-date reports postoperative chemotherapy in patients after preoperative radiochemotherapy connected with locally and regionally advanced rectal cancer does not substantially influence oncology treatment.

Conflict of interest: No conflict of interest.

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337. Carcinoma of the splenic flexure: What surgical treatment**D. Rega, U. Pace, A. Niglio, D. Scala, C. Sassaroli, F. Ruffolo, M. Pannullo, P. Delrio**¹ Colorectal Surgical Oncology, Istituto Nazionale per lo Studio e la Cura dei Tumori, "Fondazione Giovanni Pascale" IRCCS, Abdominal Oncology Department, Naples, Italy

Background: Extended right hemicolectomy or extended left hemicolectomy are the most common surgical treatments for carcinoma of the splenic flexure. Extended resection, comprising splenectomy and/or distal pancreatectomy, has been advocated for treatment for carcinoma of the splenic flexure because the lymphatic drainage at this site is variable.

This study examined the clinicopathologic characteristics of patients with splenic flexure colon cancer and the association with surgical outcomes to find the most appropriate operative procedure to achieve cure of splenic flexure cancers.

Materials and methods: We compared the clinicopathological characteristics and outcome of 77 patients with splenic flexure colon cancer, between february 2003 to december 2015. Of the total 77 patients, 47 were males and 30 females, ranging in age from 37 to 86 years, with a mean age of 66. Colonic substenosis was present in 29 patients; in 4 patients the tumor infiltrated near organs (T4).

Results: Exclusive partial resection of the transverse colon was performed in 41 patients, extended right hemicolectomy in 9 patients, left hemicolectomy in 10 patients; the combined resection of adjacent organs due to tumor adherence was performed in 17 patients: in 12 of these was a partial resection of the transverse colon. After a median duration of follow-up of 155 months, 7 patients developed distant recurrence, one patient developed local recurrence and there were 4 exitus due to progression disease. There was no difference in survival and disease-free between the different surgical treatments. The difference in survival and disease-free was related exclusively to pathologic stage (pTNM).

Conclusions: The objective of surgical treatment for resectable carcinoma of the colon is to remove the growth with an adequate margin by performing a wide excision of the tumor and associated lymphatics, paying careful attention to the blood supply. A rationale for extended surgery is that the splenic flexure has direct lymphatic drainage to the splenic hilum and along the pancreatic.

It is our opinion that extended surgery is unnecessary to cure splenic flexure. Our results shown that partial resection of splenic flexure was not associated with a worse prognosis and it was sufficient for a satisfactory oncological outcome.

Conflict of interest: No conflict of interest.

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338. Comparing characteristics and survival outcomes of adolescent and young adults to mature patients with colorectal cancer**Y.S. Rho¹, M. Gilabert², K. Polom³, A. Aladashvili⁴, K. Kubackova⁵, V. Megdanova⁶, N. Coleman⁷, M. Greally⁷, D. Marrelli³, F. Roviello³, R. McDermott⁷, V. Petrova⁶, Z. Mihaylova⁶, B. Zbynek⁵, J. Peasova⁵, G. Batist¹, L. Azoulay^{1,8}, P. Kavan¹**¹ McGill University Faculty of Medicine, Department of Oncology, Montréal, Canada² Institut Paoli-Calmettes, Department of Medical Oncology, Marseille, France³ University of Siena, General and Oncological Surgery Department, Siena, Italy⁴ National Cancer Center, GI Cancer Research Unit and Oncology Surgery, Tbilisi, Georgia⁵ 2nd Faculty of Medicine, Charles University Prague and Motol University Hospital, Department of Oncology, Prague, Czech Republic⁶ Military Medical Academy, Department of Medical Oncology, Sofia, Bulgaria⁷ St Vincent's University Hospital, Medical Oncology, Dublin, Ireland⁸ Lady Davis Institute, Jewish General Hospital, McGill University, Clinical Epidemiology, Montreal, Canada

Background: Despite the rising incidence of colorectal cancer (CRC) in adolescent and young adult (AYA) group, overall clinical understanding is significantly lacking. Therefore, we have conducted one of the largest studies characterizing AYAs with CRC, comparing the survival outcomes to that of a mature (MAT) cohort.

Materials and methods: An international multi-centre study was conducted using data from tertiary cancer centres in Canada (CA), Italy (IT), Czech Republic (CZ), Georgia (GE), Ireland (IE), and Bulgaria (BG). Included were AYA patients (18–44 years old) and MAT patients (>44 y years old) diagnosed with CRC from 2003 to 2014. Cox proportional hazards models were used to estimate adjusted hazard ratios (HRs) with 95% confidence intervals (CIs) of overall survival (OS). Site-specific HRs were pooled using random-effects meta-analysis.

Results/Discussion: A total of 553 patients with CRC were included, consisting of 251 AYAp (median age 36.4 years old; male 56.6%, 859 person years) and 302 MAT patients (median age 64.8, male 59.6%, 563 person years). At diagnosis, 58.6% AYAp presented with metastatic disease. Country specific analysis of HRs showed no association between age group and OS, except in the CZ cohort 4.71 (95% CI: 1.56–14.20). In the pooled analysis, AYAp were not an increased risk of death compared with MAT patients [pooled HR of 1.30 (95% CI: 0.70–2.42)].

Conclusion: In this international multi-centre study, AYA patients had similar survival as MAT patients.

Conflict of interest: No conflict of interest.

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Poster Session: Experimental Surgical Oncology**350. Drug delivery for colon cancer therapy by doxorubicin with oligonucleotide modified gold-nanoparticles****M.J. Baek¹, D.K. Park², S.J. Lee³, J.Y. Kim⁴, I.Y. Kim⁵, W.J. Choi⁶**¹ Soonchunhyang University Cheonan, Surgery, Cheonan, South Korea² Dankook University Hospital, Surgery, Cheonan, South Korea³ Chungbuk National University Hospital, Surgery, Cheongju, South Korea⁴ Chungnam National University Hospital, Surgery, Daejeon, South Korea⁵ Wonju Severance Hospital, Surgery, Wonju, South Korea⁶ Konyang University Hospital, Surgery, Daejeon, South Korea

Background: Methods of colorectal cancer treatment include radical surgery, radiotherapy and chemotherapy. However, the use of chemotherapeutic drugs is limited due to their adverse side-effects, low bio-distribution after intravenous administration and multidrug resistance. The major problem associated with chemotherapy is the inability to deliver pharmaceuticals to specific site of the body without inducing normal tissue toxicity. Gold nanoparticles are promising drug delivery systems to overcome multidrug resistance, which is a main cause of ineffective chemotherapy treatment.

Purpose: The aim of this study was to investigate the therapeutic efficacy of gold nanoparticles (AuNPs) containing doxorubicin in in vitro and in vivo colon cancer model.

Materials and methods: We designed the nano-complex by nanoparticle and oligonucleotide for drug delivery. We used doxorubicin (DOX) for chemotherapeutic agents, and gold nanoparticle (AuNPs), oligonucleotide (ONTs) complex for drug carrier. A novel colorectal cancer model was established in nude mice. The efficacy of the AOD was tested in vitro experiment using SW 480 colon cancer cell lines. The colon cancer cell proliferation test was done using MTT assay. The therapeutic efficacy of the AuNP-DOX-ONT NPs versus DOX was investigated in tumor bearing nude mouse model.

Results: The efficacy of cancer treatment with AOD was 2 fold higher than DOX only treatment group. A higher cytotoxic effect of AuNP-ONT-Dox than that of free doxorubicin has been observed in colon cancer cell lines. Intratumoral injection of gold nanoparticles (AuNPs) conjugated to doxorubicin (Au-Dox) is effective against human colon tumors in mice. Au-Dox suppresses growth of colon cancers in tumor bearing nude mice.

Conclusions: The results indicate that AuNP-ONT-Dox may be a potent new therapeutic agent to increase the efficacy of the drug by overcoming the resistance to doxorubicin in colon cancer cell lines and in vivo nude mouse model. Therefore, we strongly believe that gold nanoparticles will be useful for the development of colon cancer therapy using nanomedicine approach.

Conflict of interest: No conflict of interest.

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351. Expression and clinical significance of the lymphocyte antigen 6 complex locus (LY6E) in colorectal cancer

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Background: Lymphocyte antigen 6 complex locus (LY6E) is a glycosylphosphatidylinositol (GPI)-linked cell-surface protein that is induced by Interferon (IFN). LY6E mRNA was found to be overexpressed in colon cancer (CRC) suggesting a role in carcinogenesis. However, function of LY6E remains largely unknown. The aim of this study was to define the role and clinical relevance of LY6E in colon cancer.

Method: A total of 101 tissue samples were obtained from surgically resected specimens from patients with CRC in Soonchunhyang University Cheonan Hospital between January 2002 and December 2009. The expression of LY6E were examined by immunohistochemistry. The expression of LY6E and clinical factors including survival were analyzed. We also investigated the functional study of LY6E using colon cancer cell lines.

Result: The seventy-three of 101 (72.3%) tissues from patients with CRC had LY6E expression. We found LY6E is associated with advanced pathological stage ($P = 0.004$) and positive lymph node status ($P = 0.027$) in patients with CRC. Most notably, patients with LY6E overexpression showed a significantly worse prognosis after surgery ($P = 0.034$). Functional analysis revealed LY6E-depleted cancer cells exhibited markedly reduced migration and invasion ability in vitro ($P < 0.05$).

Conclusion: Altogether, our results imply that LY6E is a marker of poor prognosis in CRC and may be a promising target for cancer treatment.

Conflict of interest: No conflict of interest.

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352. Solute carrier organic anion transporter family member 4A1 (SLCO4A1) in colorectal cancer: Identification of prognostic marker

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Background: Solute Carrier Organic Anion Transporter Family Member 4A1 (SLCO4A1) is involved in glucose, bile salts and organic acids, metal ions and amine compounds transport. Many researchers reported that SLCO4A1 was highly expressed in several cancers, but there was no study about the functions and clinical significance of colorectal cancer of SLCO4A1. So in this study, we investigated the functions and clinical significance of SLCO4A1 in colorectal cancer.

Method: SLCO4A1 expression was investigated by immunohistochemistry (IHC) in 84 cases of colorectal cancer. Tissue section of colorectal cancer and the association of SLCO4A1 expression was examined with clinicopathologic features. To confirm the biological roles of SLCO4A1 in colorectal cancer, we chose 4 colorectal cancer cell lines which have high SLCO4A1 expression. And these cell lines were down-expressed by using SLCO4A1 siRNA. The functional roles of SLCO4A1 were estimated by MTT assay, migration assay, invasion assay and semi-solid agar colony forming assay.

Results: SLCO4A1 was down-expressed in colorectal cancer cell lines by siRNA. It revealed significant decreases of viability, invasion and migration compared to that of control respectively. And SLCO4A1 down-expressed cells was revealed low carcinogenesis compared to that of controls for semisolid colony forming assay. The SLCO4A1 was overexpressed in 32% of the total colorectal cancer samples. Multivariate Cox regression analysis indicated that the overexpression of SLCO4A1 was an independent prognostic factor of decreased survival ($p = 0.021$). The patients of SLCO4A1 high-expression was decreased cumulative survival compared to those SLCO4A1 low-expression patients by Kaplan–Meier analysis. (log rank test, $p = 0.025$).

Conclusions: Taken together, we suggest that SLCO4A1 has oncogenic function in colorectal cancers. And SLCO4A1 high-expression will can be a valuable poor prognostic marker of colorectal cancer.

Conflict of interest: No conflict of interest.

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353. PIK3CA mutation in gastric cancer and the role of different codon mutations in the new molecular division of that neoplasm

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Background: Understanding the biology of gastric cancer on molecular level may help in tailored treatment of that neoplasm. PIK3CA mutation is one of the most important in many cancers. We performed a comparison of clinical and pathological data of PIK3CA mutation in GC patients.

Methods: The analysis was done on 472 patients operated in one specialized center. Polymerase chain reaction (PCR) is used for the screening of PIK3CA (exon 9 and 20). For microsatellite instability (MSI) we used 5 quasi-monomorphic mononucleotide repeats- BAT-26, BAT-25, NR-24, NR-21, and NR-27. Clinical and pathological data were analyzed.

Results: From 472 GC patients PIK3CA mutation was observed in 10 patients (2.1%). All were MSI (10 of 111 patients- 9%). The mutations were seen in 5 patients in codon 9 and 5 in codon 20. Patients with PIK3CA mutation were older, in majority with intestinal Lauren histotype. 5 years survival of MSI patients with PIK3CA mutation was 36% and

without that mutation 71.1% ($p = 0.092$). For mutation in codon 9 the 5 years survival was 0% and for mutation in codon 20 80% ($p < 0.001$).

Conclusions: PIK3CA mutation in GC is not a common finding. It is strongly associated with MSI molecular subgroup, presenting worse outcome than other MSI patients. Completely different outcome is associated with mutation in codon 9 and 20 in favor of mutation in codon 20.

Conflict of interest: No conflict of interest.

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354. KRAS mutation in gastric cancer- molecular, and clinico-pathological characteristic

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Background: Gastric cancer (GC) molecular division and different mutations in specific genes seems to be a key to implement targeted therapies and tailored surgical approach. An example of an important mutation in gastrointestinal tract malignancies are KRAS mutations because of their role in efficacy of antibodies against epidermal growth factor. We analyzed the incidence of KRAS mutation in GC with special attention to separate codons subdivision, and influence of that mutation into clinical and pathological outcome.

Methods: Analysis of KRAS mutation in codons 12 and 13 were performed by PCR amplification based on 472 GC patients. We also analysed subgroups in different codons mutations.

Results: Mutations of KRAS were seen in 21 patients (4.4%). 10 of them presented mutations in codons 12D (47.6%), 1 (4.7%) is 12C, 2 are 12 V (9.5%), and 7 in 13D (33.3%). We also found a mutation 39ins TGG (4.7%). Patients with KRAS mutation showed better survival- 61.5% vs. 43.4% ($p = 0.182$). KRAS mutation patients showed that they were older, mostly females, presenting in majority intestinal histotype according to Lauren, and also with lower number of involved lymph nodes We did not find any difference in survival between mutation in codon 12 and 13.

Conclusions: KRAS mutation is not a common finding GC. It is associated with better prognosis and specific clinical and pathological findings. More detailed analysis is needed to understand better the biology of that mutation based on separate analysis of mutation in separate codons.

Conflict of interest: No conflict of interest.

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355. A comparison of the pharmacokinetics of oral ketoprofen in patients after total and partial gastric resection

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Background: Despite progress in combination therapy in gastric cancer, surgery remains the only method giving the possibility of full recovery. Both total and partial gastric resection entail serious consequences due to altered functioning of the alimentary tract. It may affect the pharmacokinetics of drugs, especially analgesics taken in the postoperative period. Ketoprofen is a non-steroidal anti-inflammatory drug (NSAID) and its main mechanism of action consists in inhibiting cyclooxygenase activity (COX). Recent studies also suggest that the drug induces analgesia by its influence on serotonergic transmission. Ketoprofen is commonly applied to treat postoperative pain, including patients after gastric resection.

Aim. The aim of the research was to analyse the pharmacokinetics (PK) of ketoprofen from tablets in patients after total and partial gastrectomy.

Materials and methods. The research was carried out on two groups of patients after total (I) and partial (II) gastrectomy. The patients in group I ($n = 4$; mean [SD] age 48.2 [19.5] years; weight 74.5 [9.1] kg; and BMI 25.4 [5.1] kg/m²) and group II ($n = 4$; mean [SD] age 61.2 [19.2] years; weight 72.2 [13.5] kg; and BMI 24.0 [3.4] kg/m²) received ketoprofen in a single orally administered dose of 100 mg. Blood samples were collected within 6 hours after the drug administration. The plasma concentrations of ketoprofen were measured by means of validated high-pressure liquid chromatography.

Results. The main pharmacokinetic parameters for ketoprofen in group I ($n = 4$) and II ($n = 4$) were as follows: C_{max} , 2.77 (0.54) and 4.79 (0.76) µg/ml ($p = 0.0094$); $AUC_{0-\infty}$, 7.58 (0.93) and 9.97 (1.88) µgh/ml ($p = 0.0952$); $AUMC_{0-\infty}$, 18.62 (1.19) and 28.73 (7.41) µg × h²/ml ($p = 0.0586$); t_{max} , 0.38 (0.13) and 0.56 (0.27) h ($p = 0.3202$), respectively.

Conclusions. Much lower concentrations of ketoprofen in patients after total gastrectomy suggest that it might be necessary to apply additional analgesic treatment to this group of patients.

Conflict of interest: No conflict of interest.

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356. Novel nanotechnology concepts and applications to support standard cytoreductive surgery and hyperthermic intraperitoneal chemotherapy (CRS + HIPEC): A preliminary report from “2-arm cancer recurrence prevention” animal in vivo studies

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Background: The combination of cytoreductive surgery (CRS) and hyperthermic intraperitoneal chemotherapy (HIPEC) becomes currently to be more and more used method of treatment in selected patients, diagnosed with peritoneal carcinomatosis (PC). There are currently conducted several studies, clinical trials and projects at different levels affecting directly onto better, wider and more efficient implementation of CRS + HIPEC technique. Till now there has been also described and developed many of different innovative supporting methods, tools and CRS + HIPEC procedure modifications, but there is a still a big need to create an effective solutions hopefully possible to the fast translational implementation into the clinic.

Material and methods: Analyzing the published data alike during scientific evaluation of several self-performed in vivo studies we have focused onto two in our opinion mainly problematic and probably breaking points correlated with CRS + HIPEC treatment. First related with the problematic recurrence protection in a place of resection directly related also to the not always possible R0 resection during CRS and second related to the potential chance and possibility to implement such drug delivery system (DDS) based onto the use of different nanocarriers (nanovehicles) which could be left after HIPEC method and which could be characterized by a controlled drug release. In this paper we want to present our idea and preliminary data related to the conducted animal PC model studies in which we have tested and established (on mouse and rat models) the “two arm prevention” concept. In this work we show the potential usefulness and limitations of some specific adhesives used as carriers for selected chemotherapeutics which are used to “protect” the place of resection or which could be used for non resectable and very small implants (I arm) and different nanomaterial's used as nanocarriers for DDS which could be left in de abdominal cavity just after finishing the intraperitoneal perfusion with chemotherapy (II arm).

Results: In our projects we have obtained the data suggested that the very effective and promising materials (for the use in “I arm”) are related to the some adhesives and hemostatic agents based onto fully biological substrates like collagen, levan, γ -PGA and other analyzed substrates. In our studies we have obtained the knowledge related to the use of different carbon nanomaterials (which could be used in “II arm”) of the project.

Conclusions: The use of many of different novel nanotechnology solutions to improve the CRS + HIPEC method is still limited. We hope that probably the use of our “double arm” supporting solutions idea in next steps of scientific projects could bring us more closer to create an novel development ways in next steps of experimental studies and could provides a novel therapeutic modality in the treatment of PC.

Conflict of interest: No conflict of interest.

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357. The assessment of the implementation of a new device to remove mammary ducts during fiberopticoscopy in patients with pathological nipple discharge under experimental conditions

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Background and aims: At present fiberopticoscopy is characterized by the greatest sensitivity and specificity among all the known methods used for imaging the mammary ducts. It is an examination used for a direct visualization of intraductal lesions contrary to other indirect diagnostic methods such as ultrasonography, galactography or Magnetic Resonance Imaging.

The aim of the planned project is to develop a new minimally invasive method which will enable to remove a mammary duct with a pathological lesion visible in fiberopticoscopy.

Material and methods: The material consists of nine patients with pathological nipple discharge (PND). Patients with a diagnosed breast cancer were previously qualified for a modified radical mastectomy (Patey’s) will be included to the project with a sample of a mammary duct. However, a suggested proceeding will not have an influence on the qualification to a type of a surgical procedure, the course of the operation as well as further post-operative proceeding, including possible oncological treatment.

In the conditions of an operating theatre immediately after the mastectomy, in a specially designated place a fiberopticoscopy of one of mammary ducts will be performed and then a fragment of the mammary duct will be collected. The obtained histopathological material containing a mammary duct, in a separate container, will be forwarded to the Department of Pathology in order to assess the preservation of a natural structure of a mammary duct.

Results: Mean age, weight, height and BMI came to 49.8 (years), 67 (kg), 164 (cm) and 24.6 (kg/m²). Nine biopsy specimens were pathomorphologically assessed by means of a new device to remove mammary ducts. During macroscopic analysis, a removed section of a nipple as well as a mammary duct with a length of 2–4 cm was found. Macroscopically, in the examined mammary ducts an undistorted structure of the ducts was found. The mean time of performing the procedure was 5 minutes.

Conclusions: The development of a new method of removing mammary ducts may contribute to a change of standards of the treatment of patients with pathological nipple discharge. They will be based on a combination of diagnostics with the treatment of the patients and obtained histo-pathological material will allow to establish a further strategy based on a further observation (in case of benign lesions) or expanding a surgical procedure after the diagnosis of breast cancer. There is a need to continue

the research with the use of the device to remove mammary ducts on a higher number of patients.

Conflict of interest: No conflict of interest.

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358. Pressurized intraperitoneal aerosol chemotherapy (PIPAC) associated with systemic chemotherapy: An innovative approach for peritoneal carcinomatosis

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Background: Pressurized IntraPeritoneal Aerosol Chemotherapy (PIPAC) is a new treatment that applies chemotherapeutic drugs into peritoneal cavity as an aerosol under pressure. It improves local bioavailability of chemotherapeutic drugs as compared with conventional intraperitoneal chemotherapy. It has been proved to be safe and feasible if performed as exclusive treatment in patients affected by peritoneal carcinomatosis. The first results in patients treated with PIPAC associated with systemic chemotherapy are presented.

Material and methods: Between June 2015 and February 2016 57 PIPAC applications with Oxaliplatin or Cisplatin + Doxorubicin every 6 weeks at 37 °C and 12 mm Hg for 30 minutes were performed. Forty PIPAC procedures performed in 14 patients were included in this study; thirteen patients were undergoing systemic chemotherapy with a wash-out interval of at least 2 weeks before and one week after each PIPAC. Safety, tolerability and postoperative complications were assessed by collection of adverse events according to the Common Terminology Criteria for Adverse Events (CTCAE) 2.

Results: Forty PIPAC administrations were performed in 14 patients with no major perioperative complications. CTCAE grade 1 and 2 were observed after 6 and 8 procedures, respectively for abdominal pain and nausea. Renal and hepatic function weren’t impaired; no cumulative renal toxicity was observed after repeated PIPAC procedures in association with systemic chemotherapy.

Conclusion: These preliminary data show that the association of PIPAC and systemic chemotherapy don’t induce significant hepatic and renal toxicity. It allows to include patients with extraperitoneal disease or at high risk of developing it. Further studies are needed to assess whether this combination therapy could become part of the standard treatment for peritoneal carcinomatosis.

Conflict of interest: No conflict of interest.

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359. Single – Port access for pressurized intraperitoneal aerosol chemotherapy (PIPAC): Technique, feasibility and safety

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Background: Peritoneal carcinomatosis (PC) is a common route of dissemination of abdominal neoplasms and it is often characterized by poor prognosis. Pressurized IntraPeritoneal Aerosol Chemotherapy (PIPAC) is an innovative drug delivery system based on laparoscopic chemotherapeutic agents administration in under pressure gaseous form for the treatment of PC. In literature the open access and the one with Verres needle and two balloon safety trocars are described. The aim of the study was the attest feasibility and safety of the single-port access for PIPAC procedure.

Material and methods: In this paper we present our preliminary results with single-port access (QuadPort+, Olympus Medical, Tokyo, Japan) PIPAC in patients with PC from colorectal, ovarian, gastric, appendiceal cancers and peritoneal mesothelioma (DMPM). From June to November

2015, 29 PIPAC procedure were carried out in 17 patients with PC. Nine patients were subjected to 1 PIPAC, 4 patients to 2 PIPAC and 4 patients to 3 PIPAC.

Results: The access to peritoneal cavity was possible in all cases. The capnoperitoneum was stable in all the procedures with zero CO_2 -flow. No postoperative complications according to CTCAE (Common Terminology Criteria for Adverse Events) >2 were observed, no re-laparotomies were required and no perioperative mortality was recorded.

Conclusions: At our knowledge this is the first report of single port-access for PIPAC procedure. In our experience the single-port access PIPAC is feasible and safe. Further investigation and clinical trials are needed in order to explore the real oncological impact of this promising therapy option on PC.

Conflict of interest: No conflict of interest.

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361. Mast cell positivity to tryptase correlates with metastatic lymph nodes in gastric cancer patients underwent to surgery

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Background: Mast Cells (MCs) can stimulate angiogenesis by releasing of several proangiogenic cytokines stored in their cytoplasm. Angiogenesis has been found to be a reliable prognostic indicator for several types of malignancies. Tryptase is a serine protease stored in MCs granules, which plays a role in tumour angiogenesis. MCs can release tryptase following c-Kit receptor activation.

Method: In this study, immunohistochemistry, image analysis methods and clinical aspects were employed in a series of 42 gastric cancer patients with stage T3N2–3M0 (by AJCC for gastric cancer, 7th edition) to evaluate the possible correlation between MCs positive to tryptase (MCPT) in tumour tissue and the number of metastatic lymph nodes harvested.

Results: Data demonstrated a positive correlation between MCPT in tumour tissue and the number of metastatic lymph nodes.

Conclusion: This is the first report considering MCPT in gastric tumour tissue as a potential prognostic factor of patients before radical surgical treatment and we suppose that the inhibition of MCs or tryptase by mean of gabexate mesilate or nafamostat mesilate could be a novel anti-

angiogenic strategy worthy to clinical investigation. Our pilot data need confirmation in a larger patient cohort.

Conflict of interest: No conflict of interest.

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362. In vitro functional study of novel oncogene serine protease 33 (PRSS33) and the clinical significance of PRSS33 expression in colorectal cancer patients

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Background: PRSS33, one of serine protease multigene family, has central roles in the regulation of a wide variety of physiological processes, including inflammation, development and malignancy. However, the function of this gene in colorectal cancer has not been elucidated. The goal of this study was to evaluate the oncogenic functions of PRSS33 in the colorectal cancer cell line and to evaluate the clinical significance of PRSS33 expression in colorectal cancer patients.

Method: PRSS33 was highly expressed in colorectal cancer cell lines, HCT116, SW480 and SW620. The oncogenic functions were evaluated in the cell lines by knocking down PRSS33 with siRNA transfection and compared them with PRSS33 highly expressing control cell lines. The functional studies included cell proliferation assay, invasion assay, migration assay and anchorage-independent semisolid agar colony forming assay. The clinical significance of PRSS33 expression was evaluated in 92 cases of colorectal cancer tissue by immunohistochemistry.

Results: The PRSS33 knockdown cell lines by siRNA transfection showed significant decreases of proliferation, invasion, migration compared to those of control ($p < 0.05$) respectively. The oncogenic function of PRSS33 was confirmed by anchorage-independent semi-solid agar colony forming assay. The PRSS33 knockdown cell lines revealed lower colony formation on semisolid agar compared to the PRSS33 highly expressing control cell lines. The disease-free survival rate was decreased in patients of PRSS33 high expression ($p = 0.001$). The overexpression of PRSS33 was associated with survival and death by chi-square test ($p = 0.002$). Multivariate Cox-regression analysis showed an association between PRSS33 expression and prognosis (HR = 2.71, 95% CI = 1.39–5.27; $p = 0.003$).

Conclusion: This study indicates that PRSS33 is a novel pro-oncogene and the expression is an independent prognostic factor in colorectal cancer patients. In the future, research on the oncogenic signal pathway of PRSS33 in colorectal cancer is necessary.

Conflict of interest: No conflict of interest.

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Poster Session: Gynaecological Cancer

377. Transcervical resection of the endometrium in early endometrial cancer: An adaptive surgical technique as an alternative in the setting of morbid obesity

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Background: Obesity is the modern epidemic of westernised society and is now a public health crisis. Obesity is an acknowledged risk for endometrial cancer. A morbidly obese patient with early endometrial cancer can present a real challenge for treatment. Most patients have a low grade, early

stage endometrioid endometrial adenocarcinoma that carries an excellent prognosis after traditional surgery by hysterectomy. A small proportion of patients have such extensive obesity and related co-morbidities that definitive hysterectomy and associated anaesthetic factors are a major mortality risk. In this population the treatment represents a greater risk than the disease itself. The hard reality is that these patients will likely suffer more morbidity and eventually die from a disease process unrelated to the uterine cancer.

Our institution has been managing this challenging subset of patients in a novel and previously unpublished manner. We present a technique that removes the tumourigenic area (the endometrium) from the uterus in a minimally invasive manner without undertaking a hysterectomy.

Methods: We present a retrospective case series from a specialist, tertiary referral gynaecological cancer centre of 12 patients with morbid obesity and a diagnosis of an early endometrial cancer. Each case has undergone hospital board multi disciplinary discussion with agreement of the treatment option. A pelvic MRI is performed in a scanner with an open magnet to accommodate the large abdominal girth to confirm early stage disease. The patient is consented and counselled with regard to deviation of standard of care and made aware of risks and importance of long term follow up.

Results: We describe the 'Two-layer' technique of systematic endometrial resection involved and show demographic and clinicopathological information of 12 patients with morbid obesity with Grade1–2 Figo Stage Ia endometrioid adenocarcinoma. We present complete operative and oncological outcomes including long term follow up data of greater than 66 months. The TCRE procedure is minimally invasive, performed under low dose spinal anaesthetic and patients are home the following day. No peri-post operative complications occurred and no patient required completion hysterectomy or adjuvant treatment. The BMI range was 42–67 (mean 54 ± 7.92 SD) all patients had significant co-existing comorbidities.

Conclusion: With no sign of this 'globesity' epidemic abating increasingly the gynaecological oncologist will be faced with the treatment challenges morbid obesity poses and adaptive measures are necessary. We present an extremely valuable and oncological safe alternative to hysterectomy in whom conventional management poses too great a risk.

Conflict of interest: No conflict of interest.

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378. Long-term oncologic and reproductive outcomes in young women with early endometrial cancer conservatively treated: An update from an institutional prospective study

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Background: Although fertility-sparing options for endometrial cancer (EC) management have increasingly been investigated, a contemporary consensus standardizing a conservative approach has not yet been defined. Progestin therapy is the most commonly used. An alternative approach to progestin alone combines operative hysteroscopy and hormonal therapy. Data on this strategy, however, are still limited and long-term treatment outcomes are not well defined.

Material and methods: Twenty patients (≤40 years; Stage IA, G1-2 endometrioid EC), wishing to preserve their fertility, were enrolled into this prospective study and treated by combined hysteroscopic resection and progestin therapy (oral megestrol acetate or levonorgestrel intrauterine device) for ≥6 months.

Results: The median follow-up from the end of treatment is 98.5 months (28–169). After 3 months from the progestin start date, 17 patients (85%) showed a complete regression, two (10%) showed persistent disease, while one patient (5%) presented with progressive disease and underwent definitive surgery (Stage IA, G3 endometrioid EC). At 6 months, one of the two persistences underwent definitive surgery (Stage IA, G1 endometrioid), while the other one was successfully re-treated. Two recurrences were observed (11.1%; at 8 and 41 months) both involving the endometrium and synchronous ovarian cancer (OC) (atypical hyperplasia, and Stage IIB G1 endometrioid OC; Stage IA endometrioid G1 EC, and Stage IA G1 endometrioid OC). The median duration of complete response was 101.5 months (8–172). 55.5% of complete responders attempted to conceive with 90% and 80% pregnancy and live birth rates, respectively. To date, all patients are alive and have no evidence of disease.

Conclusions: Following a long follow-up, the addition of a standardized three-step resectoscopy to progestin would seem to improve the efficacy of progestin alone. High pregnancy and live birth rates were observed in women attempting to conceive.

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Case #	Tumor grade	Oncologic outcome at 6 months	Relapse (months)	Second cancer (months)	Attempting to conceive	Pregnancy	Follow-up (months)
1	G1	CR	–	–	–	–	169
2	G1	CR	–	–	–	–	168
3	G1	CR	–	–	–	–	158
4	G1	CR	–	–	Yes	1 NFTD	153
5	G1	CR	–	–	Yes	1 NFTD	147
6	G1	CR	–	–	Yes	1 NFTD	141
7	G1	CR	–	–	Yes	2 SFTM	137
8	G1	CR	–	–	–	–	107
9	G1	CR	–	–	Yes	–	102
10	G1	CR	–	–	–	–	100
11	G1	CR	–	–	–	–	97
12	G1	CR	–	–	Yes	1 NFTD	92
13	G1	CR	Endometrial (41)	Ovarian (41)	–	–	89
14	G1	Persistence	–	–	–	–	88
15	G1	CR	–	–	Yes	1 NFTD	76
16	G2	Progression*	–	–	–	–	75
17	G1	CR	–	–	Yes	1 NFTD	70
18	G1	CR	–	–	Yes	1 SFTM; 1 NFTD	54
19	G1	CR	–	–	Yes	1 NFTD	34
20	G1	CR**	Endometrial (8)	Ovarian (8)	–	–	28

CR: complete regression; NFTD: normal full-term delivery; SFTM: spontaneous first-trimester miscarriage. *definitive surgery at 3 months. **after re-treatment of persistent disease at 6 months.

Conflict of interest: No conflict of interest.

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379. Cytoreductive surgery and hyperthermic intraperitoneal chemotherapy for treatment of recurrent ovarian cancer

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Background: During the last decades oncologists observe improving of recurrent-free and overall survival of patients with ovarian cancer. This became possible by changing surgical paradigm to achieve full or optimal cytoreduction both during primary surgical operation and treatment of residual or recurrent cancer process. In certain groups of patients can be used hyperthermic intraperitoneal chemotherapy (HIPEC) and systemic chemotherapy. However, indications and effectiveness of these methods require scrupulous research. Our aim was to investigate the effectiveness of combined treatment using cytoreductive surgery (CRS), HIPEC and systemic chemotherapy for treatment of recurrent ovarian cancer.

Material and methods: The study is based on retrospective data of clinical observations and results of treatment of 129 patients with recurrent ovarian cancer who were examined and treated in the Lviv State Regional Cancer Treatment and Diagnostic Center (Ukraine) from 2008 to 2015. Patients were divided into two groups, depending on type of treatment: group A- treated with CRS + HIPEC + systemic chemotherapy (68 patients), group B- treated with CRS + systemic chemotherapy (61 patients). To estimate peritoneal surface malignancy we used Peritoneal Cancer Index (PCI), which is the summation of cancer implant lesion size present in the 13 abdominopelvic regions.

Results: Average PCI was 17.7 (3–32). We found that the survival of patients inversely dependent on the level of PCI: in patients with PCI < 11- median survival was 31 months, PCI 12–21 – 29 months, whereas patients with PCI > 22- 18.5 months. By achieving full cytoreduction median post-recurrent survival of patients grows up. In group A (CRS + HIPEC + systemic chemotherapy) median survival – 31 and 28 months (for Completeness of Cytoreduction Score 0 and 1) and in group B (CRS + systemic chemotherapy) – 22,5 and 21 months (for Completeness of Cytoreduction Score 0 and 1)- statistically significant difference, $p < 0.05$.

Conclusions: Using of HIPEC after cytoreductive surgery improves overall survival of patients compared to treatment with CRS and systemic chemotherapy. Results of surgical treatment for recurrent ovarian cancer and as outcome survival of patients depends on peritoneal cancer index and completeness of cytoreduction after CRS.

Conflict of interest: No conflict of interest.

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380. Pelvic exenteration as part of cytoreductive surgery for advanced stage or relapsed ovarian cancer

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Background: Although initially pelvic exenteration was proposed as standard treatment for centro-pelvic recurrences after cervical cancer the benefits in terms of survival obtained by performing this aggressive surgical procedure enabled the onco-gynecologist to introduce it in the treatment of locally invasive or recurrent ovarian tumors with good results.

Material and methods: We present a series of 14 patients submitted to pelvic exenteration as part of primary cytoreduction (two cases), secondary cytoreduction (11 cases) and tertiary cytoreduction (one case).

Results: The postoperative course was uneventful in 12 cases, while the other two cases necessitated re-operation for urinary fistula (one case) and postoperative bleeding (one case). At two year follow up 10 patients are free of recurrent disease, three cases were diagnosed with disseminated recurrences and were submitted to palliative oncologic treatment while the fourteenth case died of disease ten months after pelvic exenteration.

Conclusions: Pelvic exenteration can be safely performed as part of cytoreductive surgical procedures in order to maximize the debulking effort and to increase survival.

Conflict of interest: No conflict of interest.

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381. Recurrence rates after radical hysterectomy with pelvic lymphadenectomy

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Background: The authors wished to know at which confidence interval one can situate nowadays the surgical intervention called radical hysterectomy with pelvic lymphadenectomy, a procedure done for cervical cancer. At its 116th anniversary after its first performance in 1900 by Dr. Wertheim, we performed a study regarding the loco-regional and lymph node recurrence, after this intervention (Wertheim’s procedure).

Material and methods: We followed the recurrences at the level of: the vaginal stump, at the level of the remaining paracolpium, in the iliac fossae and in the peri-aortocaval fossae. In the First Clinic of General Surgery and Surgical Oncology, a clinic with 70 hospital beds, of the Bucharest Oncology Institute, in Bucharest, Romania, in a 5-year time interval (1/01/2010–31/12/2015), we studied the percent of cancer recurrence after the standardised Wertheim technique, performed by general surgeons specialised in surgical oncology.

Results/Discussion: Out of the total of 711 patients operated on with the Wertheim technique for cervical cancer, during a period of 5 years, the recurrences encountered were around 20%, out of which 1.53% suffered a surgical intervention in our clinic for the excision of the tumour and, therefore, we had the possibility to document the cases.

Conclusions: The authors consider that the recurrence rate encountered puts this technique in the area of the preferred interventions, still remaining nowadays as the gold standard in the neoplasms of the uterine cervix. The improvement of the recurrence rate – taking into account that this rate has decreased significantly over the years – cannot be the result of better surgery than it was 50–60 years ago, as the technique surgically speaking has remained the same, therefore, the progress must be due to improvement in chemo- and radiotherapy techniques. Nevertheless, this technique, Wertheim’s procedure, old as it is, now in its 116th anniversary, can be, and still is, very useful in the armamentarium used against cervical cancer.

Conflict of interest: No conflict of interest.

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Poster Session: Head & Neck and Thyroid Cancer

400. Sentinel lymph node biopsy of jugulo-carotid regions after methylene blue dye injection in medullary thyroid microcarcinomas – A pilot study

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Background: Serum calcitonin level is a precise marker for medullary thyroid carcinoma. However, lymph node metastases can be found in lower serum calcitonin levels, as well, and preoperative ultrasound may provide false negative findings on regional lymph nodes.

The aim was to present original technique of sentinel lymph node (SLN) biopsy of jugulo-carotid regions after methylene blue dye injection in medullary thyroid microcarcinomas (MTMC), as well as to analyze its usefulness for selection of clinically N0 patients with lateral metastases for one-time modified radical neck dissection (MRND).

Material and methods: From 2007 to 2015th, 14 patients were operated in our institution due to MTMCs with serum calcitonin levels lower than 1000 pg/ml, tumors under or 10 mm in size and clinically negative regional lymph nodes. Total thyroidectomy with central neck dissection was done in all patients. SLN mapping was performed by injecting 0.2–0.5 ml of 1%-methylene blue dye in the thyroid lobes, just beneath the capsule. Levels II and III were explored on both sides, blue stained SLNs were removed and examined by frozen section analysis. In case SLNs were benign, additional surrounding non-colored lymph nodes were removed for more precise evaluation and sent to standard pathological preparation and analysis. If SLNs were positive on frozen section, one-time MRND was performed.

Results: One patient had hereditary form of medullary thyroid carcinoma, with bilateral subcentimeter tumors, while others had sporadic, unilateral MTMC. Sporadic MTMCs showed neither central nor lateral lymph node metastases on bilateral SLN biopsy, with no indication for MRND. Hereditary MTMC had central lymph node metastases, with positive SLNs on both sides, thus one-time bilateral MRND was performed. This patient had metastases in other dissected lymph nodes, as well, and serum calcitonin level of 200 pg/ml. Frozen section and definite pathological analysis were 100% match.

Conclusions: Sentinel lymph node biopsy after methylene blue dye injection can be precisely used for intraoperative assessment of lateral lymph nodes. It optimizes surgery of MTMCs, selecting clinically N0 patients with lateral lymph node metastases for one-time MRND. This pilot study is the first reported experience with SLN biopsy of jugulo-carotid regions in medullary thyroid carcinomas using methylene blue dye, focusing on subgroup of microcarcinomas.

Conflict of interest: No conflict of interest.

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401. Surgeons & smoking: Discussing smoking cessation with patients in head & neck cancer clinics

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Background: Smoking is an established cause of up to 73% of upper aerodigestive tract cancers. There is evidence that smoking cessation can even reverse small T1 laryngeal tumours. An estimated 20% of new patients referred to Head & Neck services are smokers. In the UK, patients with a suspicion of cancer are referred to an ENT surgeon (Ear, Nose & Throat/Otorhinolaryngologist) by their GP as a 2-week-wait urgent referral to the Head & Neck service. This stage of heightened health awareness is proposed as an opportune 'teachable moment' for surgeons to encourage smoking cessation.

This research aims to explore current practice of ENT consultants relating to their patients' smoking cessation, to consider opportunities for improvement in the efficacy of this smoking cessation message, and to discuss how this relates to fundamental educational theory.

Methods: Ethical approval was sought from the Imperial College Education Ethics Review Process. Participation was voluntary and 20 ENT consultants completed an online the questionnaire. Qualitative data collection involved semi-structured interviews. Interviews were audio recorded and transcripts were analysed using a thematic framework analysis.

Results: Of the 20 consultants, 90% reported verbally advising their patients to stop smoking in >80% of consultations. However, 70% reported making a formal referral to smoking cessation services for less than 20% of patients. 35% of participants did not know how to make a formal referral in their trust. The underlying educational theories of Lave and Wenger's description of communities of practice, professional identities and social learning were significant in exploring and accounting for these findings.

Conclusions: Patients should be encouraged to stop smoking at their first presentation to a consultant-led 2-week-wait Head & Neck cancer referral service. Use of the 'teachable moment' in the form of a brief intervention of <3 minutes is an effective method to encourage smoking cessation, which should be embraced by surgeons of all specialties. However, barriers to delivering effective smoking cessation advice include surgeons' attitudes to this advice-giving role, in addition to accessibility and knowledge of the referral process. These findings may additionally contribute to informing perioperative enhanced recovery after surgery protocols.

Conflict of interest: No conflict of interest.

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402. Parathyroid carcinoma; diagnosis of distal recurrence with ¹⁸F-fluorocholine PET/CT

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Background: Parathyroid carcinoma is a rare neoplasm accounting for less than 1% of patients with primary hyperparathyroidism (PHP) in Western countries. En bloc resection of tumor with thyroid lobectomy and ipsilateral level VI lymph nodes dissection is the principal treatment with 5-year survival rate of 76–85%. About 3% of patients experience distal recurrence in form of lung, bone or liver metastases. ¹⁸F-fluorocholine PET/CT, the PET marker of cellular proliferation was recently introduced as a promising, effective imaging method for localization of hyperfunctioning parathyroid tissue. The aim of our study was to review our referral center experience with parathyroid carcinoma and ¹⁸F-fluorocholine PET/CT.

Material and methods: A prospective institutional database of patients with PHP operated between 2003 and 2015 was analyzed and five parathyroid carcinomas were discovered 5/811 (0.6%). Regular six months

follow up of these patients consisted of history, clinical exam and serum Ca and PTH measurements. Only in one patient increased serum values of Ca (2.94 mmol/l) and PTH (328 pg/mL) were noticed 2 years after surgery. ¹⁸F-fluorocholine PET/CT with 100 MBq and an additional ¹⁸F-FDG PET/CT was performed to confirm disease recurrence and to stage the extent of the disease.

Results: ¹⁸F-fluorocholine PET/CT has shown solitary high uptake in 1 cm lesion of right upper lung lobe with SUV 4.0. The same lesion with SUV 2.0 was seen on ¹⁸F-FDG PET/CT. The lesion was resected with 4 mm free margins via VATS approach. Histopathology confirmed a 1.3 cm parathyroid carcinoma metastasis with morphology identical to the primary tumor. Normalization of serum Ca (2.51 mmol/l) and PTH (48 pg/mL) was achieved and the patient returned to regular follow-up with no evidence of disease at the moment.

Conclusions: In the future ¹⁸F-fluorocholine PET/CT can be considered as a method of choice in a diagnostic set up of staging patients with parathyroid carcinoma.

Conflict of interest: No conflict of interest.

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403. Lymphoepithelial carcinoma of parotid gland as an example of very rare malignancy

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Introduction: Lymphoepithelial carcinoma (LEC) is an uncommon tumor, histologically characterized by malignant epithelial cells with dense lymphoid stroma. LEC constitutes for 0.4% of invasive salivary gland tumors and has unique demographic specification with very low incidence rate in Europe. According to RARECARE Surveillance there are only 18 cases documented in Europe with an incidence rate 0.003/100000.

Case description: 52-years old female, Caucasian, was admitted to the Teleradiotherapy Department of Lower Silesian Oncology Centre for post-operative radiotherapy due to malignant tumor of left parotid gland (pT3N1M0). Previous CT scans followed by NMR revealed 6 oval, well-demarcated lesions, five of which were with homogenous signal. Moreover, the upper superficial lobe demonstrated the presence of large (28 mm × 18 mm × 30 mm) heterogenous mass with baffles and liquid collections.

The patient underwent total left parotidectomy. Histopathological examination revealed malignant lesions in the superficial and deep parotid lobe, classified as lymphoepithelial carcinoma. Furthermore, two lymph node metastases were found in the periparotid area. Considering the advanced stage, histological tumor type, vascular infiltration, deep lobe involvement and R1 resection adjuvant chemoradiotherapy was administered.

Discussion: The treatment of LECs is primarily surgical. As the majority of these neoplasms are radiosensitive, complete excision is followed by adjuvant radio- or chemoradiotherapy, especially in those cases with advanced stage disease.

A review of the literature indicates benefits from combined therapy and good prognosis for the patient.

Conclusions: Rare malignancies require personalized approach and careful cooperation within oncology specialists.

Conflict of interest: No conflict of interest.

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404. Lymph node metastases in clinically N0 patients with papillary thyroid microcarcinomas

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Background: The aim was to note frequency of central and lateral lymph node metastases (LNM) from papillary thyroid microcarcinomas (PTMC), and to assess whether sentinel lymph node (SLN) biopsy of lateral compartment is an accurate technique to select patients with true positive, but clinically negative lymph nodes for one-time selective lateral neck dissection (sLND). Correlation between tumor characteristics (size, multifocality, bilaterality, capsular invasion) and LNMs was analyzed.

Material and methods: During a 10-year-period (2004–2013), 111 clinically N0 patients with PTMCs had total thyroidectomy, central neck dissection and SLN biopsy of lateral neck compartment in our institution. SLN mapping was performed by subcapsular injection of 0.2 to 0.5 ml of 1%-methylene blue dye. If SLNs were positive on frozen section, one-time sLND was done.

Results: PTMCs were multicentric in 40%. LNMs were detected in 25% of patients. Isolated central LNMs were found in 18% of patients. Lateral LNMs were present in 7% of patients, of which 4% were isolated, skip LNMs. All these patients had therapeutical sLND. Specificity and sensitivity of SLN biopsy were 100% and 57%, positive and negative predictive values were 100% and 97%, respectively. Method's accuracy was 97%.

Conclusions: SLN biopsy of lateral neck compartment is more precise than physical examination and ultrasonography for detection of lateral LNMs in clinically N0 patients with PTMCs. Intraoperative assessment of lateral lymph nodes (SLNs) provides one-time therapeutical dissection for patients with occult LNMs at initial operation, reducing the need for additional operations. This method provides appropriate disease staging and optimizes treatment.

Conflict of interest: No conflict of interest.

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405. Occult thyroid cancer after operations for benign thyroid disease. Is it that rare?

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Background: Thyroid nodules are common in the general population. Most of them are identified via thyroid ultrasound (US) (13–67%). The workup of these patients aim to identify or exclude malignancy and this can be achieved with the combination of US and cytology obtained with a fine needle (FNA). In the literature it is reported that in the specimens for benign thyroid disease there is a 5% incidence of occult cancer. In reality this incidence seems to be higher, at least in Greece.

Our aim was to record the true incidence of occult thyroid cancer in operations for benign disease and assess if there are any predictive factors. Moreover, we evaluated the value of total thyroidectomy for the management of these cases.

Material and methods: We studied 150 consecutive cases who underwent total thyroidectomy for “benign” disease. The preoperative workup did not confirm malignancy in any of these cases. We compared group

A (no cancer) with group B (occult cancer). We further compared patients with microcarcinomas with those with macrocarcinomas.

Results: The mean age of the patients was 52.98 (SD = 13.89) years. The mean weight of the gland 43.51 g (SD = 28). Occult cancer was found in 53 cases (31.2%) mainly microcarcinomas (58.5%). The main histology type was papillary cancer (90.5%). The mean tumour size was 12.54 mm (SD = 13.86). None of the factors studied (dimensions of each lobe, nodule size, weight of the gland, demographics) was predictive of malignancy. Moreover, there were no differences in any of the factors studied between the patients with micro and those with macro carcinomas. None of the patients required further operation.

Conclusion. In patients with benign thyroid disease where the preoperative workup fail to prove malignancy there is a high probability, of unpredictable occult cancer justifying the option of total thyroidectomy in all cases.

Conflict of interest: No conflict of interest.

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406. Salvage surgery of total pharyngolaryngectomy and cervical esophagectomy after chemoradiationtherapy or radiotherapy

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Total pharyngolaryngectomy and cervical esophagectomy (TPLCE) after chemoradiotherapy remains a challenging surgery. The purpose of this study is to evaluate clinical significance of salvage TPLCE in hypopharyngeal cancer (Ph) and cervical esophageal cancer (Ce).

Thirty-seven consecutive patients who were diagnosed with potentially resectable Ph and Ce after chemoradiotherapy (CRT) or radiotherapy (RT) were retrospectively analyzed. We included 26 patients with Ph and 11 patients with Ce who received definitive CRT/RT followed by salvage TPLCE. RT alone was observed 4 patients in hypopharynx. All patients underwent TPLCE and free jejunum transfer.

The postoperative in-hospital death is none. Median postoperative hospital days are 21 days, ranged from 13 to 51. The postoperative complication rate was 37.8 % (14 patients); Seven patients of and tracheal necrosis, 1 patients of anastomotic leakage, 1 patients of anastomotic stenosis, 6 patients of wound infection, 2 patients of lymphorrhea, 2 patients of intestinal obstruction, and 18 patients of partial ischemic change of trachea, respectively. Complication related to trachea was more observed in Ce group when compared with Ph group ($p < 0.05$). Anal margin of cervical esophagus and radiation field were considered to be strongly associated with tracheal ischemia after salvage surgery in Ce rather than Ph.

Salvage TPLCE can offer the exclusive chance of prolonged survival. Tracheal ischemia was more associated with salvage TPLCE. Thus, the indication for salvage TPLCE must be carefully considered to maintain the balance between curability and safety

Conflict of interest: No conflict of interest.

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407. Papillary thyroid cancer: Treatment strategies and prognostic factors at the Instituto Português de Oncologia do Porto

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Background: Well-differentiated thyroid cancer (WDTC) incidence is growing mainly because of increased diagnosis. Papillary thyroid cancer (PTC) is the most frequent type of WDTC and poses the most frequent management dilemma. We sought to analyze retrospectively a cohort of patients from our Institution and evaluate the treatment strategy.

Material and methods: A retrospective review of all patients with PTC treated between 2009 and 2010 at our Institution was undertaken. Data regarding initial symptoms, preoperative studies, histologic type, surgical treatment, type of recurrence and subsequent treatments was gathered from review of the charts and subjected to analysis.

Results: From 184 initial records, 140 patients met the inclusion criteria. Of those patients, 115 (82.1%) were female. The mean age was 46 years with 80 (57.1%) patients being older than 45 years old. In regard to the surgical strategy, hemithyroidectomy (HT) was the initial approach in 48 (34.3%) although the definitive surgery was total thyroidectomy (TT) in 112 (80%) and HT in 28 (20%) patients. At the time of the surgery 23 (16%) patients were diagnosed with N+ disease and were submitted to Neck dissection. Of the 16 patients subjected to central and ipsilateral neck dissection to treat lateral compartment metastasis, 14 (87.5%) had synchronous central compartment metastasis. Surgical morbidity was identified in 24 (17%) patients, namely definitive hypoparathyroidism in 12 (8.5%); laryngeal recurrent nerve injury in 8 (5.7%) and accessory nerve injury in 4 (2.8%) patients. An analysis was made to identify predictive factors for TT as the definitive surgery and for remnant ablation therapy. pT stage, N stage, multifocality and extrathyroid extension were predictive factors for TT and pT stage, N stage and stratification according to GAMES and ATA 2015 risk scores were predictive factors for remnant ablation therapy. Age and sex didn't show statistically significant differences for either group. The overall survival and the disease free survival at 5 years were 98% and 92% respectively and stratification according to the ATA 2015 risk score was a predictive factor for disease free survival.

Conclusions: The current study shows that a more radical surgical approach has been the preferred approach at our center, and as such, the levels of morbidity rise. Although prophylactic central neck dissection isn't performed routinely, we can conclude in favor of central neck dissection every time lateral lymph nodes are involved. The predictive factors for treatment modality and for patient outcome, especially the stratification according to the GAMES and ATA 2015 risks scores may present as an important tool to better stratify our patients and prospectively assess outcomes of less extensive surgical therapy.

Conflict of interest: No conflict of interest.

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408. Thyroidectomy: Is there safe technique for the laryngeal nerve?

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Aim: The aim of our study is the presentation of our experience at thyroidectomies and the analysis of technique with standard dissection and recognition of recurrent laryngeal nerve to prevent damage nerve.

Material-Method: This is a retrospective study from 2006 to 2015. Includes the results from thyroidectomies performed by the same surgical team with the same standard method. Contains 625 patients age 19–79 years old average age 46 years. From these, 358 were women and 267 men. 432 interventions performed because of diagnosis of multinodular goiter and others 193 because of thyroid cancer.

Results: All the patients were underwent to total thyroidectomy via transverse incision 2 cm above the jugular notch of sternum. In all patients was performed bilateral recognition and dissection of recurrent laryngeal nerve. We no use nervostimulator. In 10 pts (all with thyroid cancer near to the nerve) presented temporary hoarseness, and 1 patient presented permanent hoarseness postoperatively after extended lymph node dissection but it was necessary for oncologic clearance. The laryngoscopy was negative in patients with temporary hoarseness. Other complications were parodic hypocalcaemia in 76 patients and permanent hypocalcaemia in 4 patients. There was no postoperatively bleeding or reoperation or damage of esophagus. The thyroid remnant after study with gammagraphy was below 1%.

Conclusions: During thyroidectomy the most common complication is the damage of recurrent laryngeal nerve. Our recommendation is that the safest method to avoid damage is the dissection and recognition of the nerve in each intervention either in case of malignancy or in case of benign lesions. Furthermore it ensures the whole excision of the gland with the least remnant with the maximum oncologic result and the minimum danger of recurrence.

Conflict of interest: No conflict of interest.

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409. Neck lymph node dissection: Results and complications

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Aim: The aim of our study is the presentation and analysis of our experience to lymph node dissection of neck for thyroid cancer.

Material-Method: The study is retrospective and includes the years from 2006–2015. During this period was addressed 63 patients with thyroid cancer, 39 women and 24 men, aged 19–71 years old, average 47 years. Preoperatively all patients had had an ultrasonography to identify the irregular lymph nodes.

Results: 18 patients were underwent to extended bilaterally neck lymph node dissection and 45 ipsilateral lymph node dissection. It was done a transverse incision above the jugular notch with extension to the sternoclavicular muscle. It was no use of nervostimulator. In 24 patients was performed central neck lymph node dissection. Intraoperatively was done recognition and carefully dissection to the recurrent laryngeal nerve in all patients and in one case was done en block excision the nerve with the tumor. In all interventions we used 1 vacuum drainage. Postoperatively 1 patient had permanent hoarseness and 18 patients had permanent hypoparathyroidism. 1 patient had lymphorria for one month. 2 patients had recurrent of tumor 18 months postoperatively.

Conclusions: The thyroid cancer is common medical condition. Because of the fact that at the thyroid cancer is common the presence of pathological lymph nodes, especially to the papillary cancer, our recommendation is a detailed ultrasonography for identification irregular neck lymph nodes. The standard therapy is the carefully lymph node neck dissection of all pathological lymph nodes with full recognition and dissection of recurrent laryngeal nerve. The maneuvers aim at maximum oncologic result with the minimum possible morbidity.

Conflict of interest: No conflict of interest.

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Poster Session: Hepatobiliary and Pancreatic Cancer

425. Treatment Outcomes of Gall Bladder Cancer, 10 Years

Experience

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Background: Gallbladder cancer (GBC) represents the most common and aggressive biliary tract cancer with overall 5-year survival being only 5%–10%. Survival following resection, especially in early stages, has shown some improvement due to advances in surgical treatment. Advanced stages, however, continue to have dismal outcome. Complete surgical resection offers the only chance for cure, which extended from simple cholecystectomy to major hepatectomy or en bloc resection of adjacent organs. The aim of this study was to examine the predictors of longterm survival in patients with gall bladder cancer.

Methods: We retrospectively evaluated 38 patients who underwent curative (R0) resection for GBC between January 2001 and December 2010 in Surgical Oncology Department, South Egypt Cancer Institute,

Assiut University, Egypt. Surgical procedures included simple cholecystectomy (10.5%), radical cholecystectomy (75.4%), bile duct resection (33.8), and right hepatectomy (7.8%). Adjacent organ resection was performed in (23.4%), duodenal sleeve resection (10.4%), segmental colectomy (5.2%), segmental gastrectomy (2.6%), Hepatopancreaticoduodenectomy (5.3 %). Adjuvant chemotherapy was given for (68.4%) of patients and adjuvant radiotherapy for (36.8%) of patients. Median follow up period of the patients was 38 months (0.5–69 months).

Results: The median disease free survival (DFS) for GBC patients was 38 months. Univariate analysis revealed that patient's age, comorbidities, weight loss, jaundice, tumor differentiation, organ invasion, lymph node metastasis, perineural invasion, tumor stage and chemotherapy were associated with the patient's survival. Of these, weight loss, jaundice, lymph node metastasis and tumor stage were found to influence the overall survival on the multivariate Cox Hazard Regression analysis. First year overall survival estimate was 86.84% ± 5.5%, 2nd year = 71.05% ± 7.4%, Third year 60.53% ± 7.9% fifth year = 15.79% ± 5.9%.

Conclusion: Curative surgical resection remains the only effective approach for treatment of GBC. This study confirms that jaundice, weight loss and aggressive tumor (advanced stage and regional lymph nodes metastasis) are predictors of poor prognosis.

Conflict of interest: No conflict of interest.

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427. Liver adenomatosis: A precancerous entity?

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Background: Liver adenomatosis (LA) can be defined a rare entity in which numerous (>10) hepatocellular adenomas occur in patients with a normal hepatic parenchyma without history of steroid use or glycogen storage disease.

Material and methods: In the last five years we followed the cases of 3 women (37, 43, and 51 yrs.) suffering from LA and treated by liver resection. In all cases an intraparenchymal hemorrhage of the greater lesion was present. According to the original Flejou's description of the disease, all patients had only a serous increase of alkaline phosphatase and gGT.

Results: Up to the present, all patients are alive without signs of recurrence of the disease. Microscopic examination of the specimens revealed that all lesions were composed of benign hepatocytes arranged in irregularly thickened cords, separated by sinusoids. The histologic findings were characteristic of liver cell adenomas; in view of the large number of lesions present (in all cases >20), the diagnosis of LA was established.

Conclusions: This report confirms the existence of the unusual entity of liver adenomas. These lesions can be extremely vascular and prone to hemorrhage: this argues for removing large adenomas even in the presence of LA. The distinction between LA and well-differentiated hepatocellular carcinoma (Edmonson I) is very difficult on histology alone. A long follow-up is essential to confirm the diagnosis.

Conflict of interest: No conflict of interest.

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428. Inframesocolic superior mesenteric artery first approach as an introductory procedure of radical antegrade modular pancreatosplenectomy for distal pancreatic cancer

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Background: The superior mesenteric artery (SMA)-first approaches are operative tactics purposing for identifying resectability early during the pancreatoduodenectomy. In case of a locally advanced left-sided pancreatic cancer, the early judgment of an involvement of the SMA also determines a possibility of curative resection. During either radical antegrade modular pancreatosplenectomy (RAMPS) or classic left-to-right distal pancreatectomy, dissection of the SMA is performed after transection of the pancreas or wide detachment of the distal pancreas and spleen. Herein, we describe an inframesocolic SMA-first approach as an introductory procedure when treating carcinoma of the pancreatic body and tail.

Surgical techniques: The omentum and transverse colon are superiorly retracted and the small intestine is retracted to the right. The peritoneum is incised at the duodenal recess and the aorta, inferior vena cava, and left renal vein are exposed by mobilizing and rotating the fourth portion of the duodenum and the uncinate process of the pancreas. These procedures will expose the left aortic wall and left

adrenal gland. The mesentery base is then incised, the ligament of Treitz is opened on the left and anterior side of the mesenteric root, and duodenojejunal flexure is pulled down. The SMA is then identified. Dissection of the SMA proceeds to the origin of the SMA. Next, the transverse colon is pulled downward, and the gastrocolic ligament is incised, opening the omental bursa. After dissecting the inferior border of the pancreas to the right, the superior mesenteric vein (SMV) is exposed and the mesocolon is opened on the left side of the SMA. The common hepatic artery and the portal vein are exposed along the superior border of the pancreas. The neck of the pancreas is tunneled and divided with a linear stapler and tilted to the left in order to facilitate lymph node dissection around the celiac axis (CA). Subsequently, the splenic vein was ligated at its origin. The anterior surface of the SMA, which is already exposed, is located and proximally dissected until reaching the SMA origin. After these procedures are completed, the RAMPS procedures are performed.

Conclusion: The procedure described here was performed in seven patients in our department and all patients underwent R0 resection. This introductory procedure of inframesocolic SMA-first approach for left-sided pancreatic cancer is feasible and useful with giving solidity and safety to RAMPS.

Conflict of interest: No conflict of interest.

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429. Prognostic factors and outcome of partial hepatectomy for huge (≥10 cm) hepatocellular carcinoma

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Background: This study was performed with the primary objective to determine the prognostic factors and after partial hepatectomy (PH) for huge (≥10 cm) HCC.

Methods: Between 2000 to 2013, 920 patients underwent resection for HCC of which there were 166 patients who underwent LR for a huge primary HCC which met the study criteria.

Results: One-hundred and sixty-six patients underwent LR for huge HCC. The 30-day/in-hospital postoperative mortality rate was 4.2%. The 5-year overall survival (OS) and the 5-year recurrence-free survival (RFS) was 43% and 24%, respectively. Univariate analyses demonstrated that tumor size, multifocal disease, elevated AFP, microvascular invasion, R1 resection and satellite nodules were significant predictive factors of RFS. On multivariate analysis, elevated AFP, microvascular invasion and R1 resection were independent predictors of RFS. Hepatitis B positivity, tumor rupture, elevated NLR, elevated PLR, elevated AFP, multinodular, microvascular invasion, R1 resection and satellite nodules were significant prognostic factors of OS on univariate analyses. Hepatitis B positivity, tumor rupture and R1 resection were independent predictors of OS on multivariate analyses.

Conclusions: Elevated AFP, microvascular invasion, R1 resection, hepatitis B positivity and tumor rupture were independent prognostic factors after PH for huge HCC.

Conflict of interest: No conflict of interest.

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430. Predictors of successful percutaneous biliary drainage for incurable malignant biliary obstruction

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Background: Patients with periampullary and liver neoplasms in the course of their diseases frequently develop jaundice that cannot be relieved

endoscopically or surgically. The goal of palliative treatment is effective biliary decompression to relieve complications of hiperbilirubinemia. Percutaneous transhepatic biliary drainage (PTBD) as palliative procedure may be applied alongside endoscopic retrograde cholangiopancreatography (ERCP) in poor prognosis patients with malignant obstructive jaundice caused by unresectable cancers or metastatic lesions.

The purpose of this study was to determine predictive factors for technical success of percutaneous transhepatic biliary drainage in patients with obstructive jaundice and life expectancy of less than 6 months in whom other interventions (surgery, endoscopy) were precluded or failed.

Material and methods: A total of 131 patients underwent PTBD due to obstructive jaundice caused by end-stage unresectable malignancy between August 2008 and December 2013 in a reference center specialized in surgical treatment of alimentary tract neoplasms.

Results: There were 178 procedures in with technically successful drainage was achieved in 148 (83%) procedures, and clinical success is 136 (76%). largest diameter of intrahepatic bile ducts was the only factor relevant for successful drainage. The overall odds ratio for technical and clinical success as a function of bile duct diameter were 1.141 (95% CI 1.097–1.187; $P < 0.001$) and 1.120 (95% CI 1.075–1.168; $P < 0.001$), respectively. The overall morbidity rate was 7%.

Conclusion: PTBD is an effective and relatively safe method of biliary drainage in patients with incurable malignancies. Diameter of intrahepatic bile ducts enables to predict effectiveness of the procedure. Survival does not differ in patients with successful and unsuccessful drainage.

Conflict of interest: No conflict of interest.

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432. Associating liver partition with portal vein ligation for staged hepatectomy (ALPPS) for hepatocellular cancer treatment. Is it safe? C.C. Wang¹, A.L. Komorowski², C.L. Chen¹

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Background: ALPPS (Associating Liver Partition with Portal vein ligation for Staged hepatectomy) is a complex two-stage surgical procedure for advanced liver resections. In several series the morbidity and mortality figures are alarmingly high which raises questions about viability of the procedure.

Methods: Five patients with primary HCC requiring right liver resection with borderline future liver remnant were qualified for the two-stage ALPPS procedure. In the first stage the liver partition and right portal vein ligation were performed and in the second stage right liver resection was completed.

Results: The median age of patients was 55 (35–74) with ASA III or more in two patients. Median ICG retention rate was 5.4 (0.7–9.7). The primary FLRV/SLV was 28.8 (24.9–38.5) and reached 45.3 (38.7–50.7) before stage II operation. The median left lobe hypertrophy was 45.2% (31.8–75.3). The interval between stage I and II operations was 10 days (8–14). There were 2 right lobectomies and 3 right trisectionectomies performed. Intraoperative blood loss was 150 ml (50–200) during the first stage and 150 ml (50–200) during the second stage. No patient required RBC transfusion. Four patients experienced grade II (Clavien-Dindo scale) complications (hypoalbuminaemia in 3 patients and anemia in 1 patient). Three patients had post-hepatectomy liver failure grade B (ISGLS scale). Hospital stay was 23 to 34 days. All patients are alive and well.

Conclusion: In a highly selected group of patients with primary HCC, ALPPS procedure can be performed safely with excellent short and long term results.

Conflict of interest: No conflict of interest.

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433. The malignant transformation of the choledochal cyst ‘about 5 cases’

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Background: Choledochal cyst “CC” is a rare disease usually discovered in the pediatric age, with female predominance however 20–23% of patients have their disease diagnosed in adulthood. Its incidence is 1/200,000 inhabitants, it is often associated with an abnormality of the biliopancreatic junction and its evolution can be characterized by many serious complications essentially risk of malignant transformation in bile duct tracts.

Materials and methods: From January 2010 to December 2015 thirty three patients were operated at our department for CC. And five had a malignant transformation of their malformation.

Results: In this period 33 patient was operated for CC and 5 had a malignant transformation of their malformation, they was 4 women and a man, two intra-hepatic cholangiocarcinoma, two adenocarcinoma of the gallbladder and one with an extra hepatic cholangiocarcinoma. They was two Todani I, Two Todani V left, and an isolated cyst duct dilatation. The surgery was curative in only three cases.

Comment: The CC is a congenital malformation of the bile ducts, Todani described 5 types, isolated dilatation of the cystic duct is a rare and newly described form, it is called Type 6, a biliary-pancreatic junction anomaly is systematically sought, but does not modify the therapeutic approach. Any CC diagnosed should be treated surgically to prevent complications, these complications are often the mode of revelation of this malformation, the more dangerous complications is the transformation into cancer.

Conclusion: Malignant transformation on CC is a serious complication, this risk increases with age, justifying immediate surgical treatment of all diagnosed CC.

Conflict of interest: No conflict of interest.

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434. Is there still a place for surgical palliative treatment of jaundice in hilar cholangiocarcinoma using jejunio-cholangio-anastomosis on segment III bile duct?

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Background: The main goal of palliative treatment of patients with unresectable hilar cholangiocarcinoma (HC) is to decrease effects of biliary obstruction: that aims to fight against jaundice, pruritus and cholangitis that kills these patients early, and for who palliative surgery has still advantages in case of contraindication or unavailability of interventional radiology or endoscopy. The goal of this study is to analyze the results of internal derivation on segment III bile duct.

Materials and methods: It is a retrospective study from July 2008 to March 2016 analyzing results of jejunio-cholangio-anastomosis on segment III bile duct in patients with unresectable hilar cholangiocarcinoma.

Results: From July 2008 to March 2016, twenty three (23) patients with cholestatic jaundice secondary to malignant obstruction of the upper biliary confluence underwent jejunio-cholangio-anastomosis on segment III. There were 12 women and 11 men with an average age of 54 years (range 35–69 years). Etiology of jaundice was: 15 Klatskin tumors, and 08 cancers of the gall bladder invading the hilum. The efficiency was 100% and the perioperative mortality rate was 21.7%. Morbidity was dominated by external biliary fistula in 34.8% of cases. The average of post-operative stay was 19 days.

Discussion: Surgical internal derivations have no superiority compared to non-surgical procedures. Insertion of a stent is seen as the method of choice, however, surgical internal derivation seems to have advantages in patients with good life expectancy and failure of percutaneous or endoscopic techniques, but especially in case of changing operative strategy

during the intraoperative time from curative to palliative indication after confirmation of 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 segment III is an interesting alternative procedure in some cases of HC and should be preserved in the panel of palliative procedures in jaundice treatment of HC.

Conflict of interest: No conflict of interest.

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435. Application of a three-dimensional print of a liver in hepatectomy T. Igami

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Background: Hepatectomy is performed according to the recognition of liver anatomy obtained by preoperative radiological images. Such recognition often differs between operator and assistants. To conquer difference of anatomical recognition, we are going to develop three-dimensional (3D) model navigation for open hepatectomy.

Material and methods: Digital segmentation of anatomical structures from multidetector-row computed tomography images utilized the original software "PLUTO", which was developed by Graduate School of Information Science, Nagoya University. After changing the final segmentation data to the stereolithography files, a 3D printed liver at a 70% scale was produced. The support material was washed and mold charge was removed from 3D printed hepatic veins. The surface of 3D printed model was abraded and coated with urethane resin paint. After natural drying, 3D printed hepatic veins were colored by injection of a dye. The 3D printed portal veins were whitish because mold charge remained. All procedures after 3D printing were performed by hand work. We used 3D print of a liver to hepatectomies for 14 patients.

Results: In all study patients, hepatectomy was performed referring to 3D printed model. The planned resections were successful with histologically negative surgical margins.

Conclusions: Application of 3D printed liver to hepatectomy is easy and suitable procedure. In the future, diffusion of 3D printing technology in hepatectomy requires further improvement and automatization of hand work after 3D printing.

Conflict of interest: No conflict of interest.

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436. Dissection of the hepatic pedicle in the surgical treatment of gallbladder cancer

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Introduction: The dissection of the hepatic pedicle in the surgical treatment of gallbladder cancer is the cornerstone in the radical approach of this type of cancer. We propose in the form of poster communication, a demonstrative and the typical case of a pedicle dissection of a resectable gallbladder cancer.

Material and method: This is a 53 year old man, complaining recently of pain right upper quadrant without jaundice. Abdominal ultrasound and an abdominal CT objective endo-vesicular tumor bud without signs of liver damage pedicle stock extension is negative. This patient was operated, with an bisegmentectomie IVb-V with a dissection of the hepatic pedicle. The postoperative course was uneventful, with a decline of two years; our patient is alive without recurrence.

Conclusion: Essential step in the radical approach of gallbladder cancer; the dissection of the hepatic pedicle is of paramount importance in the

therapeutic arsenal for improving the survival of this type of very lymphophilic renowned cancer.

Conflict of interest: No conflict of interest.

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437. Prehepatectomy portal vein pressure predicts liver failure after liver resection in patients with hepatocellular carcinoma

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Background: As elevated portal vein pressure (PVP) is associated with posthepatectomy liver failure (PLF), we hypothesized that prehepatectomy PVP may be predictive factor associated with increased risk of PLF. We evaluated the predictive value of PVP before liver resection for the International Study Group of Liver Surgery (ISGLS) definition and severity of grading of PLF on hepatocellular carcinoma (HCC) patients

Material and methods: All HCC patients who underwent a liver resection with an intraoperative measurement of PVP before the procedure were included. Outcome was analyzed regarding definition and grading proposed by the ISGLS. Pre- and intra-operative parameters included prehepatectomy PVPs were compared between the 2 groups (PLF grade 0 or A, and grade B or C) with Fisher's exact test.

Receiver operating characteristic curve was used to determine the optimal cutoff of PVP and independent risk factors of PLF.

Results: The study population consisted of 188 HCC patients. Mean prehepatectomy PVP was 17.9 ± 4.8 cm H₂O, and prehepatectomy PVP was significantly associated with severity of total bilirubin level and international normalized ratio ($p < 0.001$ each). Mean prehepatectomy PVP with grade B or C PLF (20.1 ± 4.1 cm H₂O) was significantly increased compared to that with grade 0 or A PLF (16.4 ± 4.8 cm H₂O; $p < 0.0001$). The optimal value of prehepatectomy PVP to predict PLF was 19.5 cm H₂O when considering grade B or C PLF.

Conclusions: Prehepatectomy PVP was gradually correlated with the PLF risk, and may be an useful index for predicting PLF.

Conflict of interest: No conflict of interest.

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438. Outcome of radical cholecystectomy for gallbladder cancer patients in a tertiary care oncology centre in Northern India

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Background: Gallbladder carcinoma is a very common gastrointestinal malignancy particularly in Northern India. It is an aggressive malignancy which always raises question regarding survival. Mortality trends have been variable from one geographical region to other. Mostly, it presents in advanced stages until unless detected incidentally following cholecystectomy for benign disorders. Only 10–15% patients are surgically resectable at the time of presentation, rest of the patients either go for NACT or Palliative and Best supportive care. We herewith present our surgical experience and survival outcomes.

Material and methods: This retrospective analysis of prospectively maintained computerized data-base of patients was conducted in Dr BRA IRCH, AIIMS, New Delhi, India, a tertiary teaching oncology centre in North India. The case records of all surgically treated gall bladder carcinoma patients were reviewed. Details concerning the clinical presentation, preoperative therapy, operative procedure, histopathological examination, postoperative complications, adjuvant treatment, and outcome were retrieved from the case records.

Results: 105 gall bladder cancer patients were treated surgically during the period from January 2010 to September 2015. Out of 105 patients, 78 patients underwent upfront surgery and 27 patients underwent NACT. Radical

surgery i.e. Radical cholecystectomy or Completion Radical cholecystectomy was performed in 51 patients and 54 patients found unresectable at exploration. Out of 51 patients who underwent radical surgery, 42 were operated upfront & 9 after NACT. After NACT, 44% (04/09) patients become resectable. In Radical Cholecystectomy patients, 13 developed recurrent disease during follow up and 38 remained disease free till the last follow-up visit. DFS of all radical cholecystectomy patients for one, two and three year was 76%, 65.2% and 39.1% respectively. DFS in upfront surgery patients for one, two & three year, was 86.9%, 73.54% and 36.77%

respectively while in NACT group the DFS at three year was 29.1%. The difference in DFS of upfront and NACT group is significant ($p < 0.015$).

Conclusions: Disease free survival is significantly better in patients who underwent upfront surgery in comparison to post NACT, although some unresectable patients may become resectable after NACT.

Conflict of interest: No conflict of interest.

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Poster Session: Liver Metastases

450. Management of colorectal cancer and synchronous liver metastasis – A single center experience

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Background: Colorectal cancer with synchronous liver metastasis (sm-CRC) is extremely unfavorable prognostic factor. In patients undergoing liver surgery increases the threat of postoperative acute liver failure (ALF). Despite the introduction into clinical practice calculating the volume of future liver remnant as well as application of portal vein embolization (PVE) or associating of liver partition and portal vein ligation (ALPPS), ALF remains to be the leading cause of complications and mortality after liver resection. And new principles of ALF diagnosis and management should develop.

Material and methods: Researches are based on results of treatment 154 patients with sm-CRC (pT₁₋₄N₀₋₂M₁ cancer of the colon and pT₁₋₃N₀₋₂M₁ rectal cancer) who performed simultaneous (group I) or staged (group II) surgery in the period from 2008 to 2016 on the basis of the research department of tumors of the abdominal cavity and retroperitoneal in National Cancer Institute.

Results: Total level of complications registered for 30 days post-operative period was 33.3% and 21.7% of patients in group I and II, respectively ($p = 0.38$). Most serious complications (\geq IIIa level, Clavien-Dindo scale) registered in a cohort of patients who underwent “major” liver resection (20.9%), whereas the “minor” resection – 4.8%, $p = 0.007$. The total duration of hospital stay was 18 ± 9.5 and 31 ± 7.8 respectively for the first and second group, $p < 0.001$. Also was registered preference of simultaneous surgical treatment for the duration of surgery, which was 367 ± 71.8 min. in group I and 515 ± 119.1 min. in the group of staged surgery $p < 0.001$.

Conclusions: Simultaneous resection of ≤ 3 segments liver with metastases and primary tumor of sm-CRC is a safe surgical strategy (complications \geq IIIa level was 4.8%). Simultaneous resection of > 3 segments of liver with metastases and primary tumor of rectum significantly increase the complications \geq IIIa level (20.9%), $p = 0.007$. Simultaneous resection ensure reduction of hospital stay terms in 58.1% and duration of surgery in 71.3% ($p < 0.001$). The average cost of treatment patient with sm-CRC treating with staged strategy exceeded group of patients using simultaneous surgical treatment in 40.9%.

Conflict of interest: No conflict of interest.

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452. Prognostic factors related to surgical resection of isolated liver metastasis from breast cancer

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Background: Isolated liver metastases (LM) from breast cancer (BC) occur in only 1–5% of cases. Resection of isolated LM improves survival.

We examined the prognostic factors for time to LM development, disease free survival (DFS) and overall survival (OS) after LM resection.

Material and methods: From February 2006 to December 2009, 32 patients underwent LM resection at the Institute of oncology and radiology of Serbia. All of them had breast cancer surgery for their primary tumor and developed resectable LMs as the first and only site of disease progression. We examined the factors related to in the general characteristics of the patient, the characteristics of the primary tumor, the treatment of the primary tumor, the metastatic properties of breast cancer in the liver, and their influence on the time of treatment to the appearance of metastases, disease free survival and overall survival after resection of liver metastases.

Results: Liver metastases developed after a median of 25 months. After resection of liver metastases, median follow-up, disease free survival (DFS) and the overall survival (OS) with corresponding 95% CI were 37 (7–66), 22.5 (12–40) and 37 (≥ 23) months respectively. Size of the primary breast cancer, metastasis to axillary lymph nodes, hormone receptor negative breast cancer status, hormonal therapy unapplied, shorter period of time to the liver metastasis development as well as the greater number of resectable metastases affecting shorter disease-free survival and overall survival after liver metastasis resection.

Conclusion: In patients with a well-selected isolated breast cancer LM, the resection of the liver metastasis extends disease-free survival and overall survival after LM resection.

Conflict of interest: No conflict of interest.

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453. The outcomes of hepatectomy for colorectal liver metastases located in the right side of caudate lobe

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Background: Hepatectomy for colorectal liver metastases (CRLMs) in the right side of caudate lobe including paracaval portion and caudate process is technically demanding due to the difficulty to secure sufficient resection margin. Our single institution's experience of hepatectomy for caudate CRLMs were reviewed and long-term prognosis was evaluated.

Methods: Retrospective chart review was performed to identify the patients who underwent primary hepatectomy for CRLMs during the period between 2000 and 2015. If any part of the tumors resected was located in the right side of caudate lobe, the patient was classified as group C (caudate) and others were as group NC (non-caudate). Operative details and postoperative outcomes were compared between the two groups.

Results: Totally 558 patients were evaluated. The median age was 61 years and 366 patients (66%) were male. Twenty five (4%) patients were classified as group C. Between the group C and NC, proportion of synchronous metastases (C vs. NC, 16 [64%] vs. 317 [59%], $P = 0.65$), preoperative carcinoembryonic antigen level (median [range], 11.0 ng/ml [2.2–1690.0] vs. 11.6 ng/ml [0.7–6860.0], $P = 0.73$), tumor size, (3.0 cm [0.7–12.0] vs. 3.0 cm

[0.2–23.0], $P = 0.55$), tumor number (2 [1–13] vs. 2 [1–14, and uncountable in two patients], $P = 0.58$) were comparable. More patients in group C received preoperative chemotherapy (11 [44%] vs. 97 [18%], $P < 0.01$). Type of hepatectomy in group C was left trisectorectomy, 2; right trisectorectomy, 1; left hemihepatectomy, 5; right hemihepatectomy, 4; posterior sector-ectomy, 1; non-anatomical local resection, 12. Proportion of major hepatectomy resecting 3 or more Couinaud's segments (C vs. NC; 12 [48%] vs. 104 [20%], <0.01) and vascular reconstruction (7 [28%] vs. 5 [1%], $P < 0.01$) was higher in the patients of group C. The incidence of positive resection margin was also higher in the group C (8 [32%] vs. 77 [14%]), $P = 0.02$). Postoperative major morbidity defined as Clavien-Dindo grade \geq III occurred more frequently in the group C (3 [12%] vs. 21 [4%]), but the difference was not significant ($P = 0.09$). Mortality occurred in one patient in group NC due to hemorrhagic shock following fibrinolytic therapy for pulmonary embolism. Adjuvant chemotherapy after hepatectomy was performed in 3 patients (12%) and 61 patients (12%) in group C and NC, respectively ($P = 1.00$). After the median follow up period of 41 months, postoperative recurrence free (5-years, C vs. NC, 20% vs. 28%) and overall survival (5 years, 54% vs. 57%, $P = 0.89$) were comparable between the two groups.

Conclusions: Patients with CRLMs located in right side of caudate lobe frequently required extensive resection with high incidence of positive resection margin. However, the incidence of postoperative major morbidity was low and long-term survival comparable with the patients in group NC could be achieved.

Conflict of interest: No conflict of interest.

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454. Early recurrence after resection of colorectal liver metastases

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Introduction: Liver resection is the only curative treatment of colorectal liver metastases. Unfortunately in most cases, despite an R0 resection of the tumor, recurrence in the liver occurs, mostly within the first 2 years after liver surgery. Early recurrence appears in the first 6 month after surgery.

Patients and methods: Clinical data from patients with colorectal liver metastases after liver resection were analyzed. Inclusion criteria were: first liver resection, no 90 days mortality, at least 6 month follow up period.

Results: 192 patients were enrolled in this study. During a median follow up period of 25 months, 114 patients had recurrence (60%) and 27 had early recurrence (14%). In the early recurrence group the primary tumor was stage I–II in 5 cases (20%), stage III in 8 cases (30%) and stage IV in 14 cases (50%). 11/27 (40%) of the early recurrence cases had solitary metastasis, 20/27 (74%) received preoperative chemotherapy. 6/27 (22%) patients had R1 resection. In the study, we try to identify factors predicting and influencing early recurrence.

Conclusion: Despite of resection of colorectal liver metastases, early recurrence is observed in about 10–15% of the cases. There are many factors associated with early recurrence, but the selection of patients before resection who will have early recurrence is not clear. Repeat resection of early recurrence is an option with good results.

Conflict of interest: No conflict of interest.

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455. Surgical strategies and outcomes in patients with initially unresectable synchronous liver metastasis from colorectal cancer

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Background: Twenty-five percent of patients with colorectal cancer have liver metastasis (LM) at the time of diagnosis. Around 80% of these patients are considered initially unresectable and only about 10–30% are converted to resectability with neoadjuvant chemotherapy. Many of these patients require complex surgical procedures like a two-stage hepatectomy or even, in selected patients, resection of concomitant peritoneal metastasis followed by hyperthermic intraperitoneal chemotherapy (HIPEC), procedures that should be performed at highly specialized centres. Careful evaluation of these patients by a multidisciplinary team (MDT) that includes a liver surgeon is essential. The aim of this study was to analyze the different surgical strategies and outcomes in patients with LM from colorectal cancer treated in our centre and considered as being initially unresectable by our MDT.

Material and methods: Patients that underwent liver surgery for colorectal liver metastasis at our centre between January 2005 and January 2014, considered initially unresectable by our MDT, were retrospectively analyzed from a prospectively collected database

Results: Thirty-six patients with CRLM considered initially unresectable by our MDT underwent liver surgery in our centre. The main cause of non resectability was the number of LM (17 patients), followed by the presence of extra-hepatic disease (7 patients). A major hepatectomy was needed in 25 patients. Ten patients underwent a two-stage hepatectomy (in 2 of those patients an Associating Liver Partition and Portal Vein Ligation for Staged Hepatectomy, ALPPS procedure, was performed) and 10 patients were managed under the liver-first approach, one of which also needed cytoreductive surgery and HIPEC for concomitant peritoneal metastasis. One patient with synchronous unresectable bilateral lung metastasis underwent a major liver-curative hepatic resection achieving a 23-month survival. Radiofrequency ablation was performed in 22 of the 36 patients. Based on the Clavien-Dindo classification, 20 patients had complications, 14 were minor (grade I–IIIa) and 6 were major (grade IIIb–V) complications, including 2 deaths during the 90 day postoperative period. Fifteen patients had a liver recurrence, 5 of which underwent repeat liver resection. The 3 and 5-year survival rate was 32.7% and 22.2% respectively.

Conclusions: Patients with CRLM considered initially unresectable, thanks to the availability of more effective chemotherapy regimens capable of rendering inoperable disease to be resectable, can benefit from different surgical strategies that aim to achieve a complete macroscopic resection of the abdominal tumour load, which translates into higher long-term survival rates than palliative treatment. In our centre all patients are carefully evaluated by the MDT and complex surgical techniques are indicated for selected patients.

Conflict of interest: No conflict of interest.

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456. Variations of two-stage hepatectomy (PVL and ALPPS) for liver malignancies

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Background: The limiting factor for surgery of colorectal liver metastases (CRLM) is a small future liver remnant (FLR). Related data suggests that associating liver partition and portal vein ligation for staged hepatectomy (ALPPS) effectively increases the volume of the FLR allowing for resection than conventional two-stage hepatectomy with portal vein ligation (PVL). The aim of this study is to compare the hypertrophic stimulus on the FLR and the clinical changes associated with both ALPPS and PVL and assess the intermediate oncological outcomes after ALPPS in patients with CRLM.

Material and methods: Retrospective analysis of 25 patients with CRLM and hepatocellular carcinoma operated with two-stage hepatectomy technique at the abdominal oncology department P.HERZEN MORI.

Results: Twelve patients (5 male, 7 female), age 57 ± 11.6 years (39–75) were operated by portal vein ligation (PVL) techniques for 5 ± 3 (2–10), metastases of which the largest was 58 ± 27 mm (30–122). Nine (75%) patients

received neo-adjuvant chemotherapy. The median volume of the FLR before PVL was 278.3 ± 73.6 mL ($28 \pm 8.3\%$) and 333.5 ± 69.7 mL ($34.7 \pm 4.9\%$) before the second step. After the first stage of hepatic resection FLR increased by $59.5 \pm 65.9\%$ ($5-166\%$, $p < 0.05$). The second stage of hepatic resection was performed in 8 (66.7%) patients. The time between two steps of the procedure was 72.3 ± 32.8 days. There were no cases of liver failure. For stage 2, operation time was 291 ± 74.3 min and estimated blood loss 1428.5 ml (400–3000).

ALPPS was initiated in 13 patients whose mean age was 59 ± 6.3 (49–72) years. Indications for surgical resection were metastases from colorectal cancer in 11 (77%) cases and hepatocellular carcinoma in 2 cases. One patient had salvage ALPPS after failed PVL. Patients were operated for 2.8 ± 1.6 metastases of which the largest was 64.6 ± 18.8 mm (40–104). The calculated FLR volume was 313 ± 120 mL ($26 \pm 7\%$) before ALPPS-1 and 503 ± 128 mL ($43 \pm 7\%$) before ALLPS-2 ($p < 0.001$). The increase in FLR between the two procedures was $95.3 \pm 53.6\%$ (range: 13–164%, $p < 0.001$). The average time between the first and second step of the procedure was 9.4 ± 1.4 days. There was 2 (15%) postoperative death after ALPPS-1 due to hepatic failure in the patients who had a hepatocellular carcinoma and liver cirrhosis. The second surgery had a surgical time of 105.5 ± 35.5 min, an average volume of blood loss 281.2 ml (100–1000).

Conclusion: Portal vein ligation effectively increased the future liver remnant in 6–8 weeks. However, it's not possible to perform the second step in every third patient. The ALPPS technique can be associated with a hypertrophic stimulus on the future liver remnant (FLR) stronger than other techniques—such as portal vein ligation at early terms. Meanwhile, the ALPPS technique in patients with hepatocellular carcinoma associated with a high risk of fatal complications.

Conflict of interest: No conflict of interest.

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457. Hepato-pancreatic resections beyond tertiary cytoreduction for relapsed ovarian cancer

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Background: Once the benefits of R0 resection in advanced stage and relapsed ovarian cancer were widely demonstrated especially in cases presenting pelvic confined disease, attention was focused on the possibility of achieving a complete resection in cases presenting an upper abdominal involvement too. In the meantime, development reported in hepato-bilio-pancreatic surgery led to the introduction of this type of surgery as part of debulking surgery in advanced stage and relapsed ovarian cancer.

Material and methods: We present a group of 12 patients in whom hepato-bilio-pancreatic procedures (including major hepatectomies, distal pancreatectomies or pancreato-duodenectomies) were associated as part of tertiary cytoreduction in relapsed ovarian cancer.

Results: An R0 resection was achieved in all cases. The postoperative outcomes were uneventful in ten of the 12 patients. In one case a biliary fistula after a major right hepatectomy was encountered and was successfully treated in a conservative manner while in the other case a pancreatic fistula after a pancreato-duodenectomy developed and was also successfully treated in a conservative manner. At a two year follow up nine patients are free of recurrent disease, two cases are diagnosed with disseminated peritoneal and hepatic lesions and are submitted to palliative chemotherapy while one patient died of disease 14 months after performing tertiary cytoreduction.

Conclusions: hepato-bilio-pancreatic surgical procedures can be safely associated as part of debulking surgery at the time of tertiary cytoreduction and might increase survival.

Conflict of interest: No conflict of interest.

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459. Treatment of colorectal cancer patients with synchronous liver metastases: Lublin experience

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Background: Synchronous hepatic metastatic disease from colorectal cancer (CRC) is a significant clinical problem. Twenty percent of patients affected by CRC have liver metastases at diagnosis and another 30–40% develop liver metastases during follow up. For patients with isolated liver metastases regional treatment approaches may be considered as an alternative to or in combination with systemic chemotherapy. Possible approaches to this select group of patients have included a synchronous resection of the colorectal primary and the hepatic metastases or a staged resection approach. Aim of the present study is to analyse results of the combined treatment of patients with CRC and liver metastases for last 10 years.

Patients and methods: Data from 232 consecutive patients treated due to liver metastases from solid tumours of various primary localizations, during the period from 2005 to 2015 at a single institution. For further analysis 168 (80%) patients with liver metastases from CRC were selected who underwent surgical treatment as a component of multidisciplinary management. Perioperative complications were graded according to the Dindo-Clavien classification.

Results: Synchronous metastases were found in 75 (40%), metachronous metastases – in 111 (60%). In 88% patients perioperative systemic therapy was evaluated in agreement with current national recommendations. Major hepatectomy were performed in 23% patients. There were no intraoperative or perioperative deaths. Perioperative morbidity was 51%. Grade III complications were found in 7 (9%) and grade IV complications were treated in 8 (11%) patients.

One-, 3-, and 5-year survival rates were 85%, 60%, and 57%, respectively. Five-year overall survival in patients with CRC after liver resection of metachronous metastases was 63% vs 49% patients synchronous metastases ($p = 0.03$, log-rank test), survival staged vs simultaneous approaches – 46% vs 45% ($p = 0.78$, log-rank test).

Conclusion Liver resection of colorectal metastases appears highly effective in selected patients. Resected patients have good long-term survival. A multi-disciplinary approach involving surgical oncologists at diagnosis in potentially curative cases is important. No clear statistical surgical outcome or survival advantage towards staged or simultaneous approaches was detected.

Conflict of interest: No conflict of interest.

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460. Simultaneous colon resection and split in situ hepatectomy in synchronous colorectal liver metastases: Feasibility and safety

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Background: Despite the multidisciplinary experts (R. Adam et al, Cancer Treatment Reviews, 2015) have recommended neoadjuvant chemotherapy as a first-line treatment of resectable synchronous colorectal cancer liver metastases (CRCLM), up to 30% of this patients switched to unresectable condition in case of ineffective chemotherapy with potential risk to miss the possibility of resection because of tumor progression, or due to the chemotherapy-associated liver injury.

Since the benefit of simultaneous colon resection and split hepatectomy in resectable CRCLM patients is negligibly studied and therefore

was not taken into account in the mentioned recommendations, we considered to describe here our experience. Presented surgical approach potentially would allow achieving a maximum of radicalism while maintaining adequate liver function in CRC patients with multiple and huge bilobar lesions with prevalence of metastatic process in right liver lobe, particular in cases with low possibility of chemotherapy response.

The aim was to estimate the feasibility and safety of colon resection simultaneously with ALPPS (associating liver partition and portal vein ligation for staged hepatectomy), or right in situ split hepatectomy in 9 patients with multiply huge synchronous CRCLM.

Material and methods: All patients included in the study characterized by symptomatic CRC and synchronous resectable huge bilobar CRCLM with low possibility of surgical intervention after chemotherapy.

The average age of patients was 59 ± 6.7 years. ALPPS was performed in 3 cases, in situ right hepatectomy – in 6. The 1st stage of surgery included colon resection and first step of hepatectomy (non anatomical resection of left liver with/without RFA liver partition and right portal vein branch ligation). The 2nd surgery stage followed by interval amounted of right lobectomy or hemihepatectomy.

Results: The median number of metastases was 10 (from 4 to 28) with average maximum size – 12.8 ± 6.7 cm. Duration of 1st surgical stage was 348.9 ± 57.6 minutes and 197.8 ± 50.6 minutes for 2nd. The average blood loss was 496.7 ± 279.0 ml and 650.0 ± 165.8 ml for 1st and 2nd stages respectively. The interval average between two stages was 37.2 ± 13.7 days.

Postoperative complications of 3–5 according to Dindo-Clavien was observed in 4 patients: biliary fistula, peritonitis, abscess, and one liver insufficiency after two-stage hemihepatectomy resulting in death within 60 days after 2nd surgery stage.

Conclusions: Despite the great technical difficulty of simultaneously resections with in situ split hepatectomy, this strategy enable to reach R0 resection in huge multiple CRCLM with high probability of chemotherapy failure. Our experience demonstrated the approach with satisfactory mortality and postoperative complications rate. Moreover, the death could be prevented by prolongation of the interval between surgical stages.

Conflict of interest: No conflict of interest.

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461. Prognostic value of stromal caveolin-1 expression in colorectal liver metastases

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Background: Loss of Stromal Caveolin-1 (CAV1) expression is associated with poor prognosis in various cancers. In this study, we evaluated the prognostic value of CAV1 expression of both tumour cells and stromal cells in colorectal liver metastases (CRLM) in patients undergoing hepatectomy for liver-only colorectal metastases.

Materials and methods: In this retrospective study, 109 patients were enrolled. CAV1 expression was studied by immunohistochemistry. The staining was scored semiquantitatively as weak, or strong for both tumour cells and stromal cells. DFS and OS were calculated using both Kaplan-Meier and multivariate Cox-regression methods.

Results: Weak stromal CAV1 expression was associated with decreased DFS (HR 1.90; 95% CI, 1.20–3.00; $P = 0.006$) and OS (HR 2.84; 95% CI, 1.48–5.42; $P = 0.002$) in univariate analysis. This finding remained significant in multivariate analysis for both DFS and OS (HR 2.07; 95%CI, 1.29–3.33; $P = 0.002$, and HR 1.86; 95%CI, 1.17–2.96; $P = 0.008$ respectively). Tumour CAV1 expression was not

associated with DFS and OS. Five-years DFS and OS rates were 27% and 43% respectively in patients with weak and 70% and 71% respectively in patients with strong stromal CAV1 expression.

Conclusions: In this study, we indicate that weak stromal CAV1 expression in CRLM is an adverse prognostic factor in patients who undergo liver resection for liver-only colorectal metastases. We suggest validation of this finding in an independent cohort and consideration of risk stratification for post-hepatectomy adjuvant follow up and therapy.

Conflict of interest: No conflict of interest.

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462. Prognostic value of monocarboxylate transporter 4 expression in patients with colorectal liver metastases

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Background: To validate the prognostic significance of the stromal expression of Monocarboxylate Transporter 4 (MCT4) in patients with colorectal liver metastases (CRLM) treated with liver resection following neoadjuvant chemotherapy.

Materials and methods: This is a retrospective study, of 107 patients with colorectal liver metastases. MCT4 expression in stroma and in cancer cells was studied by immunohistochemistry. The staining was scored semiquantitatively as weak, or strong. DFS and OS were calculated using both Kaplan-Meier and multivariate Cox-regression methods.

Results: Specimens from 57 patients (53.27%) showed weak levels of stromal MCT4 staining, whereas 50 patients (46.73%) showed strong levels of MCT4 staining. From the statistical analysis strong stromal MCT4 expression was associated with decreased DFS (HR 1.79; 95% CI, 1.12–2.85; $P = 0.014$) and OS (HR 3.81 95% CI, 1.88–7.72; $P < 0.001$) in univariate analysis. This finding remained significant in multivariate analysis for both DFS and OS (HR 1.95; 95% CI, 1.19–3.17; $P = 0.007$, and HR 4.38; 95% CI, 2.15–8.92; $P < 0.001$ respectively). Tumour MCT4 expression was not associated with DFS and OS. Five-years DFS and OS rates were 43% and 78% respectively in patients with weak and 15% and 37% respectively in patients with strong stromal MCT4 expression.

Conclusions: Our results indicated that strong expression of stromal MCT4 in CRLM was associated with poor prognosis in patients who undergo liver resection for liver-only colorectal metastases. This finding could be further more validated in independent studies and MCT4 could be used as a new biomarker in CRLM and creates the possibility of new studies in targeted therapies.

Conflict of interest: No conflict of interest.

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463. The benefits of liver resection for isolated metachronous cervical cancer liver metastases

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Background: Although the subject of liver resections originating from various malignancies has been widely debated, when it comes to liver metastases from cervical cancer the reported results are rather scarce due to the rarity of cases in which hepatic resections are feasible with curative intent.

Material and methods: Between 2002 and 2014 13 patients were submitted to surgery for isolated cervical cancer liver metastases in Fundeni Clinical Institute, Bucharest, Romania. One patient presenting a synchronous pelvic recurrence which was also resected was excluded. The remaining 12 cases were included in the present study.

Results: Liver resection was performed after a median interval of 22 months from the time of cervical cancer surgery and consisted of major resections in four cases and minor resections in eight cases. In all cases resection was performed with curative intent, no residual disease being found at the end of the surgical procedures. During the postoperative period two patients developed liver resection related complications which were successfully managed in a conservative manner. The median overall survival after hepatic resection for cervical cancer liver metastases was 18 months.

Conclusions: Liver resection for hepatic metastases with uterine cervix origin can provide a significant survival benefit in cases in which is performed with curative intent.

Conflict of interest: No conflict of interest.

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464. Surgical rescue of unresectable liver metastases from colorectal origin after neoadjuvant treatment: Our experience

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Background: Surgery of liver metastases has increased in the last decade thanks to a multidisciplinary approach that has allowed greater therapeutic aggressiveness. Our objective is to evaluate the survival of these subset of patients (pts) treated in our hospital with a multidisciplinary approach.

Material and methods: From February 2001 to September 2013, 240 pts were treated in our hospital of which 184 were considered initially unresectable. 38 pts (21%) could be operated after an average of 10 cycles of chemotherapy with 5-fluorouracil + leucovorin combined with oxaliplatin (82%) irinotecan (3%) both (10%) + cetuximab (5%). 205 metastases were treated, an average of 5 lesions per pt and a medium size of 3,4 cm (0.7 to 21 cm). The most frequently affected segment was the third (58%) and the least affected was the I (12%). Extrahepatic disease was present in 10 pts (26%). Multifocality and extrahepatic disease was the leading cause of unresectability.

Results: Three pts underwent a left hepatectomy, 3 pts a right hepatectomy and 2 pts were performed an extended Left (1) and right (1). One pt received a central hepatectomy. 40 metastasectomies, 13 segmentectomies and 122 RFA were performed. In four cases a portal ligation and ablative treatment was performed at a first stage, and later an hepatectomy at a second stage. 8 pts (21%) an extrahepatic tumor resection was performed. Morbidity was 19% and mortality of 6% within 2 months

of postoperative follow up. After a mean follow-up of 109 months, tumor recurrence was identified in 11 pts (16%) of which 9 pts a surgical salvage was performed after chemotherapy treatment, one pt received systemic chemotherapy as a unique treatment and another pt received radiotherapy + stenting. The disease free survival has been of 13 months and the 5-year survival of 21%. Currently 9 pts are alive (7 without evidence of disease).

Conclusions: A multidisciplinary approach with modern systemic chemotherapy administration has allowed surgical salvage of 21% of our patients with 5-year survival similar to those of the literature.

Conflict of interest: No conflict of interest.

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465. Surgical aggressive treatment of primary and liver metastases of neuroendocrine tumors

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Background: In contrast to other gastrointestinal endocrine tumors, tumors of the jejunum-ileum of comparable size can behave very aggressively. According to the literature, only 23% of patients having undergone apparently curative resection were free of disease after 25 years. Regional lymph node metastases are present at the time of diagnosis in 36–39% and non-localized disease is evident in 64.1% of the patients. For localized tumors of the small intestine, the 5-year survival rate is 65–75% for regional disease, whereas for non-localized tumors the 5-year survival is 50% according to the SEER registry. The 5-year survival rate of patients with hepatic tumor spread is 18–32%.

Objective: To describe two cases of surgical aggressive treatment for primary and metastatic neuroendocrine tumor (MNT).

Case 1: Male 46 yo, diagnosed of MNT with multiple affection and heart disease (tricuspid regurgitation and severe dilatation of right cavities, he is operated: a right hepatectomy, hepatectomy subsegmentary (4b), cholecistectomy and ileal resection (primary) was made. Histopathology: Good differentiated MNT. He was discharged 19 day after surgery without complications.

Case 2: Male 52 yo, diagnosed of cecal MNT with multiple affection, he is operated: an open right colectomy, 9 metastasectomies, and vesicular implant was resected. Histopathology: Good differentiated MNT. He was discharged 10 day after surgery without complications.

Conclusions: Aggressive surgical resection for metastatic NETs with the goal of clearing all detectable disease.

Conflict of interest: No conflict of interest.

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Poster Session: Lung Cancer

475. Leiomyosarcoma of the mediastinum: An extremely rare case

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Background: Malignant smooth muscle tumors usually develop in the organs with abundant smooth muscle such as intestine, esophagus and uterus. Sarcoma developed in the soft tissue of mediastinum has not been found in the literature. We herein report a case of leiomyosarcoma of mediastinum.

Case presentation: A 44-year-old male who was diagnosed with neurofibromatosis type 1 20 year ago, was admitted to our ward because of chest

tightness, dyspnea and left supraclavicular mass for more than two months. Physical examinations revealed decrease breathing sound over left upper chest. A $5 \times 5 \text{ cm}^2$ non-movable, non-tender, elastic bulging was found over his left supraclavicular region. Chest radiography and CT scan showed a large space occupying lesion, extending between left supraclavicle, left side middle mediastinum, base of neck and paratracheal region. Excision was suggested due to tracheal compression and impairing left upper limb function. Near-total removal was performed through median sternotomy and left oblique cervical incision. His symptoms relieved afterwards. However, he refused further adjuvant therapy and recurrence was noted 3 months later. He died after living for another 4 months. Immunohistochemical studies with vimentin, smooth muscle actin and sarcomeric actin showed positive staining. On the other hand, s-100 and desmin revealed negative results. We then concluded that leiomyosarcoma was most likely.

To our knowledge, case of similar type has never been reported in the literature.

Conflict of interest: No conflict of interest.

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476. Highly enhanced ErbB signaling pathway was unveiled in lepidic predominant invasive lung adenocarcinoma

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Background: This study aims to identify proteins characterizing each group by the proteomic method using formalin fixed paraffin-embedded tissues, which will serve as the protein expression panel of Minimum invasive adenocarcinoma (MIA)/Adenocarcinoma in situ (AIS) for both molecule-based diagnosis stratifying patients for their treatment strategies. We have unveiled the stage-related proteomic profiles since chemotherapeutic treatments could be explored for MIA/AIS patients.

Material and methods: A total of nine adenocarcinoma tissues were selected from their archives based on AIS, MIA, and lepidic predominant invasive adenocarcinoma (LPIA). Hematoxylin-stained thin sections of these FFPE tissues were subjected to collecting the tumor regions and the peripheral non-tumor regions in the manner of laser microdissection (LMD). Using liquid chromatography-tandem mass spectrometry (MS/MS), protein compositions were compared with respect to the peptide separation profiles among the tumor collections and the non-tumor cells. Proteins identified by database search were semi-quantified by spectral-counting protein-based approach, and statistical evaluations for identified peptides/proteins have been applied to elucidate protein candidates significant to each group.

Results/Discussion: A total of about 840 proteins were identified from the four groups (pseudo-normal, AIS, MIA, and LPIA) with their identification significance of $p < 0.05$. Spectral counting-based semi-quantitative comparisons of all identified proteins through AIS to LPIA have revealed that the protein expression profile of LPIA was significantly differentiated from other subtypes. Protein-protein interaction network analysis demonstrated the notable association of LPIA with the disease of cellular proliferation ($p = 1.19 \times 10^{-5}$), cancer ($p = 3.39 \times 10^{-6}$), pathways in cancer ($p = 1.11 \times 10^{-8}$), ErbB signaling pathway ($p = 1.61 \times 10^{-8}$).

Interestingly, all these proteins seem to be expressed along with the aggressive tumor progression and proliferation.

Conclusions: In-depth proteomic analysis found proteins associated with histological types, in which a quite distinct profile of protein expressions has been unveiled in LPIA. Those results for GGO lesions would provide the useful knowledge of disease-oriented proteins as well as clues to describe mechanisms of the early-stage progression of lung adenocarcinoma.

Conflict of interest: No conflict of interest.

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477. Surgical treatment of pulmonary metastases: Analysis of 80 our patients

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Introduction: The first surgical resection of a pulmonary metastasis was performed in 1855. This was followed in 1882 by an en bloc resection of the chest wall and adjacent lung metastasis for sarcoma. Planned resection of a pulmonary metastasis was reported in Europe in 1927. Interest in pulmonary metastasectomy was fuelled by a 1939 report of right lower lobectomy for metastatic renal cell carcinoma; the patient died 23 years later of coronary artery disease. In 1945, Alexander and Haight demonstrated significant 3-year survival in 24 patients who underwent elective resection of metastatic pulmonary lesions. There are five primary criteria for surgical resection of pulmonary metastases: (1) no disease at the site of the primary tumor; (2) no metastases outside the lungs; (3) no nonresectable pulmonary nodules; (4) no nonsurgical alternative for cure; and (5) no evidence that the patient cannot tolerate the proposed surgical therapy.

Objective: The aim of this study is to analysis long term survival in patients with lung metastasis undergoing lung metastasectomy.

Methods: This is a retrospective review was performed of patients with lung metastases, and after treatment of a primary tumor and was treated for lung metastasis by thoracotomy, pulmonary metastasectomy.

Results: Patients ($n = 80$) were submitted to a total of 68 thoracotomies on 30 patients was performed single metastasectomy with size 0.5–7 cm, 20 patients multiple metastasectomy mean number 3 lung metastasis (range from 2–21 metastasis) and 12 total median sternotomy for bilateral lung metastasis. Kind of interventions realized: 42 Patients treated with cuneiform resections metastasectomy of single pulmonary metastases that, in 20 patients was conducted multiple cuneiform metastasectomy. On 10 patients were treated with lobectomy, 5 patients no anatomical segmentectomy, 1 patient right lower bilobectomy, 1 one patient anatomic lingulectomy, whereas in one patient is performed light upper lobe metastasectomy after he was treated for primary lung tumor of the left lung by left pneumonectomy. Median follow-up time 11.6 across all patients was 11.6 months (range: 0–49.6 months). The postoperative complication rate was 13%, and the 30-day mortality rate was 2%. The 5-years survival rate for all patients was 20%. Before operation for to identified the number of pulmonary nodules detected on preoperative CT-scan, the number of malignant nodules resected, and complete resection as the independent prognostic factors for overall survival.

Conclusion: This study identified a group of patients who may benefit from pulmonary metastasectomy. These results confirm that lung metastasectomy is a safe and potentially curative procedure for patients with treated primary tumours. A select group of patients can achieve long-term survival after resection.

Conflict of interest: No conflict of interest.

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Poster Session: Melanoma

500. FDG-PET surveillance imaging in high-risk melanoma patients: Time for change?

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Background: AJCC stage III-B and III-C melanoma patients are at risk for disease relapse or progression. The advent of effective systemic therapies has made curative treatment of progressive disease a possibility. Since resection of oligometastatic disease confers a survival benefit and immunotherapy is most effective in a low tumour load setting, there is a likely benefit to early detection of disease progression. The aim of this study was to evaluate a PET/CT surveillance schedule for resected stage III-B and III-C melanoma.

Material and methods: From 1-2015, stage III-B and III-C melanoma patients at our institution underwent 6-monthly surveillance with PET/CT, together with 3-monthly s100b assessment. When symptoms or elevated s100b were detected, an additional PET/CT was performed. Descriptive statistics were used to evaluate outcomes for this surveillance schedule.

Results: Twenty-two patients underwent PET/CT surveillance according to the 6-monthly schedule. Seven III-B patients and 15 III-C patients were included. In the III-B group, relapses were identified in 2 patients, both asymptomatic, with a normal range s100b at the time of scanning. In one patient, regional nodal metastasis was found, which was managed with surgery. In another patient, visceral metastasis was found, after which systemic therapy was initiated. In the III-C group, relapses were identified in 9 out of 15 patients. One patient had in-transit metastasis and two patients had regional nodal metastasis, which were managed with surgery. Six patients had visceral metastases for which systemic therapy was initiated. In 4 out of 9 cases, s100b was elevated. PET/CT identified asymptomatic metastases in 5 out of 9 cases.

Conclusions: PET/CT can effectively detect metastases in high-risk melanoma patients before onset of symptoms or elevation of s100b. This allows treatment of disease in an early stage. The question whether this translates into a survival benefit needs to be addressed in a randomized controlled trial.

Conflict of interest: No conflict of interest.

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502. The analysis of 222 procedures of sentinel node biopsy in patients with cutaneous melanoma performed in one unit within 5 years

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Background: Sentinel node biopsy (SNB) is the standard surgical procedure for patients with cutaneous melanoma without clinical metastases to regional lymph nodes and feature T of TNM classification over pT1a.

Methods: A total of 222 of patients with cutaneous melanoma, who had undergone sentinel node biopsy (SNB) between 2010 and 2015, were identified in this study. The average age of patients was 59 years, the study included 136 women and 86 men. The location of primary focus was as follows: 126 on the limbs, 88 on the trunk, 8 on the head and neck. The median Breslow depth of the tumor was 3.51 mm (pT1a – 5 patients, pT1b – 30, pT2a – 56, pT2b – 11, pT3a – 36, pT3b – 26, pT4a – 20, pT4b – 35, no data – 3) and the average mitotic rate was 4.96 mitoses/mm². The follow-up was carried out an average of 25.1 months. Patients before surgery had performed a standard clinical assessment of the disease. About 2 hours before surgery, patients were receiving the isotope, then lymphoscintigraphy and SPECT were performed. Additionally, in the operating room they were given the dye Patent Blue.

Results: Sentinel node (SN) was identified in 217 patients (98%), the average number of excised-SN was 2.25. Twenty-seven patients (12%) had metastases in the SN; in 25 of them the complementary lymphadenectomy was performed (2 patients did not agree to further surgery). In the whole group during the observation period 31 disease recurrences were recorded, usually in the form of distant metastases. In patients with a positive SNB, 10 relapses were reported (37%), in group with negative SNB – 20 (10.5%), moreover 1 relapse occurred in the group of 5 patients, who did not have SN identified. Patients with positive SNB had deeper melanomas (Breslow 4.48 mm vs. 3.37 mm), with higher mitotic rate (mitosis 5.26/mm² vs 4.93 mitoses/mm²) in comparison to SNB-negative group. Recurrence in regional lymph nodes was recorded in only 5 (2%) patients with negative SNB. Patients with relapse of the disease recorded, were also characterized as older (mean age 63.6 years vs. 58.2), having deeper primary lesions (Breslow 6.1 mm vs 3.06 mm), with higher mitotic rate (8.3 mitosis/mm² vs. 4.5 mitosis/mm²) and more frequent ulceration (55% vs. 30%).

Conclusions: SNB is a precise method of identifying patients with metastases to the regional lymph nodes. The presence of metastasis in SN indicates a higher risk of disease recurrence. Patients with the recurrence of disease are usually older and have higher stage of local advancement of melanoma with unfavorable biological characteristics.

Conflict of interest: No conflict of interest.

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503. Melanoma: Prognostic factors in 5 years of follow up

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Background: Melanoma has been increasing in the last few years. We evaluated some populational and histological factors and its role in the prognosis of this patients.

Material and methods: This is a retrospective study. The patients in our study had histologic diagnosis of cutaneous melanoma in 2010. They were followed for 5 years. The statistic analysis was made with

SPSS 23 version using the chi square test and Kaplan Meyer survival curves.

Results: We analysed 168 patients, 18 were excluded (stage IV at diagnosis, lost in follow up, non cutaneous melanomas and unknown primary). We had 150 patients included in the study. 57% were female. The majority of the patients had between 60 and 69 years old. The most frequent place of the body affected was the leg (46%), the less affected was the arm (7%).

Most of the patients ($n = 55$) had a Breslow <0.75 . The majority was in stage I at the diagnosis, 23% at stage II, 18% stage III and 9% stage 0.

In five years we had 35 relapses. These, 54% occurred in the first 2 years of follow up and 88.5% occurred in the first 3 years.

The relapse was local, regional and/or systemic. Most of the patients had disease in two or more places when the relapse was diagnosed. The lung was the most affected organ when there was a systemic disease.

After 5 years of follow up we achieved 74.8% of free disease survival.

We achieved a statistically significant difference between the patients with Breslow inferior to 2 millimeters comparing with the patients who had more than 2 millimeters.

Patients with 2 or more mitosis had a significant poorer prognosis.

Conclusions: Cutaneous melanoma in the early stages has excellent prognosis. Mitotic rate seems to be important not only in the early stages. Other important characteristics that had statistically significance were Breslow, the existence of ulceration, linfovacular invasion, microsatellitosis and Clark level.

It's essential to do an early diagnosis in order to save lives.

Conflict of interest: No conflict of interest.

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504. Skin sonography in regional recurrence of melanoma treatment R. Czarnecki, K. Dąbrowski, W. Witkiewicz

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Background: Sonography/ultrasound/ of skin by linear transducer is helpful in the treatment planning of regional recurrence of melanoma.

Examination during patient follow – up and intraoperative allows to detect small subcutaneous lesions earlier than palpation. It enables better disease staging and treatment planning

Material and method: In our center ultrasound scanner is used by surgeon at the clinic. If the in – transit metastases are suspected it is possible to run quick test during the visit, locate lesions in subcutaneous tissue and plan surgical procedure. Linear transducer of 7.5 MHz is used for scanning skin, subcutaneous tissue around primary tumor or scar after excision. In – transit metastases appear as hypochoic round and sharp contour. In most cases recurrence is so extense that does not qualify to surgical treatment (excision/cryosurgery/electrosurgery). Those patients are directed to isolated perfusion in conditions of hyperthermia or systemic therapy. In ours studies of three patients, during sonography, countable amount of less than ten in – transit metastases were detected on limbs. New lesions appeared in 6 to 9 months cycles. After ultrasound examination and recurrence detection the surgical treatment was performed. Excision of metastases or surgical-freezing of lesions visible on the skin were held with intraoperative guidance of sonography. Removed changes were small with diameter less than 8 mm. Excision was simple and did not require plastic techniques.

Results: One of the patient died because of melanoma dissemination. Two patients are alive and under constant clinical control, in transit metastases are removed periodically.

Conclusion: 1. Sonography examination allows to detect regional recurrence of melanoma in skin and subcutaneous tissue during preclinical period. 2. Intra operative sonography allows exact localization of lesions requiring removal. Making procedure easy, the diameter of excision small, less invasive for the patients and possible to be done in one day. 3. Introducing skin sonography for routine diagnostic process makes treatment more effective.

Conflict of interest: No conflict of interest.

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Poster Session: Minimally Invasive Surgery

525. Preliminary results of minimally invasive inguinal lymph node dissection in Egypt

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Background: Inguinal lymph node dissection is an integral part of many surgical oncology procedures targeting penile, vulvar, scrotal and anal cancer, melanoma and squamous carcinoma of lower trunk and lower limb. This operation comes with a very high morbidity rate the most common being skin complications.

In an attempt to minimize complications endoscopy was first proposed in 2003 and has been since been adopted as a new valid alternative for the open technique. In this ongoing series we apply this technique in Egypt for the first time to test its feasibility and efficacy.

Material and methods: Procedures are performed via three ports: one at the apex of the femoral triangle, a second medial to the adductors, and the third lateral to the sartorius. No inguinal incision is needed. After developing a plane deep to Scarpa's fascia and infusing CO₂ gas at 15 mmHg, a retrograde dissection with the same limits as the standard open surgery is performed. Femoral vessels are skeletonized, and all lymphatic tissue within the femoral triangle up to the inguinal ligament

are resected. Specimens are removed through the apical port via a specimen bag.

In our series twenty minimally invasive inguinal lymphadenectomies will be compared to 20 open inguinal lymphadenectomies regarding peri-operative data including time, complications and length of hospital stay, number of retrieved lymph nodes.

Results/Discussion: So far eight minimally invasive inguinal lymphadenectomies were done with similar number of retrieved nodes when compared to the open group with decrease of operative time from 270 min in the first case to 60 min in the last 2 cases denoting an easy learning curve with only one case being converted to open method due to bleeding from saphenous vein due to adherent bulky nodes which necessitates proper patient selection.

Conclusion: Preliminary results are promising and show that minimally invasive inguinal lymphadenectomy seems to be a feasible safe procedure and a valid alternative to the traditional open technique. Completion of the cases in the series is needed to confirm these results.

Conflict of interest: No conflict of interest.

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526. A case of esophageal carcinoma, which performed laparoscopic Y gastric tube for esophageal bypass

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Background: Y gastric tube esophageal bypass for unresectable esophageal cancer have surgical stress, and often after operation course have frequent complications and poor prognosis. Laparoscopic surgery has possibility to decrease this surgical stress but it is difficult to make gastric tube in abdominal cavity with laparoscopic procedure.

Methods: A 73-year old male with advanced tumor at middle third of esophagus was admitted to our hospital. He received chemotherapy with cisplatin and 5-FU for 2 cycles. After chemotherapy, an endoscope could not pass through the stricture in the esophagus. Laparoscopic Y gastric tube for esophageal bypass was performed. Tri-Stapled RadialReload (Curved Stapler) was used for making gastric tube.

Results: The operation was performed in 260 min with 20 ml blood loss. Postoperative course had no events, and no postoperative complication. The patient was able to eat most foods for 30 days. The patient died by the carcinomatosis 43 days after operation.

Conclusion: Y gastric tube for esophageal bypass for unresectable esophageal cancer have much surgical stress, but often after operation course have poor prognosis. Stent methods have few stress but this method provide poor quantity essential. Laparoscopic surgery is few invasion surgery, so Laparoscopic Y gastric tube for esophageal bypass have possibility to decrease this surgical stress. Tri-Stapled RadialReload is useful for making gastric tube.

Conflict of interest: No conflict of interest.

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527. Permanent implantable central venous catheters under ultrasound guidance as a part of one-day surgery

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Background: Totally implantable central venous catheters (CVC) are of great importance for oncological patients in order to administrate chemotherapy if there are any difficulties or no possibility to continue the treatment with the use of peripheral vessels. It provides patient's comfort, desirable cosmetic effect, reduces the pain and stress during treatment.

Material and methods: The retrospective analysis of the protocols of CVC implantation in patients treated for various malignancies between 2007 and 2014 in one institution was performed. In 509 patients (54.4% women and 45.6% men) implantation of CVC was performed after careful physical examination and analysis of laboratory tests. The CVC placement was performed by experienced surgeon as a part of one-day surgery using minimally invasive procedure in 1% lignocaine solution anaesthesia. Since 2009 the procedure was performed under ultrasound guidance aimed to localize venous vessels, and thoracic/neck radiogram was used only for verification of final CVC placement.

Results: Four hundred forty six procedures of CVC implantations and 63 of removing were performed. CVC was implanted in the treatment of: colorectal (47%), gastric (11.2%), breast (8.6%), pancreatic (8.6%), ovarian (8.2%), and other carcinomas (16.4%).

Access to the vena cava superior was obtained through the right internal jugular route (82.7%), left jugular vein (11.6%), right subclavian vein (4.2%), left subclavian vein (1.4%).

The following complication rates were documented in consecutive years: 6.8% (2007); 5.1% (2008); 2.7% (2009), 4.8% (2010); 5.3% (2011); 4.5% (2012); 2.7% (2013); 0% (2014).

Perioperative complications were associated with: hematomas occurring in the pocket under the catheter port, hematomas occurring in the carotid area, failed cannulations, peripheral catheter placement.

There were also post implant complications which caused removal of the port: inflammation of the sub-catheter pocket, catheter migration, occluded catheters, vena cava superior syndrome, membrane leakage, leakage from the vessel wall, thrombosis.

Conclusions: CVC placement if performed by experienced surgeon as a part of one-day surgery is safe procedure. The frequency of complications and unsuccessful implantation attempts have been successfully reduced due to a detailed patient selection and utilizing ultrasound guidance.

Conflict of interest: No conflict of interest.

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528. Comparison of patients who underwent laparoscopic versus open surgery for colorectal cancer: Tertiary care centre experience

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Background: Laparoscopy with small incisions and quick recovery has revolutionized abdominal surgery. Most of times it is being used for benign diseases but now more and more malignant diseases are also being treated. Aim of this study was to determine the clinical effectiveness and cost effectiveness of laparoscopic surgery in comparison to open surgery for the treatment of colorectal cancer.

Material and method: Patients who had undergone elective open or laparoscopic surgery for colorectal cancer from Jan 2006 to Jun 2013 were analyzed. Age, gender, body mass index (BMI), American Society of Anesthesiologists (ASA) score, clinical stage and type of resection were matched. 244 patients (130 by laparoscopic surgery and 114 patients by open surgery) were selected for analysis. Intra operative time, postoperative data and long term survival were evaluated.

Results: There was no significant difference in preoperative data between the two patient groups. Operative time was significantly longer in laparoscopic group whereas amount of blood loss was significantly lower in laparoscopic group than in open group. The mean number of harvested lymph nodes was significantly higher in laparoscopic group than in open surgery group. There was no significant difference in overall survival or recurrence free survival.

Conclusion: Laparoscopic surgery for patients with colorectal cancer produces the same long term results compared with open surgery in terms of survival and recurrence. Laparoscopic approach to colorectal cancer results in smaller incision, reduced pain, less postoperative narcotic requirement, shorter hospitalization and quicker recovery.

Conflict of interest: No conflict of interest.

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529. Retrospective study of modified video-endoscopic versus open inguinal lymphadenectomy

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Background: Inguinal lymph node metastases are conventionally treated with open inguinal lymph node dissection (OILND) which has high postoperative morbidity. Minimally invasive approach is an alternative that can be utilized for reducing the morbidity. The aim of this study is to compare the immediate postoperative short-term outcomes of lateral approach video-endoscopic inguinal lymph node dissection (L-VEIL) vs OILND.

Material & methods: We conducted a retrospective analysis of inguinal lymphadenectomies performed for various cancers (penile and vulval

carcinoma, melanoma, others) at our institute between January 2012 and December 2015. Only cases with clinical N0 status and operable primary tumours were included in the study. The modified technique of VEIL used here involves placement of all three ports lateral to femoral triangle. We had 24 cases undergoing L-VEIL and 92 cases of OILND. Patient characteristics, operative outcomes and 30-day morbidity were evaluated.

Results: Both the groups were similar in patient characteristics with no statistically significant differences in patient age, gender, body mass index or smoking status. L-VEIL required longer operative time (94.5 vs 68.1 min, $p = 0.08$) but had less blood loss (23.3 vs 64.8 ml, $p = 0.002$). The wound dehiscence rate (0 vs 24 %, $p = 0.005$), flap necrosis rate (2.7 vs 46%, $p = 0.0006$), hospital readmission rate (0 vs 13 %, $p = 0.005$), and hospital length of stay (3 vs 8 days, $p = 0.0002$) were all lower in the L-VEIL group. The lymph node count was significantly higher (11.04 vs 8.38, $p = 0.001$) for L-VEIL compared with OILND.

Conclusions: L-VEIL is a safe and feasible alternative for radical inguinal lymph node dissection that provides equivalent lymphadenectomy and reduced post-operative morbidity in comparison to OILND.

Conflict of interest: No conflict of interest.

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530. Minimally invasive surgery for the treatment of colo-rectal adenocarcinoma: Laparoscopic and robotic approach

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Background: Minimally invasive approach has gained interest in the treatment of patients with colorectal cancer. The purpose of this study is to analyze the differences between laparoscopy and robotics for the treatment of colorectal cancer in terms of oncologic and clinical outcomes and to analyze the learning curve of robotic surgery in an initial experience at a single Italian center.

Materials and methods: Clinico-pathological data of 141 patients surgically treated for colorectal cancer from January 2006 to February 2016 with laparoscopy and robotics were analyzed. The procedures were: right, transverse, left colonic and rectal resections. A comparison between the laparoscopic and robotic resections was made and an analysis of the learning curve of the robotic approach, based on the operative times, was also carried out.

Results: Seventy-five patients underwent to robotic resections and 66 underwent to laparoscopic resections. The two groups were comparable with respect to gender, sex, tumor stage, tumor location and type of surgical procedure. The post-operative mortality was 0.7%. The margins were always free of tumor. The conversion rate was 6.7% for robotics and 6.1% for laparoscopy ($p = 0.94$). Major complications (Clavien-Dindo III–IV) were registered in 9 cases: 5 in the robotic group and 4 in the laparoscopic group ($p = 0.97$). No differences in terms of post-operative stay, number of lymph nodes harvested and number of positive lymph nodes were found in the two groups for each procedure (right hemicolectomy, left hemicolectomy, rectal resection). Operative time was always lower in laparoscopy. The learning curve (Loess curve of the operative time) was of: 13 procedures for right hemicolectomy, 13 for left hemicolectomy, 15 for rectal resection. In the comparison of the last robotic procedures and all the laparoscopic procedures, no statistical difference in terms of operative time was found in any procedure.

Conclusions: This initial experience has showed that robotic surgery for the treatment of colorectal adenocarcinoma is a feasible and safe procedure not inferior to standard laparoscopy in terms of oncologic and clinical outcomes. After completing the learning curve, robotic approach is not inferior to standard laparoscopy in terms of operative time. Further investigation is needed to demonstrate the supposed superiority of robotics over laparoscopy.

Conflict of interest: No conflict of interest.

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Poster Session: Multidisciplinary Approach to Cancer

550. Multidisciplinary team in the treatment of breast cancer – The role of preoperative meetings

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Background: Recent advances in the diagnosis and treatment of breast cancer have increased the complexity of therapeutic decisions. Thus, a multidisciplinary team (MDT) approach to breast cancer management should be a gold standard. The aim of this study was to evaluate MDT decision making and the impact of preoperative meetings on the treatment sequence and the extent of surgical breast and axilla operation in a newly formed breast unit within the regional comprehensive cancer centre.

Material and methods: Breast cancer MDT management policy has been formally implemented in our institution since the January 2015. After completion of diagnostic process and defining disease stage each patient is appointed to outpatient counselling, examined by the consulting surgeon, and, if wants to be treated in our institution, referred to the breast MDT meeting before starting the therapy. Medical records of all referrals to MDT during first year of its operating were reviewed. Patients assessed by the surgeon as primarily operable entered the analysis. MDT

decisions were compared to primary surgeon's decisions and classified as concordant and discordant. Details of discordant decisions were investigated.

Results: There were 389 (84%) concordant and 74 (16%) discordant decisions. In 38 patients (8.2% of all, 51% of discordant) treatment sequence was changed by MDT, favouring preoperative systemic therapy: primary chemotherapy in 26 women (5.6%) and primary hormone therapy in remained 12 (2.6%). In 36 patients (7.8% of all, 49% of discordant) surgical intervention with regard to breast or axilla was changed. Extent and type of breast operation was recommended on the basis of patient's preferences, surgical variables (lesion size and location, tumour size/breast volume ratio), radiological reassessment of mammograms, ultrasound reports and MRI (when appropriate) as well as the presence of contraindications to radiotherapy. Decision was discrepant in 30 (6.5%) women. For 22 (4.8%) patients mastectomy instead of breast conserving surgery was considered a preferable option. In contrast, 8 women (1.7%) were referred to breast conservation instead of mastectomy. In cases of disagreement in nodal assessment between clinicians and radiologist as well as when discrepant ultrasound reports were present axillary nodes were re-evaluated and fine-needle aspiration was completed. As a result, in 6 patients (1.3%) primary surgeon's decision regarding axillary procedure was changed. Four were referred to sentinel node biopsy instead of axillary dissection while in two others axillary dissection was recommended instead of primarily assumed sentinel node biopsy.

Conclusions: Preoperative MDT meetings seem to be important in treatment decision-making process because the sequence of therapy as well as the type of surgical intervention can be changed in considerable rate of patients.

Conflict of interest: No conflict of interest.

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551. Prospective observational study of assessment of morbidity in cases of peritonectomy with intraperitoneal chemotherapy

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Background: Cytoreductive surgery and hyperthermic intraperitoneal chemotherapy increases progression-free and overall survival in patients with peritoneal carcinomatosis of appendicular or colorectal origin. The morbidity associated with this procedure is significant (30–52%). This modality is also routinely used in other peritoneal diseases with improvement of outcome. The aim of this study was to analyze the morbidity associated with this procedure.

Materials and methods

Inclusion criteria: Patients of age 18–65 years, Peritoneal spread in ovarian, gastric and colon malignancies.

Exclusion criteria: Parenchymal metastases, gross retroperitoneal lymph node metastases, hydronephrosis/hydronephrosis, small bowel obstruction. Based on the preoperative investigations, neoadjuvant chemotherapy was administered. 3 cycles of carboplatin and paclitaxel given preoperatively. Cytoreductive surgery was carried. Peritoneal carcinomatosis index was estimated.

Hyperthermic intraoperative intraperitoneal chemotherapy: After the cytoreduction was complete, the abdomen and pelvis was instilled with Cisplatin (50 mg/m²) and Doxorubicin (15 mg/m²) or Mitomycin C (10 mg/m² in females, 12.5 mg/m² in males) in the operating room at approximately 42 °C in 2 litres of water for 60 min.

Results: In our study, 60 patients with peritoneal carcinomatosis in various malignancies like carcinoma of stomach, ovary, and colon were considered. Average age being 49.38 yrs. 90.6% of the cases were female. 71.9% of the population had ovary cancer, 12.5% colon cancer. 10 out of 60 patients expired. 1 out of 10 patients expired was having PCI Score <20 and rest 9 patients were having PCI score > 20. Morbidity observed is as follows: 3 patients developed Anastomotic Failure, 9 patients had wound infection, 7 patients had respiratory distress, 3 patients had pleural effusion, 3 patients had pneumonia, 5 patients had ARDS, 8 patients had hypotension.

Conclusion: In this study mortality (16.66%) was higher as compared to worldwide. Higher mortality rate may be due to extensive nature of disease and the extensive dissection required in cytoreductive surgery (CRS). Morbidity associated with respiratory system and haematology was common. Major cause of mortality in patients was ARDS. Neutropenia was observed in 31.25% patients, thrombocytopenia in 25% patients. Despite continuing advances in systemic chemotherapy, long-term survival is reported in peritoneal carcinomatosis patients. Hence it is advisable in a patient with peritoneal carcinomatosis in various malignancies.

Conflict of interest: No conflict of interest.

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552. Value of endoscopic procedures for diagnostic and treatment of metastatic breast cancer

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Background: Breast cancer is a tumor with high metastatic potential. Success of the breast cancer treatment depends not only on molecular and biological characteristics of the tumor but also on the stage of the tumor. It's extremely important to detect metastatic lesions when they are asymptomatic, and to perform correct follow up. At the same time any focal changes can be caused either by tumor, or inflammation. According to the literature and own experience pleural effusion may be the manifestation sign of metastatic breast cancer. Cytological examination of pleural effusion doesn't always satisfy oncologists' diagnostic needs because of the high rate of false negative results and lack of opportunities for additional histological and immunohistochemical tumor examination. In this clinical setting thoracoscopy and mediastinoscopy may provide valuable diagnostic input.

Materials and methods: From January 2014 to December 2015 we performed 36 thoracoscopies with pleural biopsy and 10 mediastinoscopies with lymph node biopsy in 46 patients with breast cancer at the department of thoracic surgery at the National Medical University. Indications for thoracoscopy and pleural biopsy were pleural effusion established by X-ray, ultrasonography or computed tomography of the chest. Among them 6 patients had newly diagnosed breast cancer with pleural effusion, and 30 patients had breast cancer treated, but presented with pleural effusion. Cervical mediastinoscopy was performed in patients who had serum CA-15-3 increased 1.5-3 times above the norm, but had no pathological changes detected on X-ray, ultrasonography, computed tomography of the chest. There was focal accumulation of radiopharmaceutical in mediastinal lymph nodes on PET-CT.

Results: Thoracoscopy. Among patients with primary breast cancer 4 (66%) had metastatic pleural effusion. Among 30 patients with pleural effusion before breast cancer treated, 23 (77%) have metastatic pleural effusion. Mediastinoscopy. Pathology in 6 patients revealed metastases to lymph nodes, and systemic anticancer therapy was initiated. Other changes in removed lymph nodes included anthracosis and nonspecific inflammation. One patient had increased tumor marker due to rheumatism. One had post-radiology pulmonitis of high grade. Following endoscopy all patients received treatment according to their basic diagnosis and comorbidity.

Conclusions: The biopsy of the parietal pleura and lymph nodes, which can be done during thoracoscopy and cervical mediastinoscopy is important diagnostic tool, which allows to exclude or confirm metastatic lesion. This provides additional benefits for further treatment and it also prevents ungrounded medicine prescription for patients without recurrency of breast cancer.

Conflict of interest: No conflict of interest.

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554. Do we know everything about the effective multidisciplinary diagnostic and follow up procedures performed in patients with rare synchronous double cancers? An single-center case series analysis and review

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Background: Synchronous cancer is an extremely rare in occurrence. It is characterized by the existence of two or more histologically distinct malignancies following each other in sequence by less than six months. In several studies the problematic aspects of the most effective creation and use of multidisciplinary diagnostic and follow-up procedures has been described. But it is also noted that there is a still a lack number of

centers creating and systematically using an expanded criteria to avoid future misdiagnosis of unexpected multiple malignancy.

Material and methods: The aim of our study was to analyze the single-center case reports of patients with finally diagnosed synchronous double cancers and to present the multidisciplinary diagnostic and follow-up tracks performed in this specific group. Additionally we have presented in our work the novel and currently used schemes and potentially useful recommendations and guidelines concerning the discussed topics.

Results: In our work we have presented selected examples of case reports from our center concerning to the effective multidisciplinary diagnostic and follow up procedures performed in patients with rare synchronous double cancers. We have also obtained the specific analysis data from the currently published literature and we have presented the potential optimal multidisciplinary diagnostic and follow-up procedures and scenarios supporting the fast, comprehensive and maximally individualized anti-cancer treatment.

Conclusions: We hope that this work will shed the light on this subject and alert physicians to the possibility of the development of synchronous cancer and the importance of performing early multidisciplinary follow up scans after the initial tumor therapy cessation. Also we want to report our self-case reports to avoid future misdiagnosis of unexpected multiple malignancy and to show that the number of synchronous double or multiple cancer cases is still growing and that more clinically unexpected coincidences are likely to emerge.

Conflict of interest: No conflict of interest.

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555. Zebra tumor in uncommon location as a therapeutic challenge K. Szewczyk¹, K. Rachunek², J. Slusarczyk², A. Maciejczyk³, U. Staszek-Szewczyk⁴

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Background: Carcinoid thymic tumors represent a very rare group that constitute only for 2–4% of all anterior mediastinal masses. As the neoplasm is rare and some available treatment options were not efficiently tested, further evaluation is necessary to determine the best standard of care.

Case description: 34-years-old male, Caucasian, contacted his general practitioner due to radiating chest pain. An X-ray followed by a CT scans revealed a mass in the anterior mediastinum, sized: 9.3 × 5.8 cm. Biopsy displayed mixed morphology of the tumor with atypical carcinoid and large- cell neuroendocrine carcinoma components. Due to advanced local stage of the disease with major blood vessels infiltration and left brachiocephalic vein stricture, neoadjuvant therapy with 7 courses of cisplatin and 4 of somatostatin was administered. Partial response enabled extensive surgical approach with vascular prosthesis implantation. The patient didn't approve such extensive plan which resulted in performing R2 resection. Postoperative SPECT scan revealed no radioactive tracer uptake in residual mediastinal mass, although abnormal concentration in pancreas was displayed. The patient underwent radical adjuvant radiotherapy concerning residual tumor mass and operated area, with further plan to evaluate suspicious pancreas radioactivity. Recent PET scans showed abnormal metabolic activity concerning lesions in lungs (SUV max 2,7–3,2) of unknown nature and no other relevant findings.

Discussion: Most authors go along with published guidelines and perform surgery in an adequate cases. Such approach concerned our patient. Postoperative radiotherapy was administered due to risk factors and based on NCCN guidelines.

Conclusions: Complexity of this rare case illustrates difficulties occurring in planning the treatment of uncommon malignancies.

Conflict of interest: No conflict of interest.

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557. Synchronous liver and head and neck cancer: Which neoplasm to tackle first

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Background: Multiple primary malignancies in a single patient were first reported by Billroth in 1879.

The frequency of multiple primary tumors has been reported between 3.7% and 12% of all cancers.

Extra-hepatic primary malignancies (EHPM) in the setting of hepatocellular carcinoma (HCC) are frequent, especially if cirrhosis is also present, most of them presenting synchronously (76.7%). It is classically stated that EHPM do not significantly influence the survival of patients with HCC but pharyngeal squamous cell carcinomas are rare events in the published literature. We report on a patient with synchronous liver and pharyngeal carcinoma and discuss the rationale behind the treatment sequence.

Case presentation: A 55 year old male, with alcohol related liver cirrhosis Child Pugh A and current smoker with chronic obstructive pulmonary disease was referred to our center after a contrast-enhanced computerized tomography, performed for respiratory tract infection at the primary care facility, showed a well-circumscribed mass with a large exophytic component measuring 15cm × 9cm × 11.5 cm favoring the diagnosis of a HCC. Concurrently, the patient complained ofodynophagia and a mass in the soft palate was observed. Biopsy was positive for a squamous cell carcinoma. Pharyngeal carcinoma was staged as a T2N0M0 and the HCC as a T3bN0M0. After multidisciplinary evaluation, the patient was submitted to partial pharyngectomy and bilateral neck dissection. Left portal vein embolization was deemed necessary for safer liver resection and was performed 1 month after surgery. A left lateral hepatectomy was then performed.

Pathology report confirmed the diagnosis of a squamous cell carcinoma of the soft palate with lymph node involvement staged as a T2N2M0 and a HCC measuring 17 cm.

Patient is currently on the first year of follow up without recurrence of either malignancy.

Conclusion: Synchronous malignancies raise the question of treatment sequence, i.e., which primary should be treated first. HCC has the highest rate of synchronous tumors and the most common site of EHPM is colorectal. Although HCC and head and neck cancer share risk factors, the presence of both cancers is rare and conclusions regarding prognosis are difficult to extrapolate. Even if the prognosis depends on HCC, in the current case an inversion in treatment sequence was favored based on the fact that the pharyngeal cancer was symptomatic, the favorable profile of HCC with a large exophytic component and because HCC has other therapeutic options without compromise of progression free survival justified this choice. Personalized oncology treatment in this scenario requires centers capable of managing multiple malignancies as well as close follow up to ensure completion of a curative strategy.

Conflict of interest: No conflict of interest.

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Poster Session: Nursing in Surgical Oncology

575. Patients survey on the assistance from personal breast nurse navigator during their cancer journey

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Background: The position of breast nurse who navigates the process of cancer diagnostics and therapy has been available in our institution since January 2014 in a newly formed breast unit. The aim of this study was to evaluate patients satisfaction from the assistance that they had obtained from their personal breast cancer nurse navigator (BCNN).

Material and methods: One hundred and fifty-five patients were interviewed after the completion of oncological treatment (surgery, ±chemotherapy, ±radiation) or during postoperative hormonotherapy. We conducted a phone survey using a standardised set of three questions: 1 – was the assistance of your BCNN helpful? 2 – are you satisfied with this support? 3 – is the breast cancer patient navigation important? Patients were asked to answer these questions using a visual analogue scale scored 0–10 when 0 meant “absolutely not” and 10 meant “extremely yes”. Then the scores were calculated all together to evaluate the total perception of the navigation idea by the patients.

Results: There were no lower scores than 8 considering each question. With regard to the question 1 the median score (mean, SD, range) was 10 (9.6, 0.64, 8–10), while regarding questions 2 and 3 median scores were: 10 (9.5, 0.69, 8–10) and 9 (9.3, 0.77, 8–10), respectively. The total score was as follows (median, mean, SD, range): 10, 9.5, 0.72, 8–10.

Conclusions: Our results demonstrate the importance of BCNN in coordination of care for individuals affected by cancer. Navigation by the personal BCNN is regarded by cancer patients as very helpful and supportive during their cancer journey. They assess very highly the oncological nurse who offers individualised assistance to them. BCNN seems to be an important element of contemporary breast care service to optimise cancer management and minimise patient anxiety.

Conflict of interest: No conflict of interest.

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576. The role of personal breast cancer nurse navigator in the process of cancer diagnosis and treatment

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Background: Professional oncology nurse is particularly well positioned to navigate the patients during their cancer journey. Coordination of cancer management by the personal breast cancer nurse navigator (BCNN) is a new element of breast care in our institution. The aim of this study was to investigate the specificity of service needed to be provided by BCNN during the process of breast cancer diagnosis and treatment.

Material and methods: We review the details of BCNN activity during her navigation of the series of consecutive one hundred and seventy-two patients. Navigation got started with the histological diagnosis of primary breast cancer and being continued through the further diagnostics and disease staging, multidisciplinary team meeting, treatment planning, and all the process of therapy. Each patient had her own individually assigned BCNN who was available personally in her office or by dedicated mobile number.

Results: There were 1,876 phone calls (average 8 per patient) to give emotional support as well as to provide the information about the nature of disease, techniques of further diagnostics and staging, or characteristics,

effectiveness and possible side effects of various methods of therapy. BCNN arranged 361 multidisciplinary team meetings (minimum 2 per patient: one preoperative and one postoperative; average 2.1 per patient), fixed 150 further diagnostic investigations (average 0.48 per patient), set 28 pathological re-assessments (0.16), and made 606 appointments with doctors (average 3.5 per patient, including pre-meeting gynaecologist and preoperative anaesthesiologist) while 162 (average 0.94 per patient) with clinical psychologist. She also arranged 143 meetings (average 0.83 per patient) with medical staff to choose and fit well the surgical compression bra.

Conclusions: Our findings demonstrate all the spectrum of patient needs, which have to be met by BCNN. Breast cancer patients diagnosed and treated in our institution want to be supported emotionally, better informed, more involved in their care and better able to plan ahead. BCNN plays a complex role to improve breast service in the fragmented system of cancer care.

Conflict of interest: No conflict of interest.

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577. Who benefits the most from the assistance of breast cancer nurse navigator? Analysis of patient-related factors

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Background: The position of breast nurse who navigates the patients during their cancer journey has been available in a newly formed breast unit in our institution since January 2014. The aim of this study was to investigate how patient-related factors influence benefits from the assistance provided by the personal breast cancer nurse navigator (BCNN).

Material and methods: We conducted a phone survey using a standardised question: how beneficial to you was the BCNN assistance during your breast cancer journey? A series of consecutive one hundred and fifty-five patients was interviewed after the completion of oncological treatment (surgery, ±chemotherapy, ±radiation) or during postoperative hormonotherapy. Patients were asked to answer the question using a visual analogue scale scored 0–10 when 0 meant “absolutely not beneficial” and 10 meant “extremely beneficial”. Comparative analysis using Mann-Whitney U-test was done with regard to the patient age: ≤70 vs >70 years, social status (in patient self-perception): higher vs lower, and living area: urban vs rural. P-value less than 0.05 was considered statistically significant.

Results: The overall assessment of the benefits from BCNN navigation was very high - there were no lower scores than 7. Median score was 10 while mean, SD and range: 9.1, 1.1 and 7–10, respectively. Evaluation scores did not significantly differ regarding the patient living area: urban vs rural (median, mean, SD, range) 9, 9.1, 1.1, 7–10 vs 10, 9.2, 1.2, 7–10, respectively (P 0.61). Older patients assessed the benefits significantly higher than younger ones (median, mean, SD, range): 9, 8.6, 1.2, 7–10 vs 10, 9.5, 0.8, 7–10 (P < 0.001). Navigation was significantly more beneficial to the patients with lower social status (median, mean, SD, range): 10, 9.4, 1.3, 8–10 vs 9, 8.6, 1.2, 7–10 (P < 0.001).

Conclusions: Our findings demonstrate that in their own opinion all breast cancer patients benefit much from the BCNN assistance irrespectively of their age, living area or social status. However, older women and patients with lower social status assessed the benefits from navigation significantly higher. Thus, a special effort should be made to look after these subgroups of women.

Conflict of interest: No conflict of interest.

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578. Who benefits the most from the assistance of breast cancer nurse navigator? Analysis of treatment-related factors

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Background: The position of breast nurse who navigates the patients during their cancer journey has been available in a newly formed breast unit in our institution since January 2014. The aim of this study was to investigate how treatment-related factors influence benefits from the assistance provided by the personal breast cancer nurse navigator (BCNN).

Material and methods: We conducted a phone survey using a standardised question: how beneficial to you was the BCNN assistance during your breast cancer journey? A series of consecutive one hundred and fifty-five patients was interviewed after the completion of oncological treatment (surgery, ±chemotherapy, ±radiation) or during postoperative hormone therapy. Patients were asked to answer the question using a visual analogue scale scored 0–10 when 0 meant “absolutely not beneficial” and 10 meant “extremely beneficial”. Statistical analysis was performed using Mann-Whitney U-test with regard to the treatment setting: surgery alone (group 1) vs surgery + hormone therapy (group 2), and surgery + adjuvant chemotherapy / radiotherapy (group 3) vs neoadjuvant therapy followed by surgery (group 4). Then the comparison was done between patients treated mainly with surgery (1 + 2) and with combined-modality therapy (3 + 4). P-value less than 0.05 was considered statistically significant.

Results: The overall assessment of benefits from BCNN navigation was very high - there were no lower scores than 7. Median score was 10 while mean, SD and range: 9.1, 1.1 and 7–10, respectively.

Evaluation score did not significantly differ between groups 1 and 2 (median, mean, SD, range): 8, 8.2, 1.1, 7–10 vs 9, 8.4, 1.1, 7–10, respectively (P 0.4354). The difference between groups 3 and 4 was also not significant (median, mean, SD, range): 10, 9.7, 0.6, 8–10 vs 10, 9.6, 0.5, 9–10, respectively (P 0.2983). However, the evaluation scores of groups 3 and 4 taken together were higher than groups 1 and 2 taken together with a very high statistical significance (median, mean, SD, range): 10.9876, 0.5, 8–10 vs 8, 8.3, 1.1, 7–10 (P < 0.00001).

Conclusions: Our findings demonstrate that in their own opinion all breast cancer patients benefit much from the navigation by BCNN irrespectively of the treatment setting. However, women treated with combined-modality therapy evaluate the benefits significantly higher than those treated without chemo – or radiotherapy. Therefore, they need to be a special target of navigation.

Conflict of interest: No conflict of interest.

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579. The challenge of change for OT Nurses: Through a perioperative learning curve in robotic surgery

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Background: The use of robot-assisted procedures has also emerged among the oncological surgery, so much so that in the European Institute of Oncology (EIO), these procedures are performed routinely. This approach has been a surprising success in a few years, giving rise to new challenges for nursing in general, and especially for perioperative nursing. The education program, therefore, turns the focus a way from the operating room and onto the process of nursing care beginning in pre-op holding, involving the operating room, and recovery room staff.

Objective: The application of robotic assisted technology has created a new era in surgery. In this context, the issue of training of new personnel involved in robotic procedures has become a crucial point. Nursing education and specific learning curve have to be expand to include requirements for advanced computer technology, as well as every new challenge brought by technology. It has become indispensable to value the learning curve of nurses in robotic surgery.

Methods: Nurses involved in robotic surgery procedures conducted the investigation at the European Institute of Oncology (EIO) in Operating theatre. Some critical points of perioperative care were analyzed, in approximately six thousand robotic procedures since 2006 until now. The data analyzed concern both issues concerning scrub nurse and circulating nurse. The purpose of the analysis is to observe how the efficiency of the perioperative nursing has changed with the consolidation, gradually becoming more sophisticated, in some standards of learning that we have been refined over the years.

Results: The efficiency of perioperative nursing is directly proportional to a specific learning curve: more nurses are trained according to specific learning curve, and more assistance is effective. This is quantifiable, according to our analysis, observing how the topics analyzed have gradually improved over the time, while the training of beginner nurses was perfecting, thus to answer to even better standards of care. Nurses trained in the last two years have achieved the skills of older nurses in less time than in previous years; this suggests that our learning curve is improved.

Conclusion: The improvement of a specific learning curve for nurses involved in robotic surgery allows a nursing care that ensures high standards, aimed at responding to ongoing challenges and changes. Continuous analysis is a duty to ensure best practices. Teamwork is essential to the success of robotics program. Therefore, it is necessary to ensure that the nursing learning curve in robotic surgery is constant and always update.

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Poster Session: Oesophageal and Gastric Cancer

601. Risk factors for lymph node metastasis in early gastric cancer patients in Lithuanian population

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Background: Endoscopic treatment of early gastric cancer (EGC) is widely accepted in Asia and in some centers in Western countries. Endoscopic treatment criteria are based on risk for lymph node metastasis (LNM). Current

criteria are mostly developed in Asian countries. Their acceptability in Western population is still debatable. The aim of our study was to evaluate factors associated with LNM in EGC patients of Lithuanian patients.

Materials and methods: A total of 1654 patients, who underwent conventional gastrectomy with lymphadenectomy for gastric cancer between 2005 and 2015 years were included in this retrospective study. 220 patients with EGC were included to final analysis, where factors associated with LNM were revealed. Non-parametric tests and linear multiple regression models were used for statistical analysis.

Results: Gastrectomy was performed for 220 patients with EGC. LNM were found in 43 (19.54%) cases. Univariate analysis of clinicopathological

factors showed submucosal tumor invasion, higher tumor differentiation grade, lymphovascular invasion, diffuse and mixed tumor type according to Lauren classification and tumor size >2 cm as factors associated with higher rate of LNM. Gender, age and tumor ulceration were not significantly associated with LNM. (Table 1) Multivariate analysis showed submucosal tumor invasion (OR = 7.81, 95% CI = 2.58–23.81, $p < 0.05$) and lymphovascular invasion (OR = 10.31, 95% CI = 0.94–111.11, $p < 0.05$) as independent risk factors for higher LNM rate.

32 patients had any risk factors (T1a, <2 cm, well differentiated, not ulcerated and without lymphovascular invasion) for LNM, despite this 1 (3.13%) patient had a LNM.

Table 1
Clinicopathological data of patients with EGC and univariate analysis of risk factors for lymph node metastasis.

		LNM–	LNM+	p value
Gender (%)	Male	100 (84.75%)	18 (15.25%)	$p = 0.09$
	Female	77 (75.49%)	25 (24.51%)	
Age (mean \pm SD)		65.34 \pm 12.14	66.91 \pm 13.03	$p = 0.45$
Depth of invasion (%)	T1a	96 (95.05%)	5 (4.95%)	$p = 0.00$
	T1b	81 (68.07%)	38 (31.93%)	
Tumor differentiation grade (%)	G1	41 (91.11%)	4 (8.89%)	$p = 0.01$
	G2	61 (85.92%)	10 (14.08%)	
	G3	75 (72.12%)	29 (27.88%)	
Lymphovascular invasion (%)	LV–	165 (87.30%)	24 (12.70%)	$p = 0.00$
	LV+	12 (38.71%)	19 (61.29%)	
Histologic classification by Lauren (%)	Diffuse	48 (73.85%)	17 (26.15%)	$p = 0.01$
	Mix	12 (63.16%)	7 (36.84%)	
Tumor size (%)	Intestinal	106 (86.18%)	17 (13.82%)	$p = 0.01$
	<2 cm	93 (86.92%)	14 (13.08%)	
Ulceration (%)	>2 cm	83 (74.11%)	29 (25.89%)	$p = 0.111$
	UL–	118 (83.69%)	23 (16.31%)	
	UL+	58 (74.36%)	20 (25.64%)	

Conclusions: Submucosal tumor invasion and lymphovascular invasion are independent risk factors for LNM in EGC patients. However risk of LNM in patients with any risk factors still exist. Limitations of our study indicate need of prospective multicenter studies and revision of endoscopic EGC treatment criteria for Western population.

Conflict of interest: No conflict of interest.

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603. Thoracoscopic esophagectomy with total mediastinal lymphadenectomy in esophageal cancer patients with near complete response to neoadjuvant chemoradiotherapy: Feasibility and significance

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Background: Neoadjuvant therapy followed by surgery is the current recommended treatment for esophageal cancer. However, there is controversy over the extent of lymphadenectomy in patients with near complete response to neoadjuvant chemoradiotherapy. Hence, this prospective study was performed to determine the feasibility, short-term outcomes and significance of thoracoscopic esophagectomy with total mediastinal lymphadenectomy in patients with near complete response to neoadjuvant chemoradiotherapy.

Methods: Patients with resectable squamous cell carcinoma of the esophagus (cT1–3, N0–1, M0) who had near complete response to neoadjuvant chemoradiotherapy were included in this prospective study. Neoadjuvant chemoradiation protocol includes weekly administration of carboplatin and paclitaxel for 5 weeks and concurrent radiotherapy of

41.4 Gy in 23 fractions. Near complete response was defined as no obvious residual tumor on contrast-enhanced computed tomography and upper gastrointestinal endoscopy with biopsy done 5 weeks after completion of chemoradiotherapy. Thoracoscopic esophagectomy with total mediastinal lymphadenectomy was performed in all patients.

Results: During the study period from July 2013 to December 2015 (Interim analysis of the ongoing prospective study) 21 patients who had near complete response to neoadjuvant chemoradiotherapy underwent thoracoscopic esophagectomy with total mediastinal lymphadenectomy. Median (range) age of the patients in the study group was 51(40–74) and the majority were males (13/8). The tumor was located in the upper, middle and lower thoracic esophagus in 1, 12 and 8 patients, respectively. Median (range) operation time for thoracoscopic phase was 215 (165–315) min, median (range) blood loss was 75 (50–200) ml and there was no conversion to thoracotomy. All patients underwent R0 resection. Total median (range) lymph node count and mediastinal lymph node count were 18 (11–32) and 11 (6–18), respectively. Sixteen patients (16/21, 76.2%) had a pathological complete response of the primary tumor in the esophagus. Of the 16 patients, 7 had (43.8%) metastasis in the lymph node. Of the 7 patients, 5 (71.4%) patients had isolated lymph node metastasis along recurrent laryngeal nerves. There was no postoperative mortality and transient vocal cord palsy occurred in 4 (19.1%) patients.

Conclusions: Thoracoscopic esophagectomy with total mediastinal lymphadenectomy is feasible after neoadjuvant chemoradiotherapy with an acceptable incidence of postoperative vocal cord palsy. A significant number of patients with a pathological complete response of the primary tumor had mediastinal lymph node metastasis. Total mediastinal lymphadenectomy might be indicated even in esophageal cancer patients with near complete response to neoadjuvant chemoradiotherapy.

Conflict of interest: No conflict of interest.

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604. Limited gastric resection in the therapy of gastric tumors

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Background: Gastric malignancies remain important cause of malignancy related mortality despite the decreasing incidence. Our aim was to assess short and long term results in patients indicated for limited surgery.

Material and methods: Retrospective single centre study of 381 patients with surgical treatment of the gastric cancer in years 2006–2015. From this cohort we excluded the patients with total or subtotal gastrectomy and D2 lymphadenectomy and explorative laparotomy/laparoscopy. Patients were evaluated according to the indication of palliative surgery, short term and long term morbidity and mortality. Results were compared with patients treated with limited surgery for GIST.

Results/Discussion: Limited surgery was provided in 41 patients (20 gastric cancer, 21 GIST) and included 28 wedge resections and 13 Billroth I resections. 30 days morbidity was 4.8%, mortality 0%. 15 patients with significant comorbidities and risks (st. Ib-IV) revealed recurrent symptomatic cancer in 27% with disease-free interval on average 16 months. 5 patients with early gastric cancer (st. IA) included one cancer related death (systemic disease, comorbidity of T3 N1 clear cell renal carcinoma). Short term morbidity was comparable with GIST patients.

Conclusion: Decreased early morbidity and comparable oncologic results of limited surgery in selected patients can be achieved in comparison to radical surgery. Limited surgery remains the feasible possibility of treatment in symptomatic metastatic disease and advanced cancer in high risk patients and selectively in early gastric cancer patients.

Conflict of interest: No conflict of interest.

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605. Use of systemic inflammatory markers for prognostication of gastric cancer

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Background: Carcinoma has been postulated to enhance chronic inflammation leading to tumour growth, invasion, metastases and hence, poorer outcomes. With the aid of hematological investigations, this study aims to establish an association between systemic inflammation and disease free survival in invasive gastric cancer patients.

Materials and methods: A retrospective review of a prospectively collected database of 332 patients with invasive gastric cancer was performed from 1st February 1996 to 31st December 2005. The neutrophil and lymphocyte ratio (NLR), and the platelet and lymphocyte ratio (PLR), which is derived by taking the absolute neutrophil and platelet counts respectively, divided by the absolute lymphocyte counts were compared against the patient's disease free survival and disease specific survival.

Results: A cut off value of 3.111 for the NLR and a value of 11.295 for the PLR were decided as the optimum value according to the Receiver Operating Characteristics (ROC) curve.

Patients with NLR >3.111 had significantly lower disease free survival (37% vs 63%; $p = 0.001$) while patients with PLR >11.295 also had significantly lower disease free survival (39.7% vs 71.4%; $p = 0.001$).

Patients with NLR >3.111 had poorer overall survival (13.1% vs 34.2%; $p = 0.001$) and patients with PLR >11.295 also presented with poorer overall survival (14.4% vs 38.6%; $p < 0.001$).

Cox proportional multivariate hazard model for disease specific survival revealed that NLR >3.111 and PLR >11.295 were independently correlated with poor prognosis with hazard ratio of 2.57 ($p = 0.007$) and 3.683 ($p = 0.001$), respectively. When analyzing for overall survival, it was also found that NLR >3.111 and PLR >11.295 were independently correlated with poor overall survival with hazard ratio of 2.336 ($p = 0.048$) and 2.644 ($p = 0.035$), respectively.

Our results show that elevated NLR of >3.111 and PLR of 11.295 at initial clinical presentation were independent factors for poorer disease free survival.

Conclusions: We conclude that higher NLR and PLR are related to poorer disease free survival. This significant association sets the stage for preoperative haematological investigation to take a more significant role in the prognostication of patients with invasive gastric cancers.

Conflict of interest: No conflict of interest.

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607. Gastroduodenal gastrointestinal stromal tumor: A case series

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Introduction: Gastrointestinal stromal tumor (GIST) is the most common non-epithelial mesenchymal tumor of the gastrointestinal (GI) tract comprising only 0.1–3% of all GI tract tumors. Stomach is the commonest site (60–70%) while only 4.5% of these are located in the duodenum. GIST originates from the intestinal cells of Cajal (ICC) and expresses CD 117 (c-kit), a proto-oncogenic protein. C-kit positivity distinguishes GIST from other mesenchymal tumors of GI tract.

Clinical presentation of gastroduodenal GIST is variable and mainly depends upon its size and site. Most common symptom is occult bleeding. Early diagnosis is important as complete surgical resection for resectable non-metastatic GIST offers good outcome.

Methods: We retrospectively analysed cases of gastroduodenal GIST who received treatment between January 2012 to December 2015 in the Department of Surgery (unit III) at Post Graduate Institute of Medical Education and Research (PGIMER), Chandigarh.

Age, gender, clinical symptoms, upper GI endoscopic findings, operative procedure, role of Imatinib was analysed in this group of patients. The operative procedure was sleeve resection or gastrectomy for gastric GIST and limited resection or pancreaticoduodenectomy for duodenal GIST depending on their location. Diagnosis of GIST was based on histopathological examination and immunohistochemistry for CD 117. All patients were followed up every 3 months for first 2 years and 6 monthly thereafter.

Results: During this period 12 patients who had gastroduodenal GIST received treatment. Common presentation was GI bleed (66.66%), 66.66% had gastric and 33.33% had duodenal GIST. One each of gastric or duodenal GIST had peritoneal or liver metastasis respectively. Sleeve resection for gastric GIST was done in six patients and antrectomy in one patient. Antral GIST with peritoneal metastasis and ascites was present in one patient who received palliative treatment and Imatinib. Limited resection was done in two and pancreaticoduodenectomy was done in one patient of duodenal GIST. Duodenal GIST with liver metastasis was present in one patient who was treated with Imatinib. There was no response to imatinib in metastatic group and their disease kept on increasing on follow up. Patients who underwent curative surgery are well on follow up ranging 3 months to 3 years. Only one of the patients in surgically treated group had high grade GIST and received Imatinib.

Conclusion: Complete surgical resection for resectable non-metastatic GIST offers good outcome.

Conflict of interest: No conflict of interest.

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608. Risk factors associated with complications of open gastrectomy for gastric cancer – Analysis of data based on the Clavien–Dindo classification

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Background: In previously published reports the complication rate after gastrectomy varied from 15% to 25%. The majority of studies demonstrated data from retrospective analysis of patient's files with different criteria of complications. Moreover, the severity of symptoms was mostly not taken into consideration. The approach proposed by Dindo et al. enables simple, reproducible and applicable irrespective of the cultural background, reporting of data on postoperative complications based on the therapy required to treat them. Since its introduction only few centres published data on severity of gastric cancer complications based on limited numbers of patients.

Material and methods: All data on consecutive patients with gastric adenocarcinoma were collected prospectively at Department of Surgery between 2006 and 2013. Detailed data on clinicopathological features (age, sex, weight, comorbidities, previous surgery, 7th TNM staging), surgery (type of operation, extent of lymph node dissection, volume of red blood cells transfused, operation time, extent of resection) and postoperative course were collected through medical records and saved in a database. The complications were classified retrospectively according to the severity according to the revised version of the Clavien-Dindo classification.

Results: A total of 626 patients were included in the study. The majority of patients (52.3%) underwent R0 resection and D1 lymphadenectomy (54.2%) according to Japanese Gastric Cancer Treatment Guidelines 2010 (version3). Of the 626 analysed patients, 298 (47.6%) developed complications. The numbers of Clavien–Dindo grade I, II, IIIA, IIIB, IVA, IVB and V complications were 8 (1.3%), 157 (25.1%), 46 (7.3%), 9 (1.4%), 22 (3.5%), 16 (2.6%) and 40 (6.4%), respectively. In multivariate analysis two significant risk factors for overall complications were identified: pre-operative anaemia (odds ratio 2.09; 95% confidence interval 1.45 – 3.02, $p = 0.0001$) and duration of operation >180 min (odds ratio 1.73; 95% confidence interval 1.2 – 2.47, $p = 0.002$). Three significant risk factors for severe complications were identified: extended gastrectomy (odds ratio

1.696; 95% confidence interval 1.25 – 2.03, $p = 0.001$), total gastrectomy (odds ratio 1.684; 95% confidence interval 1.14 – 2.46, $p = 0.008$) and operation time >180 min (odds ratio 1.380; 95% confidence interval 1.03 – 1.84, $p = 0.030$).

Conclusion: Preoperative anaemia and operating time >180 min were associated with increased risk of overall complications after open gastrectomy. Extended gastrectomy (multiorgan resection), total gastrectomy and operation time above 180 min increased the risk of severe complications (grade IIIA or over according to Clavien–Dindo).

Conflict of interest: No conflict of interest.

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609. Pathology of signet-ring cell in gastric cancer and its prognostic value in surgical treatment

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Background: Signet ring cell (SRC) is one of a group in pathological division of gastric cancer (GC). The aim of the study was the analysis of single institution experience of SRC GC treatment and its impact on survival. We also evaluated what prognostic factors are differing between SRC and non-SRC GC.

Material and methods: A retrospective study of 686 consecutive patients operated because of primary gastric cancer from 1997 to 2011 in Surgical Oncology department. Clinical, pathological and follow-up data were collected and analysed by univariate and multivariate methods.

Results: SRC was observed in 192 patients of 686 (28%). Patients with SRC were younger mostly females presenting differences in pT status as well as pN status. Another factors were tumour position, lower rate of morbidity- but not for major one, higher number of examined lymph nodes as well as median number of positive one. Also stage of the disease was different between both groups. A trend for a better survival in non-SRC group was seen- 56.2% vs. 45.2% ($p = 0.057$). No significant differences were observed in survival because of stage of the disease.

Conclusion: SRC GC is a cancer presenting bad prognosis especially in advanced stage of the disease. A multimodal tailored treatment should be offered. Because of unfavourable prognosis we should look for a specialized surgical approach, which should be offered with an intention of cure also with tools like HIPEC, and extended lymphadenectomy.

Conflict of interest: No conflict of interest.

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610. Heterogeneity of new molecular gastric cancer classifications. Clinico-pathological characteristic

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Background: Today we have few genetical and molecular classification of gastric cancer (GC). An analysis of clinical utility of molecular classification based on anatomical and histological background and additionally we used that classification for microsatellite instability (MSI) patients.

Material and methods: We analyzed 472 patients treated because of gastric cancer. Clinical, pathological and follow up data were compared with molecular information of MSI. We differentiated 3 types: proximal intestinal/mixed (type 1), diffused (type 2), and distal intestinal/mixed (type 3).

Results: Some clinical and pathological factors were different for all 3 analyzed types like age, sex, T,N status, and stage of the disease. The biggest differences were seen for type 3. Also the survival for type 3 had the highest rate but without statistical significance ($p = 0.120$). For

MSI type 3 showed the best 5 years survival with 76% and for microsatellite stable only 39.1% ($p < 0.001$).

Conclusions: The molecular classification based on anatomical and histological factors seems to a useful tool in simple classification of gastric cancer. It can be also used for MSI GCs to subdivide this new molecular subgroup according to clinical and pathological factors.

Conflict of interest: No conflict of interest.

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611. Gastric cancer patients with familial aggregation of gastric cancer and Lynch syndrome associated cancers with microsatellite instability

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Background: One of the new molecular group in gastric cancer (GC) is Microsatellite instability (MSI). About 90% of GC cases appear sporadically. MSI seems to be responsible for both sporadic and Lynch syndrome associated familial GC. Aim of this study was analysis the frequency of MSI in GC that present familial history not only GC but also other cancers especially associated with Lynch syndrome.

Material and methods: Analysis of 472 patients with GC was done. MSI analysis was evaluated using 5 quasi monomorphic mononucleotide repeats, namely, BAT-26, BAT-25, NR-24, NR-21, and NR-27. We analyzed patients according to cancer history across family members with a special division according to GC and Lynch syndrome associated cancers.

Results: MSI was found in 111 of 472 patients (23.5%). MSI status in patients without familial history of GC was present in 22.3% and with familial history of GC in 28% ($p = 0.145$). For 1st or 2nd degree family member with GC, MSI was observed in 27.6% and in 30.8% ($p = 0.552$). No difference was seen between patients with or without familial cancer linked with Lynch syndrome (23.3% vs 24%), but in case of 1, 2, 3 and more Lynch associated cancers in familial history MSI was observed in 22.1%, 30.8% and 30% of patients ($p = 0.577$). No survival difference was observed in all analyzed groups.

Conclusions: In our study we could not find a link between familial background and a MSI status in GC patients. More detailed molecular and genetical analysis of subgroups of these patients is needed.

Conflict of interest: No conflict of interest.

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612. Molecular background of high risk and low risk areas of gastric cancer in Italy

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Background: Geographical differences are seen in different regions in Italy because of gastric cancer incidence. Data were analyzed according to high risk and low risk gastric cancer areas.

The pathological characteristic and prognosis differences between patients coming from high risk (group A), and low risk (group B) areas of gastric cancer were observed. We investigated a probably difference in microsatellite instable (MSI) and microsatellite stable (MSS) tumors between these two groups.

Methods: On a group of 452 gastric cancer patients MSI analysis was performed using 5 quasi monomorphic mononucleotide repeats NR-21, NR-24, NR-27, BAT-25, and BAR-26. MSI analysis was done by PCR usage. An allelic profile of these 5 mononucleotides was detected on an automated DNA sequencer ABI PRISM 3100 Genetic Analyser.

Results: MSI was observed in 24.2% of patients and the rest of patients showed MSS tumors. Among patients from group A showed higher rate of MSI (29.1%), than group B (12.8%) ($p < 0.001$). As we analyzed that association together with tumor location and Lauren classification a not significant differences were seen in non-cardia tumors ($p = 0.408$) and Lauren histotype ($p = 0.062$). There were no statistical difference between high risk and low risk areas ($p = 0.31$), with a trend for better survival in high risk one especially seen with longer time. Analyzing MSI or MSS in these subgroups the survival curves were almost the same.

Conclusions: A higher frequency of MSI in patients coming from high-risk areas may contribute to explain geographical differences of gastric cancer. Trend in better survival in high-risk areas might be probably because of higher rate of MSI gastric cancer patients.

Conflict of interest: No conflict of interest.

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613. Lymph node metastases in microsatellite unstable gastric cancer **K. Polom, F. Ferrara, C. Voglino, L. De Franco, M. Scheiterle, V. Pascale, L. Garosi, D. Marrelli, F. Roviello**

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Background: Microsatellite instability (MSI) represents one of the new groups in gastric cancer (GC) molecular division. We presented lymph nodes metastasis pattern in MSI GC patients.

Methods: MSI analysis of 423 GC patients with full information about the lymph nodes stations were performed using 5 quasimonomorphic mononucleotide repeats done by PCR usage. The metastasis rates for each lymphatic station was analyzed as well as clinicopathological characteristic of patients were combined. Stations were divided into N1, N2, and N3 on the basis of Japanese Classification 3rd edition.

Results: MSI was found in 96 patients (22.7%). N0 status was observed in 49.5% while in microsatellite stable (MSS) 27.2% ($p < 0.001$).

Statistically significant MSI GC spreads to lower number of lymph nodes as well to lower number of lymph nodes stations. Skip metastases were seen in 5.2% in MSS and 0% in MSI. In MSI patients without lymphovascular invasion only in 1.6% of cases a presence of positive nodes beyond N1 level was seen meanwhile for MSS in 10.4% of patients ($p = 0.018$). Patients with non-cardia intestinal type MSI GC have less metastases beyond N1 stations ($p < 0.001$).

Conclusions: In MSI GC a higher rate of N0 status, lower number of lymph node metastases and lower number of involved lymph node stations are observed. In patients without lymphovascular invasion lymph nodes involvement is almost in all cases limited to first level of lymph nodes. Future studies are needed to propose a tailored lymphadenectomy for these patients.

Conflict of interest: No conflict of interest.

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614. Proximally extended D2 gastrectomy in Siewert's type III adenocarcinoma of gastroesophageal junction

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Background: To analyse the postoperative morbidity and mortality of proximally extended gastrectomy with D2 lymphnode dissection with oesophago-jejunal anastomosis in chest using right thoracotomy.

Methods: The study consisted of a retrospective review of patients with Siewert's type III adenocarcinoma of gastroesophageal junction between 2003 and 2015. Demographic data, surgery protocols, complications, pathological reports, oncological outcome and cause of death were recorded. All patients had oesophageal involvement upto the extent that negative margin of oesophageal end was not feasible through stomach.

Results: The series consisted of 21 patients. The Median age was 55 years. The surgical technique consisted of upper midline laparotomy after staging laparoscopy with D2 gastrectomy. Elongated jejunal limb was prepared and tied to distal end of stomach. After changing position right posterolateral thoracotomy was done. After division of oesophagus at or below level of carina, specimen was pulled up in the chest along with jejunal limb. Oesophago-jejunal anastomosis was done in single layer hand sewn. The mean total surgery time was 360 min (306–422 min). R0 resection could be achieved in 76.1%. Splenectomy and/or distal pancreatectomy was done in 28.5%. A total of 61% of patients had postoperative complications. Respiratory complications were the most frequently observed. Median follow-up was 118.6 months. Actuarial survival in R0 resected patients was 28.5%.

Conclusion: Proximally extended D2 gastrectomy is feasible procedure where proximal extension of gastric tumour require resection of significant part of oesophagus. Jejunal limb can be pulled up into the chest upto carina level. Though post-operative morbidity is high it provide adequate oncological outcome.

Conflict of interest: No conflict of interest.

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615. Initial experience in robot assisted minimally invasive esophagectomy (ramie)

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Background: Emerging techniques in minimally invasive esophageal surgery include robot assisted approach. The aim of this review is to analyze our initial experience in Hospital Clinic of Barcelona after the first year working with the Da Vinci Xi system. We here present our initial results of RAMIE approach in terms of quality of oncological resection, morbidity and mortality.

Materials and methods: Data from our first 12 consecutive patients submitted to esophagectomy by RAMIE approach were prospectively collected. Variables included patient demographics, tumor characteristics, type of surgical resection and anastomosis, morbidity and long term outcomes.

Results: From November 2014 until May 2015, a total of 12 robot-assisted esophagectomies were performed. All were male patients with a median age of 64 years. Median BMI was 25 kg/m² (20–29); ASA score classification was II (83%) and III (17%). Tumor type was adenocarcinoma in 66.7% and squamous cell carcinoma in 33.3% of patients. Tumor location was Siewert I in 16.7%, Siewert II in 8.3% and medium-distal esophagus 75% cases. 75% of patients received neoadjuvant treatment. Robot-assisted total esophagectomy (3-field) was performed in 4 cases (33.3%) and Robot-assisted Ivor-Lewis in 8 cases (66.7%). Conversion to thoracoscopy was necessary in 1 case due to Pachypleuritis and there was no need to convert to open surgery.

Median operating time was 320 min (210–480 min). There was 1 intraoperative bleeding without consequences. Thoracic end-to-end anastomoses were performed in 8 cases (66.7%) and cervical anastomosis in 4 cases (33.3%). There were 2 anastomotic leaks (17%). Resection was considered R0 in all cases. Median number of retrieved lymph nodes was 18 (6–35). Median ICU stay was 6,5 days(1–25). Median Hospital stay was 13,9 days (8–28). 30-day mortality was 0%.

Conclusion: Our first experience in RAMIE is acceptable, with adequate oncologic results and outcomes comparable to those of MIE and standard open esophagectomy.

Conflict of interest: No conflict of interest.

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616. The relation between HER2 overexpression on the tumour cells and microvessels density in the tumour stroma in gastric cancer

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Background: In gastric cancer, HER2 protein overexpression is considered to be conducive to the higher proliferation activity of tumour cells. Tumour formation is associated with angiogenesis in order to secure an abundant supply of oxygen and glucose to cancer cells. The aim of the study was to assess, if HER2 overexpression is related to higher microvessels density in the tumour stroma.

Material and methods: The archival samples of primary tumour from 144 consecutive patients, that underwent gastric resection for cancer between 1.08.2006 and 31.12.2013 in Oncological Surgery Clinic of Medical University of Gdańsk were analyzed. CD34 was used as a marker of vessels density in the tumour stroma. Both CD34 and HER2 protein expressions were tested by immunohistochemistry. The assays were unsuccessful due to technical reasons in 10 HER2 and in 14 CD34 cases. The results were obtained for 128 patients.

Results: Mean vessels density (mean number of vessels in the visual field) in 128 patients was 32.4 (median 29.5). The relation between HER2 protein expression and microvessels density is presented in the table. For statistical reasons, HER2 0 and HER2 1+ as well as HER2 2+ and HER2 3+ were combined. The differences did not reach the level of statistical significance.

HER2	Vessels density (mean)	Vessels density (median)
0 (n = 62)	32.3	30
1+ (n = 28)	29.5	27.5
2+ (n = 24)	33.1	29.5
3+ (n = 14)	37.0	31
0 and 1+ (n = 90)	31.4	28
2+ and 3+ (n = 38)	34.6	30

Conclusions: Statistical analysis performed in our study did not reveal the relation between HER2 overexpression on the tumour cells and microvessels density in the tumour stroma. However, the results encourage for further research on larger groups of patients.

Conflict of interest: No conflict of interest.

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617. Preservation of an aberrant hepatic artery arising from the left gastric artery during gastrectomy for gastric cancer

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Background: An aberrant left hepatic artery (ALHA) is occasionally encountered during esophagogastric surgery. However, at curative gastrectomy for gastric cancer, it is questionable as to whether the ALHA need to be preserved the way of lymphatic dissection need to be changed.

Material and methods: We encountered 57 patients with an ALHA during curative gastrectomy for gastric cancer between 2008 and 2014. Data concerning operative feasibility, postoperative liver function and therapeutic value of nodal dissection were analyzed in compare with gastric cancer patients without ALHA,

Results: For whole patients with ALHA we preserved this artery, the total numbers of dissected lymph nodes and metastatic lymph nodes around the left gastric artery were similar in the 2 groups (P 0.447 and P 0.338), respectively. No significant differences were seen between the 2 groups in morbidity and mortality. The overall 5-year survival rates were also comparable.

Conclusions: ALHAs should be preserved during gastrectomy when they are identified because precise preoperative assessment is difficult by a routine work-up. Preservation of the artery should not decrease the extent of lymph node dissection.

Conflict of interest: No conflict of interest.

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618. Compliance with perioperative systemic therapy in patients with advanced gastric cancer

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Background: Perioperative chemotherapy is presumed to be the standard of care for patients with advanced gastric cancer throughout most of the Europe. Since perioperative chemotherapy may not be completed in all patients with resectable gastric cancer, the compliance remains main problem in wide adoption of the standard.

The aim of the present study was to analyze the compliance with complete planned multimodal systemic and surgical treatment in consecutive patients with advanced gastric cancer treated at one institution.

Patients and methods: Forty three consecutive patients with advanced gastric or junctional adenocarcinoma treated by multidisciplinary team with perioperative chemotherapy were analyzed retrospectively using prospectively collected data set. There were 22 males (51%) and 21 females (49%) with median age 58 years. The most common tumor location was stomach in 72% and gastroesophageal junction in 28%. The most frequent regimens were EOX (51%), PLFE (18.6%), Cisplatin + Capecytidine/5-Fluorouracil (7%), ECX (4.6%), DCF (2.3%) and FLO (2.3%).

Results: Among 43 patients who started preoperative chemotherapy, 7 were not resected and were addressed to palliative therapies due to advanced stage. Surgical resection was possible in the remaining 36 patients, resulting in an overall resectability rate of 83.7%.

Out of 36 patients who were resected, 13 did not continued adjuvant postoperative therapy. It was associated with: postoperative mortality (2 pts), poor performance status (4 pts), disease progression (1 pt), chemo-toxicity during preoperative therapy (1 pt), qualification for adjuvant chemo-radiotherapy (2 pts), excellent response to preoperative therapy (pCR; 3 pts). Only 23 patients (53%) proceeded to adjuvant postoperative chemotherapy.

Conclusions: Compliance with complete planned multimodal treatment of pts with advanced gastric cancer is not satisfactory. Optimizing strategies are needed to deliver full multimodal therapy for advanced stage disease in order to benefit the outcomes.

Conflict of interest: No conflict of interest.

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619. A study about prediction of the anastomotic leak after esophagectomy using serum markers: Serum C-reactive protein is an only marker to predict anastomotic leak after esophagectomy in both neoadjuvant and non-neoadjuvant therapy cases

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Introduction: The early prediction of anastomosis leak after esophagectomy in esophageal cancer is clinically valuable, because when anastomotic leak exists, esophagogram using contrast dye is harmful and management would be different according to existence of the anastomotic leak. The purpose of this study is to investigate the relationship between routine postoperative laboratory findings and the anastomotic leak and to clarify the different findings of between neoadjuvant (NT) and non-neoadjuvant therapy cases (non-NT)

Material and methods: We retrospectively assessed the records of 192 consecutive cases from January 2009 to December 2014. We analyzed routine laboratory findings from the day before operation to the eighth postoperative day on a daily basis. Laboratory study consisted of 26 separate routine tests and consisted of CBC (complete blood cell count) and BC (blood chemistry) including ESR (erythrocyte sedimentation rate) and CRP (C-reactive protein).

Results:

1) 70 out of 192 patients underwent neoadjuvant therapy. Anastomotic leaks were found in 10 patients in NT and 10 patients in non-NT.

2) We found that WBC (white blood cell count) and CRP (C-reactive protein) out of all routine postoperative laboratory findings were significantly associated with anastomotic leak in overall patients. However, WBC was not associated with the anastomotic leak in NT and CRP was an only significant parameter to predict the anastomotic leak in both NT and non-NT. In NT, CRP on the third, fourth, sixth, and seventh postoperative day were significantly associated with the anastomotic leak ($p = 0.020$, $p = 0.044$, $p = 0.003$, and $p = 0.017$, respectively). In non-NT, CRP on the third, fifth, and sixth postoperative day ($p = 0.021$, $p < 0.001$, and $p = 0.012$, respectively) were significantly associated with anastomotic leak.

3) In overall cases, CRP on the third, fifth and sixth postoperative day had significant diagnostic accuracy for the development of anastomotic leak with a pooled area under the curve of 0.833 (95% confidence interval 0.66 to 1.000), 0.833 (95% confidence interval 0.68 to 0.988) and 0.833 (95% confidence interval 0.67 to 0.995), respectively. The derived cut-off values of CRP were 21.44 mg/dL on the third postoperative day (sensitivity 80.0% and specificity 83.3%), 13.11 mg/dL on the fifth postoperative day (sensitivity 80.0% and specificity 79.2%), and 12.42 mg/dL on the sixth postoperative day (sensitivity 80.0% and specificity 79.2%). When CRP on the third, fifth and sixth postoperative day were included as covariates, multivariate analysis using the logistic regression identified CRP on the sixth postoperative day as independent predictive factors of anastomotic leak ($p = 0.006$).

Conclusions: Serum CRP was an only parameter to predict the anastomotic leak in both NT and non-NT.

Conflict of interest: No conflict of interest.

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620. Accuracy of computed tomography in gastric cancer staging
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Computed tomography (CT) has become part of the preoperative evaluation of gastric cancer patients. Its main goal is to identify advanced disease not suitable for curative surgery. However, it is also used for locoregional disease staging, especially if ultrasound endoscopy (EUS) is not readily available, as in our institution. According to previous reports, the overall accuracy of CT in preoperative T (tumor) staging of gastric cancer ranges from 43% to 85% and in N (node) staging from 51 to 84%. Our aim was to evaluate CT accuracy in gastric cancer T and N staging.

We reviewed all gastric adenocarcinoma patients admitted for surgery in our institution from January 2009 to December 2014. We excluded those that underwent neoadjuvant therapy. Demographic information, tumor characteristics, preoperative CT findings and pathological staging was assessed. Tumors were staged according to the AJCC/UICC TNM classification.

We included 118 patients, 63% males and 37% females, with a median age of 70 (SD 12.1). The majority of the tumors were located in the gastric antrum (63.6%), followed by body, cardia and fundus (18.6%, 14.4% and 1.7%, respectively); 2 patients had linitis plastica. All patients underwent staging abdominal and pelvic contrast-enhanced CT. Overall accuracy for T staging was 43% (Table1) and for N staging was 51%. Pathological assessment revealed overall T understaging of 49% and overall T overstaging of 10%. Median tumor size was 44 mm (SD 27), with a median nodal harvest of 10 lymph nodes (SD 6).

Table 1
 Assessment of local invasion with CT (cT) vs. pathological examination (pT).

CT	Pathological staging (n)				Accuracy	Overstaged	Understaged
	pT1	pT2	pT3	pT4			
cT1	11	7	10	0	39%	NA	61%
cT2	11	14	47	4	18%	15%	67%
cT3	0	1	10	3	72%	7%	21%

CT: computed tomography; NA: not available.

Accurate pre-operative staging in gastric cancer is crucial as it may affect treatment decisions, especially when planning for curative surgery. In our study, locoregional staging accuracy with CT was lower than expected, with a high rate of understaging. These findings obviate the need for more reliable exams or use of combined staging modalities. Staging laparoscopy may be the answer as our access to EUS is limited. Systematic use of this technique has been described to change management in up to 60% of patients.

Conflict of interest: No conflict of interest.

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621. The use of perioperative chemotherapy plus standard D2 lymphadenectomy in resectable gastric cancer: Results form a single-center retrospective analysis

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Background: The administration of perioperative chemotherapy has been well established in Europe and is considered to be a safe choice for the treatment of patients with resectable gastric cancer. Nevertheless, the total survival benefit when adequate lymph node dissection (D2 extent) remains controversial. The aim of our study is to examine the possible benefit of the administration of perioperative chemotherapy when combined with D2 lymph node dissection in patients with resectable gastric cancer.

Material and method: It is a retrospective study of 140 patients (72 men, 68 women) who have been subjected to an operation for resectable gastric cancer during the period 2001–2015 at our Hospital. Postoperative mortality, postoperative complications and 5-year survival rates were studied. Three patients' groups have been formed that included 61 (D1 lymph node dissection), 41 (D2 lymph node dissection) and 14 (D2 lymph node dissection and perioperative chemotherapy) patients respectively. The patients that have been subjected to perioperative chemotherapy had tumors equal or bigger than T1b, regardless of the lymph node burden.

Results: The median follow-up period was 51, 44 and 29 months respectively. No statistically significant difference was observed in terms of mortality and the postoperative complications' rate (hemorrhage, respiratory infection, abdominal infection) between the three groups. The 5 years' survival was 26%, 38% and 37% for the groups respectively, without statistically significant difference.

Conclusions: The administration of perioperative chemotherapy combined with the D2 lymph node dissection remains a safe choice for the treatment of patients with resectable gastric cancer. On the other hand, the D2 lymph node dissection remains of significant value to the 5-year survival of patients with gastric cancer. Possible benefits of the perioperative chemotherapy will be shown with longer postoperative observation and larger number of patients.

Conflict of interest: No conflict of interest.

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622. Gastric cancer – Is perioperative chemotherapy really the best option

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Background: Gastric cancer is still one of leading reason of cancer death worldwide despite its decreasing incidence. Adequate surgery is the only possible curative treatment modality. Treatment results and survival are still unsatisfactory in non-Asia countries. In these countries was accepted principle of perioperative chemotherapy in the last decade. There are several studies supporting this approach. But there is some twilight zone hidden in these studies.

Material and methods: We identified useful studies which were included in recent metaanalyses and Cochrane Database of Systematic Reviews dealing with perioperative chemotherapy in cases of gastric cancer and checked them for quality of surgical therapy. We also compared these results with other studies focused on various oncological treatment options and their timing.

Results: We identified 12 studies suitable for our analysis including MAGIC and French studies which introduced perioperative chemotherapy into clinical guidelines. Only 7 studies are more specific about surgical procedure especially extend of lymphadenectomy. When we compare survival in these studies patient with D2 lymphadenectomy have better survival in both arms then patients with D1 or less lymphadenectomy regardless adjuvant, neoadjuvant or perioperative treatment.

Conclusion: Adequate extend of surgery including lymphadenectomy is the most important prognostic factor. There is need for new RTCs to establish proper role and timing of oncological treatment in patients with gastric cancer. And the quality of surgery is crucial factor in designing these studies.

Conflict of interest: No conflict of interest.

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623. The impact of sarcopenia on postoperative complications in gastric cancer patients

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Introduction: Sarcopenia is characterized by decreased skeletal muscle mass plus low muscle strength and/or physical performance. The aim of this study was to investigate the prevalence of preoperative sarcopenia among gastric cancer patients undergoing gastrectomy and the differences in postoperative complications between sarcopenic and non-sarcopenic patients.

Material and methods: Ninety-eight patients who underwent gastrectomy for gastric cancer were analyzed. Whole-body skeletal muscle mass was measured using a bio-impedance analysis technique (BIA) based on the European Working Group on Sarcopenia in Older People (EWGSOP) algorithm for the evaluation of sarcopenia before surgery.

Results: Of these patients, 4 (4.08%) were diagnosed with sarcopenia. The overall incidence of postoperative complications and mortality was similar in the two groups. In our group the occurrence of sarcopenia was not related with age, sex, BMI, TNM stage.

Conclusion: In this population of gastric cancer surgical patients the prevalence of sarcopenia was low. Sarcopenia was not associated with postoperative morbidity or mortality. Most probably sarcopenia is more common in patients with non-resectable gastric cancer.

Conflict of interest: No conflict of interest.

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625. Intraoperative sentinel lymph node mapping with methylene blue dye in gastric cancer

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Background: The status of lymph nodes represents the main prognostic factor, important in gastric cancer evolution and indispensable for an adequate postoperative therapy. The accurate determination of lymph nodes invasion stage can be established only by extended intraoperative lymphadenectomy and histopathological examination. Sentinel lymph node (SLN) mapping is a controversial method, which can increase the number of identified lymph nodes and can lead to an accurate detection of lymph nodes status.

Materials and methods: We present our experience in determining SLN in patients with gastric cancer operated in the Second Surgical Clinic of Tg-Mures, between 2013–2015. We performed SLN mapping using a limphofil dye, by injecting intraoperative methylene blue dye in the peritumoral subserosa. All blue nodes were histopathological examined. In cases without SLN metastases, immunohistochemical stain with cytokeratin-pan was performed.

Results: SLN detection was performed in 50 cases, in 2 cases we could not identify SLN. In 2 cases the SLN was identified false negative. In 11 cases the histopathological and also the immunohistochemic examination of SLNs were negative, and in 33 cases positive, 2 cases were with micro-metastasis confirmed only by immunohistochemical methods. In 2 cases skip metastasis were identified.

Conclusions: SLN mapping is a simple and inexpensive technique. Staining lymph nodes in vivo and ex vivo improves lymphatic status determination. Applying the SLN identification techniques in gastric cancer may lead instead to changes in postoperative gastric cancer staging, increasing the number of patients who may benefit from adjuvant chemotherapy.

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Conflict of interest: No conflict of interest.

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Poster Session: Plastic and Reconstructive Surgery

650. Implementation of immediate implant-based breast reconstructions under the external supervision

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Background: Surgical management of breast cancer is nowadays a complex undertaking. Along with oncoplastic breast conservation an immediate breast reconstruction should be available for all eligible patients. The aim of the study was to investigate early results of the immediate implant-based breast reconstructions performed under the supervision of external expert.

Material and methods: Since January 2015 a newly formed breast-dedicated surgical team is available in our institution. Although well experienced in oncoplastic techniques for breast conservation, the team has never performed before immediate implant-based breast reconstructions by themselves. Hence, we adopted the policy based on the well-defined procedures and strictly standardised protocols using in high-volume institution by the external expert (M.B., Germany) deeply experienced in various breast reconstructive techniques. All steps of patients management were done under the expert's tutoring and monitoring as follows: patient selection, choosing the best reconstructive technique, measuring the breast, tailoring the implant, preparation for surgery, accomplishment of mastectomy and immediate reconstruction, rehabilitation and postoperative care.

Results: Eight procedures in seven women were performed. There were four nipple-areola complex (NAC) sparing mastectomies (NSM) followed by reconstruction with implant placed into sub-muscular pocket and four skin-sparing mastectomies (SSM) followed by dual-plane reconstruction using implant pocket creating with pectoral muscle and de-epithelialised inferior flap according to Maurizio Nava's technique. In these patients NAC was harvested as full-thickness (areola) and composite (nipple) skin grafts and replanted onto the reconstructed mammary mound. Operations were successfully and uneventfully completed in all cases. In one woman early postoperative subcutaneous bleeding outside of the sub-muscular implant pocket occurred and required surgical intervention. Neither haematoma nor surgical site infection developed. In three patients partial and superficial epidermal necrosis of areola was observed (NSM, SSM, and symmetrisation; one case each). It was successfully healed per secundam. Cosmetic outcome assessed by the patients themselves and by the multidisciplinary breast team at the meeting 4–6 weeks after surgery was rated as excellent or very good in all cases with regard to breasts symmetry as well as ipsilateral (reconstructed) and contralateral (if symmetrisation) breast shape, projection and NAC position.

Conclusions: External supervision is a valuable solution for surgical team starting to perform immediate breast reconstructions. Our initial findings suggest that due to close cooperation and thorough co-working with highly experienced expert promising early outcomes can be achieved in the term of little morbidity and good cosmesis.

Conflict of interest: No conflict of interest.

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651. Necrosis of nipple-areola complex after its recentralisation during oncoplastic breast conserving surgery

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Background: Oncoplastic breast conserving surgery allows optimal local cancer control with excellent cosmetic results. However, in some techniques of breast remodelling the nipple-areola complex (NAC) needs to be recentralised, which is associated with the risk of its necrosis. The aim of this study was to investigate the NAC necrosis incidence, management and risk factors after oncoplastic breast conserving surgery with NAC recentralisation.

Material and methods: A series of consecutive sixty patients operated by one surgical team was studied. All patients underwent breast conserving surgery using various oncoplastic techniques with breast remodelling and NAC recentralisation. We reviewed our records to investigate the rate and course of NAC necrosis as well as to identify its risk factors. Median, mean, standard deviation and range were calculated if appropriate. Statistical analysis was performed using Mann-Whitney U-test for continuous variables and chi-square test for categorical ones. P-value less than 0.05 was considered statistically significant.

Results: In none of the patients deep NAC necrosis (full-thickness) developed. Superficial, epidermal necrosis occurred in 9 (15%) patients, encompassing full area of areola just in one patient. In all the cases it was successfully managed with conservative treatment (anti-bacterial dressings, bacitracin ointment) and healed per secundam without any visual defects. Patients with NAC necrosis were significantly older and had higher BMI (median, mean, SD, range): 78, 77.9, 6.5, 65–84 vs 55, 57.9, 9.9, 45–78 ($P < 0.01$) and 27, 27.3, 4.4, 20–34 vs 23, 22.4, 2.6, 19–27 ($P < 0.05$), respectively. It was associated with the presence of cardiovascular diseases (20% vs 11%) and using of inferior / superior pedicle technique and round block technique when compared to J-, V- or B-mammoplasty (22% vs 20% vs 13%). However, these differences were not important ($P > 0.05$). Significant risk factors of NAC necrosis were: age >75 years (47% vs 4%, $P < 0.0001$), BMI >25 (46% vs 6%, $P < 0.001$), smoking (38% vs 3%, $P < 0.001$), and diabetes (50% vs 8%, $P < 0.01$).

Conclusions: NAC necrosis develops in considerable rate of patients undergoing its recentralisation. However, when occurs, it is usually not full-thickness but epidermal and superficial, and can be successfully managed without surgical intervention. It is significantly more common in older, overweight and smoking patients with diabetes.

Conflict of interest: No conflict of interest.

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652. Breast reconstruction in National Cancer Center of Serbia in 2015 – Single institution experience

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1. Breast carcinoma is most common cancer in female population. Post-mastectomy trauma is psychological, as well as somatic. Breast is a symbol of femininity and consecutively loss of it represents huge blow to woman stature. Knowing this, breast reconstruction becomes operation with both oncologic and aesthetic effect. Because of this, breast reconstruction is regular surgical procedure at our clinic. Reconstruction of breast is type of operation performed by surgical oncologist and plastic surgeon.

2. During year 2015, we performed 59 breast reconstructions at our clinic. Primary reconstructions were performed with 51 pts. Secondary reconstructions were performed with 8 pts. All patients were drained minimum seven days with one or two drains and wore suspensor bras for at least two week in continuity. Drains were removed when drainage reached low peak of 20–30 ccm per day. Rehabilitation starts

at second postoperative day. Average hospital stay was three postoperative days.

3. Primary subcutaneous mastectomy, SLNB or axillary dissection, frozen section for retromammary cone and implantation of endoprosthesis subpectorally were performed in 42 pts. One-time simetralisation of contralateral breast with subglandular implantation was performed in 4 pts. Retromammary cone was positive in 4 pts, thus excision of areola and mamilla were done. One patient had bilateral one-time primary subpectoral reconstruction of breasts. Secondary subpectoral reconstruction was performed with 8 pts: 4 pts. due to prosthesis rupture (US and NMR verified), 2 pts. due to skin necrosis after radiotherapy and infection, 2 pts. had expander prosthesis implantation subpectoral reconstruction 6 months later.

4. Oncoplastic surgery is constantly improving in Serbia. Team of multidisciplinary specialists involve surgeon, medical oncologist, radiologist, pathologist, as well as anesthesiologist, psychologist and physiotherapist. Survival is nearly identical to literature data, as well as provided quality of life. Effect on psycho social life of patients is very satisfying.

Conflict of interest: No conflict of interest.

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653. Adverse outcomes of delayed breast reconstruction after mastectomy using abdominal advancement flap: A 15-year experience

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Background: Delayed breast reconstruction (DBR) after mastectomy is mainly performed using expander prostheses (that are later replaced by permanent ones), or using pedicle/free musculocutaneous flaps, since there is an insufficient amount of skin in this area. These techniques, however, require more than one operation, which increases treatment costs and prolongs patient's recovery due to many expected complications. Back in 1980s, abdominal advancement flap (AAF) technique was described as

useful to reduce number of surgery stages, as well as donor-site complications, whilst providing more optimal aesthetical results. This technique has been used in our institution for 20 years now.

The aim of this study was to evaluate adverse outcomes after DBR using AAF and permanent prosthesis in patients treated with mastectomy due to unilateral breast carcinoma, as well as to determine which factors are predictive for their occurrence.

Material and methods: Study included 155 patients operated at Institute for Oncology and Radiology of Serbia from 1996 to 2010. All patients previously had total mastectomy and axillary dissection, followed by specific oncological treatment. Patients were selected for DBR after complete diagnostic evaluation, and local or distant disease relapses, as well as contralateral breast carcinoma, were excluded. Permanent prostheses used for breast reconstruction were placed under the major pectoral muscle in all patients. Size of the prostheses was determined by patient's constitution, other breast volume and the quality of the skin and muscle for the flap. Adverse events were evaluated in regard to patient, disease and prostheses-related factors.

Results: In the follow-up, DBR adverse events were observed in 23.23% of patients – majority (91.67%) had only one. The most frequent was capsule contracture (47.22%), followed by asymmetry (22.22%), infection (16.67%) and prosthesis rupture (16.67%). There were isolated cases of prosthesis prolapse and local disease recurrence. Infections were treated conservatively in all but one patient. Other events were managed by additional operation. Statistical analysis showed that complications occurred significantly more often in patients ≥ 51 years (vs. 18–40, vs. 41–50), IIb (vs. Ia) disease stage, T2 (vs. T1) tumors and adjuvant radiotherapy (vs. without). Prostheses-related factors were not significant for DBR complications, neither body mass index, nor smoking habits.

Conclusions: DBR using AAF and permanent prosthesis is a safe technique with acceptable rate of adverse outcomes. It provides one-time surgery with satisfactory aesthetic results and good postoperative recovery. Most frequent complication is capsule contracture. Patients' age and irradiation of the chest wall after mastectomy are predictive factors for adverse outcomes after DBR using AAF and permanent prosthesis.

Conflict of interest: No conflict of interest.

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Poster Session: Quality Assurance/Audits

675. Not just the cosmetic outcome: Quality assessment of breast conserving surgery in the oncoplastic era and before

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Background: The indications for breast conserving therapy in cancer are expanding due to adoption of oncoplastic surgery. This novel approach consists in the integration of cancer excision with plastic surgery techniques allowing extensive resections and breast remodelling. Apart from cosmetic benefits it should result in optimal local control achieved in one therapeutic operation. The aim of this study was the quality assessment of breast conserving surgery carried out in the same institution before and after the implementation of oncoplastic approach.

Material and methods: Breast conserving patients operated on during the year 2015 using oncoplastic techniques were prospectively studied.

Next, a retrospective analysis of historical control was carried out: we reviewed records of patients undergoing surgery in the year 2013 not according to oncoplastic surgery principles. A total number of 889 patients were analysed. All patients were treated in the same department, all had image-guided core-needle/vacuum-assisted biopsy prior to surgery, and preoperative localisation (skin marking in palpable tumours, hook-wire in non-palpable lesions). Results were statistically analysed, differences were determined by chi-square test. Quality assessment was done by the comparison to the performance indicators defined and recommended by the European Commission (EC).

Results: Rate of breast conservation in primarily operable cases was in oncoplastic era 76% and 54% before ($p < 0.05$). Re-excision rate and proportion of women when definitive breast conserving surgery was completed in one operation was in oncoplastic era 7% and 93% while 26% and 74% before, respectively ($p < 0.05$). In the oncoplastic era just 2 patients (0.6%) had a positive margin following three attempts (primary resection followed by two re-excisions) while 9 patients (3.8%) before. As

a consequence, >99% of women having conservation surgery had 3 or fewer therapeutic operations in the oncoplastic era while >96% of women before ($p < 0.05$). EC recommended that breast conservation rate in small-sized cancers should be at least 70% (acceptable level) or 80% (desirable level). Proportion of women having 3 or fewer therapeutic breast conserving operations should be over than 90% while proportion of women when definitive breast conserving surgery was performed in one intervention should be at least (minimal standard) or over 90% (ideal standard).

Conclusions: Regardless of the better cosmetic outcome oncoplastic surgery results in more effective local control and higher quality of breast conserving operations. Due to using oncoplastic techniques performance indicators recommended by the EC can be achieved at desirable levels.

Conflict of interest: No conflict of interest.

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676. Quality assessment of population-based mammographic screening program

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Background: Mammographic screening is believed to reduce breast cancer mortality. Because it takes too long to become evident some operational objectives were identified to monitor the management of the program and to measure its effectiveness. When these early indicators are accomplished then the program will be on target to replicate the mortality reduction achieved in randomised trials. The aim of this study was to assess the quality of program in the 3-million region of Lower Silesia (Poland) in the year 2015 using early performance indicators recommended by the European Commission (EC).

Material and methods: Nation-wide population-based program of mammographic screening is centrally organised and targets women aged 50–69 without breast cancer history. Biennial two-view mammography is used as a standard screening test. The second level diagnostic tools are clinical examination with additional imaging. Following further assessment women are referred to back into the program for routine screening (lesions R1/R2), screened at short-term follow-up (R3), or referred to invasive investigations (R4/R5). Quality evaluation was carried out using early performance indicators and compared to EC recommendations at acceptable and desirable levels.

Results: 90.501 participants were screened from 218,561 women of the eligible population per year, giving 41% coverage rate (acceptable level >70%; desirable level >75%). Among program attendees the technical repeat rate (a repeat mammogram due to technical inadequacy) and early recall rate (short-term follow-up at an interval less than the routine round length) were 0.25% (<3%; <1%) and 0.9% (<1%; 0%), respectively. Further assessment rate was 3.8% (<5%; <3%). Cancer detection rate was 6.2/1000 while cancer detection rate expressed as a multiple of the expected breast cancer incidence rate was 3.06 (3; >3).

Conclusions: Diagnostic service of screening program meets EC recommendations at acceptable or even desirable level. However, due to poor coverage it is unlikely to obtain the benefits for the whole eligible population and to reduce breast cancer mortality. The invitation system needs to be more effective and promotion of breast cancer screening must be improved.

Conflict of interest: No conflict of interest.

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677. Time to diagnosis before and after the implementation of breast cancer rapid management policy

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Background: Delays at any stage of the breast cancer diagnostic process may result in high anxiety for the woman. Targets should be set at every stage where delay may arise. The aim of this study was to investigate the therapeutic delay in women with primarily operable breast cancer before and after the implementation of breast cancer rapid management policy (BCRMP) in our institution and compare it to the European Commission (EC) recommendations.

Material and methods: Time in working days (wd) between screening/symptomatic mammography and result as well as between result of screening/symptomatic mammography and day of assessment appointment offered to the woman before and after the implementation of breast cancer rapid management policy was calculated. Results were statistically analysed and compared to EC recommendations.

Results: Median time (range, mean, SD) between screening mammography and result before and after the implementation of BCRMP was 6 (1–10, 6.2, 2.8) and 6 (1–10, 6.4, 2.3) working days, respectively. The difference was not significant. With regard to symptomatic women time did not differ – result was available the same day as mammography. Time between screening mammography result and day of assessment appointment offered to the woman was significantly shorter after the implementation of BCRMP: 2 (1–4, 2.4, 0.9) vs 8 (3–10, 7.5, 2.0) working days, respectively (Mann–Whitney: Z-score -7.5519 , U-value 35, $P < 0.00001$). In symptomatic cases time was also shorter with very high statistical significance: 2 (1–4, 2.3, 0.8) vs 8 (3–10, 7.4, 1.9) working days, respectively (Z-score -8.3504 , U-value 24.5, $P < 0.00001$). In all screening and symptomatic patients (100%) EC recommendations regarding the time between mammography and result (screening: ≤ 15 wd: acceptable 95%, desirable > 95%; ≤ 10 wd: acceptable 90%, desirable >90%; symptomatic: ≤ 5 wd: acceptable 90%, desirable >90%) were met before and after the implementation of BCRMP. In contrast, time between screening mammography result and day of assessment appointment offered to the woman met EC criteria (≤ 5 wd: acceptable level 90%, desirable level >90%; ≤ 3 wd: acceptable level 70%, desirable level >70%) only after the implementation of BCRMP: 100% ≤ 5 wd, 85% ≤ 3 wd (before BCRMP: 18% ≤ 5 wd, 5% ≤ 3 wd). Time between symptomatic mammography result and day of assessment appointment offered to the woman (≤ 5 wd: acceptable level 90% while desirable level >90%) also met EC recommendations only after the implementation of BCRMP: 100% ≤ 5 wd (before BCRMP: 20% ≤ 5 wd).

Conclusions: Implementation of breast cancer rapid management policy together with complex care by multidisciplinary team of newly formed breast unit result in our institution in significant shortening time between diagnosis and therapeutic decisions, which meets EC recommendations at desirable levels.

Conflict of interest: No conflict of interest.

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678. Time to surgery before and after the implementation of breast cancer rapid management policy

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Background: Special effort should be made to eliminate any dispensable delays in cancer therapy. To minimise anxiety for breast cancer patients European Commission (EC) defined and recommended appropriate

performance indicators in terms of working days between therapeutic decision and date of surgery. The aim of this study was to investigate the therapeutic delay in women with primarily operable breast cancer before and after the implementation of breast cancer rapid management policy (BCRMP) in our institution.

Material and methods: We reviewed the data of breast cancer patients diagnosed and operated on in our institution in the year 2015 (when the BCRMP based on newly formed breast team was implemented) and before. Time in working days (wd) between decision to operate and date offered for surgery was measured. Median, mean, standard deviation and range were calculated. The difference was analysed using Mann–Whitney U-test with P-value less than 0.05 considered statistically significant. Results were compared to EC recommendations.

Results: Median time (range, mean, SD) between decision to operate and date offered for surgery before and after the implementation of BCRMP was 15 (4–30, 15.6, 6.3) and 4 (2–11, 6.9, 5.8) working days, respectively. The difference was of very high statistical significance: Z-score -8.8689 , U-value 151, $P < 0.00001$. EC recommended that proportions of women when time between decision and surgery was not longer than 15 wd and 10 wd should be 90% and 70% at acceptable level while $>90\%$ and $>70\%$ at desirable level, respectively. Before the implementation of BCRMP the proportions were: $50\% \leq 15$ wd and $31\% \leq 10$ wd. In contrast, after the implementation of BCRMP these rates were increased respectively to $100\% \leq 15$ wd and $97\% \leq 10$ wd, meeting the EC recommendations at desirable level.

Conclusions: Implementation of breast cancer rapid management policy together with the formation of breast unit, where the diagnostic and therapeutic team may work together in a multidisciplinary setting, resulted in significant shortening of time between therapeutic decision and surgery. Due to this policy delays can be minimised, patient anxiety can be reduced, and EC recommended targets can be achieved in our institution at desirable levels.

Conflict of interest: No conflict of interest.

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679. Non-operative diagnostic service in a newly formed breast unit in the regional comprehensive cancer centre – Quality assessment using key performance indicators

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Background: Minimal-invasive investigations should be considered a norm in the process of breast cancer diagnosis. Its role in malignancy is to attempt to provide a definitive diagnosis allowing rapid referral for treatment. On the other hand, definitive non-operative diagnosis of benign conditions is also fundamental, avoiding surgery for diagnostic purposes. The aim of this study was to evaluate the quality of non-operative sampling techniques allowing histological examination.

Material and methods: Minimal-invasive image-guided percutaneous biopsies performed during the year 2015 were reviewed. Invasive investigation was carried out in screening or symptomatic patients with lesions of radiological category R5 (malignant), R4 (suspicious), and – very few – R3 (indeterminate). Procedures included vacuum-assisted 10G and core-needle 14G sampling techniques completed under ultrasound or stereotactic guidance. Biopsy histological reports were categorised (B1 normal/uninterpretable, B2 benign, B3 uncertain, B4 suspicious, B5 malignant) and analysed along with postoperative pathological reports. Quality of service was assessed using key performance indicators defined and recommended by the European Commission (EC) and compared to EC minimum and preferred standards.

Results: Absolute sensitivity (AS), complete sensitivity (CS), and specificity (SPEC) was 95% (EC minimum standard $>70\%$, preferred standard $>80\%$), 99% ($>80\%$, $>90\%$), and 98% ($>75\%$, $>85\%$), respectively. Suspicious rate and miss rate from cancer was 2.4% ($<10\%$, $<5\%$) and 0.7%

($<15\%$, $<10\%$), respectively. Positive predictive value (+PV) of core/vacuum (postoperative cancers from B5 biopsy results) was 100% ($>99\%$, $>99.5\%$).

Conclusions: Non-operative minimal-invasive diagnostic service in a newly formed breast unit is of high quality. Completion of all the invasive procedures under standardised protocol and imaging guidance results in effectiveness that meets EC recommended standards at preferred levels.

Conflict of interest: No conflict of interest.

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680. Surgical service in a newly formed breast unit in the regional comprehensive cancer centre – Quality assessment using early performance indicators

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Background: “The Florence Statement” demands that all women have access to multidisciplinary breast units based on population of around 250,000 and it calls for mandatory quality assurance programs for breast services. Modern management of breast disease is a multidisciplinary undertaking requiring trained and experienced professionals. All breast units engaged in surgical activity must ensure the formation of proper teamwork involving the radiological staff closely cooperating with surgeons (image-guided biopsy, impalpable lesion localisation, specimen radiogram etc.). The aim of this study was to assess the quality of breast-conserving surgery.

Material and methods: Surgical procedures completed in a newly formed breast unit during the year 2015 were reviewed. Key performance indicators defined and recommended by the European Commission (EC) were measured and calculated. Quality of service was assessed by comparing results to the EC minimum and desirable standards.

Results: All patients (100%) with impalpable lesion had localisation wire placed within the tumour prior to excision (EC minimum standard 90%, preferred standard $>90\%$). No frozen sections (0%) were performed (5%, $<5\%$). Proportion of localised impalpable lesion successfully excised at the first operation was 97% ($>90\%$, $>95\%$). Proportion of all patients where a repeat operation was needed after incomplete excision was 6% (10%, $<10\%$). Proportion of women having 3 or fewer therapeutic breast-conserving operations was 99.5% (90%, $>90\%$).

Conclusions: Due to close teamwork of surgical and radiological staff quality of breast-conserving surgical service meets EC standards at desirable levels.

Conflict of interest: No conflict of interest.

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681. Incidence and trends of gastrointestinal malignancies in Jewish and Arab populations in Israel: A 32-year review

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Background: Gastrointestinal malignancies comprise a broad spectrum of neoplasms with a high overall incidence. Different ethnic groups in Israel have different incidence rate due to different risk factors. In this retrospective study, we investigated incidence trends of these cancers in Israel in both Jewish and Arab ethnic groups in order to better understand the risks in those different groups.

Methods: The study is based on data published by the Israel National Cancer Registry and The Central Bureau of Statistics. We compared statistics between ethnicities and genders. We examined the eight most common gastrointestinal cancers focusing on colon, rectal, and gastric cancers.

Results: Between 1980 and 2012, there was a decline in incidence of gastric cancer in the Jewish population, whereas there was a significant increase

in Arab women, but no significant change in Arab men. Colon cancer showed a relative decrease in incidence in the Jewish population, but an increase in the Arab population. A decrease in incidence in rectal cancer was observed in the Jewish population, while an increase was observed in the Arab population.

Conclusion: Gastric, colon, and rectal cancers exhibit differences in incidence and outcome between Jewish and Arab populations in Israel. These differences were not observed in the other five types of less common gastrointestinal cancers.

	Jews				Arabs			
	Male		Female		Male		Female	
	1980	2012	1980	2012	1980	2012	1980	2012
Colon cancer	33.9	33.6	28.5	25.1	7.9	26*	6.1	22.1*
Gastric cancer	16.8	8.80*	8.95	4.12*	9.78	9.37	4.74	5.35*
Rectal cancer	16.5	10.6*	12.7	7.3*	2.2	7.1*	2.6	6.9*
Pancreatic cancer	8.4	8.5	7.5	6.5	2.6	5.7	4.6	4.3
Liver cancer	3.3	2.9	1.4	1.4	1.2	3.2	0.6	1.1
Gallbladder cancer	1.2	1.6	2.8	1.5	3.8	2.6	2.7	2.9
Esophageal cancer	1.8	1.4	1.3	0.8	1.0	0.7	0.2	0.2
Small bowel cancer	0.5	0.9	0.7	0.8	0.38	0.48	0.68	0.96

Conflict of interest: No conflict of interest.

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683. Audit-based improvements in the management of patients with diseases of the breast in a newly founded breast clinic

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Background: Our hospital's breast clinic started admitting patients in 2013. By retrospectively investigating the management of the patients seen in clinic, we identified possible pitfalls and proposed a course of action to resolve these issues. After implementing most of the changes proposed, a retrospective analysis of the management of patients with breast problems that were seen in 2014 was done, in order to identify new possible problems, and measure the effect of the implemented changes.

Material and methods: The hospital records of patients seen or admitted in our Breast Clinic during the year 2014 were retrospectively reviewed. Compared to year 2013, the changes implemented were: 1) more clinic hours to accommodate the increased need for appointments, 2) a weekly breast surgery list to reduce patient waiting time between clinic visit and surgery, and 3) a faster referral of patients to the Breast MDT following their operation to reduce the time between surgery and administration of adjuvant therapy. Changes regarding the modernization of screening and diagnostic equipment (mammography, ultrasound, stereotactic biopsy table) were not implemented due to lack of appropriate funds.

Results: During 2014, 419 women and 8 men with a mean age of 52,7 years (range 14–90 years) were seen in the outpatient clinic. The waiting time for an appointment was reduced to 7 days. 51% of the patients presented for screening mammography and exam, and 23% for further investigation of a breast symptom (most frequently a breast lump). 35 biopsies were performed (8 FNA, 27 core biopsies) with or without ultrasound guidance. 16/27 core biopsies had a malignant result, while 11/27 were negative for cancer (one false negative result). 6/8 FNAs were negative for cancer, 1/8 was suspicious for cancer and 1/8 positive. There were no false negative FNAs. 40 patients underwent a procedure in their breast(s). A total of 12 open biopsies, 18 wide local excisions (12 wire-guided), and 10 mastectomies (1 bilateral, 3 with reconstruction, 3 MRMs) were performed. SNB was performed in 20 patients and was positive in 7. Re-excision rates for inadequate margins were 0%. In a total of 25 cancer patients treated, the waiting time between the clinic visit and surgery was reduced to 12,7 days (from 16,25 days in 2013), and the waiting time between surgery and MDT discussion was reduced to 33,1 days (from 37,8 days in 2013).

Conclusions: The audit of the management of patients visiting our Breast Clinic during the first year of its operation revealed significant information on potentially useful actions in order to improve patient care. By implementing most of the proposed changes, we managed to significantly improve patient outcomes. However, the need for modern equipment remains obvious, as well as the need to remain alert and seek constant improvement in patient care.

Conflict of interest: No conflict of interest.

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Poster Session: Regional Cancer Treatment and Peritoneal Malignancy

700. Small bowel adenocarcinoma in a regional hospital - a series of cases

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Background: Primary small bowel adenocarcinoma (SBA) accounts for less than 2% of all gastrointestinal tumours and its clinicopathologic characteristics have not been well elucidated. The unspecific and vague symptoms lead to a difficult and usually late diagnosis and consequently to a worse prognosis. In this study we analyse the experience of a regional institution in the management of this rare condition.

Material and methods: Retrospective study of the patients diagnosed with SBA between 1995 and 2014 at our institution. The variables analysed were clinical presentation, diagnostic methods, therapeutic approach, surgical procedures, adjuvant treatment and global survival.

Results: The study included 8 patients (4 males, 4 females). Median age at presentation was 64,1 years. The most frequent initial symptoms

were abdominal pain, nausea and vomiting. Four patients presented within acute clinical settings. Tumours were located at duodenum (n = 4), jejunum (n = 3) and ileum (n = 1). Six patients were submitted to surgery, five of them with curative intent. Surgical treatments performed were segmental resection (n = 3), ileocolic resection (n = 1), pancreatoduodenectomy (n = 1), gastroenterostomy (n = 1). Adjuvant treatment was chemotherapy in 4 patients and radiotherapy in only one patient. Global survival of 46,5 months. Four patients are still alive with survivals between 1,5 and 20 years, free of disease.

Conclusions: The early diagnosis is crucial to allow a radical surgical resection, which is the only potentially curative treatment. Its rarity makes difficult to gather evidence in order to establish therapeutic approach guidelines. Sharing the experience of cases from each center is important to a better knowledge about this entity.

Conflict of interest: No conflict of interest.

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701. Comparison of oral hydration versus conventional intravenous hydration in patients receiving cisplatin in preventing nephrotoxicity
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Background: Cisplatin was discovered more than 40 years ago, and is still used for many different types of cancer. Its wider use has been limited by toxicities, one of which is nephrotoxicity. Early clinical manifestations of the renal effects of cisplatin include a uniformly present polyuria. Hypomagnesemia is a common complication and is likely due to a renal defect in magnesium reabsorption. Hypomagnesemia results in secondary hypocalcemia and hypokalemia. Pre-hydration with saline for a goal urine output of 3 to 4 L per day, drug dosage decrease (toxicity is generally dose-related), and screening for renal abnormalities are the most accepted ways to prevent nephrotoxicity.

Materials and methods: 60 patients in the age group of 16 – 60 years receiving cisplatin based chemotherapy for various cancers were studied for a period of 18 months.

Inclusion criteria: Euvolemic with normal serum creatinine (S.Cr), normal GFR, normal serum electrolytes, completed at least 4 cycles of cisplatin, no history of renal compromise at any time.

Exclusion criteria: Outside the normal range for Weight and BSA, renal insufficiency, S.Cr more than 1.8 mg%, chronic renal failure, comorbid conditions such as uncontrolled hypertension, heart failure, oliguria (24 hrs urine output less than 400 ml), intractable vomiting, who received 3 or less cycle.

Discussion: We studied 60 patients receiving cisplatin based chemotherapy and compared the effects of using ORS as oral hydration versus I.V. saline hydration. All of the patients finished at least 4 cycles of chemotherapy, 14 finished 5 cycles and 10 received 6 cycles. In the I.V. group 14 were females and 16 were males whereas in the oral group 12 were females and 18 were males. The median age of presentation was 50 years in I.V. group, 49.5 in the oral group, the youngest patient being 18, oldest 58 years of age. Cancer of the esophagus and stomach made up 15%, testicular cancer at 13.3% and carcinoma of ovary at 11.7. There was a dip in the GFR among the patients on I.V. hydration in cycle 3 and then a rise in cycle 4, eased out by cycle 6 but were well within the normal range. The difference in the study was found to be significant at cycle 4. In our study both the groups showed magnesium levels maintained well within the normal range, 15 patients from I.V. group, 10 from oral group had recorded hypocalcemia in the first cycle without any clinical features, 1 patient in the I.V. group and one in the oral group showed isolated levels of potassium below normal. Thrombosis of the superficial veins is a very common side effect.

Conclusion: Oral hydration using WHO ORS is as safe as intravenous saline hydration in preventing nephrotoxicity. Going by the results obtained in our study and on comparison with similar studies we conclude that oral hydration can be safely used in patients receiving cisplatin based chemotherapy.

Conflict of interest: No conflict of interest.

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702. Neuroendocrine tumors (NET's) – Unusual clinical presentations
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Introduction: Neuroendocrine tumors are a heterogeneous group of malignant tumors. Earlier thought to be rare, forming 1% of all neoplasms, the current data shows that NET form 10% of all neoplasms. They vary in localisation, clinical presentation, tumor biology & prognosis. The tumors

can occur at any site in the neuroendocrine system. Seventy five percent of NET's arise from the gastrointestinal tract i.e the small intestine, appendix, stomach & rarely the colorectum. The lung & bronchus are the second most common sites forming 20% of all NET's. The Pancreatico-biliary tree, thymus & ovary are the other known sites. Some tumors present with clinical syndromes related to peptides & amine production, or the carcinoid syndromes related to serotonin & tachykinin production from small intestinal NET's (carcinoids). Two unusual clinical cases of NET are described in this presentation.

Case presentation: A 62 year old male presented with a swelling and pain in the right scapular region. MRI and PET-CT scan showed a localized lesion of the scapular spine without any dissemination. The entire lesion was widely resected. Final histopathology revealed a primary NET. Patient is followed up over 4 years & has remained disease free clinically & on imaging.

A 22 year old female was diagnosed as a small cell lung carcinoma & treated with chemo radiotherapy at another institution. Three years later she presented with a large abdomino pelvic mass. MRI & PET scan showed a large lobulated mass arising from the pelvis. The lungs were normal on imaging. A core biopsy reported a NET. Chromogranin A levels were elevated. She had no symptoms to suggest a carcinoid syndrome. Exploratory laparotomy revealed huge bilateral ovarian masses. A total hysterectomy with bilateral salpingo-oophorectomy was performed. The final histopathology showed a high grade NET consistent with metastasis from a small cell neuroendocrine carcinoma of the lung. Post operative chemotherapy (carboplatin, etoposide & capecitabine) were administered. She remains disease free 3 years later.

Conclusion: Primary skeletal NET is extremely rare, literature has reported sacrum and presacral NET's; however, primary scapular spine NET remains unreported.

Metastasis from a primary NET's are known to occur in the liver, lung & bones; however, metastasis to the ovary occur in only 2%. Metastasis to the ovary usually occur from primary carcinoids in the ileum, pancreas, appendix or jejunum. Metastasis to the ovary from a primary lung NET is extremely rare as in this case. Small cell lung carcinoma (SCLC) is considered similar to NET of the lung due to common morphologic, immunohistochemical & molecular features. SCLC is, in fact, a large cell neuroendocrine carcinoma as reported in this patient. The authors present appropriate imaging and histopathology evidence of these cases.

Conflict of interest: No conflict of interest.

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703. Early challenges and outcome in extracorporeal irradiation and reimplantation for primary malignant bone tumours

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Introduction & purpose: Extracorporeal radiation & reimplantation is an innovative method to treat bone sarcomas, especially in long bones and pelvis especially when the need for biological reconstruction is high coupled with dearth of massive bone allografts. This study was performed to analyse the results of extracorporeal radiation & reimplantation after excision of primary malignant bone tumours.

Material & methods: Retrospective data of 18 patients with mean age of 16.3 ± 9.6 years treated during period June, 2009–March 2016 were analysed. Histological diagnosis included 12 Osteosarcoma, 5 Ewing's Sarcoma and 1 Chondrosarcoma. Femur was involved in 8, Tibia in 4, Humerus in 3 and Pelvis in 3. All patients underwent wide excision of involved meta-diaphyseal or pelvic bone segment followed by 50 Gy irradiation in sterile conditions. This irradiated tumour graft was subjected to warm saline pulse lavage, soaked in 3gm vancomycin reimplanted with various osteosynthesis methods depending on the bone segment resected.

Average surgical time was 6.2 ± 1.1 hours, mean blood loss was 540 ± 180 ml. Median follow up was 44 months (range, 15-80). Partial protected weight bearing in pelvis and lower limb reconstruction was allowed by mean 4 ± 0.6 months and full weight bearing by mean 9.4 ± 1.8 months (which correlated with union at osteotomy sites). Patients were followed up at regular intervals as in standard protocols. One patient was lost to follow up at 5 months after adjuvant chemotherapy and one patient succumbed during adjuvant chemotherapy complications 2 months after primary surgery and were excluded from analysis.

Results: At latest follow up, 10 were alive disease free, 3 were alive with disease (lung metastases-2, skull base metastases-1) and 3 patients died of disease (lymphoma post chemotherapy-1, local recurrence with disseminated lung metastases-2). Average time to union at osteotomy sites was 9.4 ± 1.8 months. 11 Complications were observed of which 7 were major types (1 fracture of graft with osteonecrosis, 3 implant failures, 1 delayed union, 2 non-union, 1 foot drop and 1 flap congestion). Revision procedures to treat complications were performed in 9 patients. All complications were salvaged except in one with persistent non-union of distal humerus with infection. One patient with local recurrence of osteosarcoma in soft tissue after 13 months of primary surgery underwent revision with total femur endoprosthesis. Functional outcome in 16 patients at latest follow up according to MSTTS was 24/30.

Conclusion: Reconstruction of diaphyseal and pelvic tumours is a challenge with varying rates of success and complications. Irradiated bone can be a biological and economical solution in this situation with complications that can be salvaged. Patient selection, precise planning, execution and strict postoperative rehabilitation is key for success of this technique.

Conflict of interest: No conflict of interest.

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704. The use of modular resection hip endoprosthesis in the treatment of tumours

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Background: The introduction of resection endoprostheses – Modular Universal Tumour And Revision System – has made it possible to perform a surgery to save a limb in cases of bone tumours. This paper presents the results of the use of modular resection endoprosthesis for hip replacement performed for oncological purposes in the Rehabilitation and Orthopedics Centre in Krakow.

Material and methods: Between 2008 and 2015, 13 patients of the Rehabilitation and Orthopedics Centre in Krakow had 13 hip replacement resection implants provided as a treatment for primary or metastatic foci of femur tumors with a significant decrease of bone tissue. An average observation period was 18 months. The femur lesions were classified using the Katthagen i Paproski scores. The clinical assessment was carried out before the surgery and one year after it. The evaluation was based on the modified Harris Hip Score. The pain intensity was assessed using Visual Analogue Scale. 4 patients from the studied group died within a year after the surgery. Such cases were excluded from the clinical study.

Results: The operated limb could be retained in all the cases. What is more, statistically significant improvement in the Harris score and a reduction of pain (in Visual Analogue Scale) were noted. During the observation period, two instances of endoprosthesis dislocation were recorded. In the first case, a closed reduction of dislocation was performed. In the other case, the remedy was an open repositioning during which the endoprosthesis head was replaced with a longer one. No complications such as infections of the operated area or loosening of the endoprosthesis were observed.

Conclusions: The use of resection endoprosthesis made it possible to retain the patients' limbs as well as their ability to walk. Total hip replacement

improved the patients' quality of life. The use of the modular implant makes it possible to make adjustments to endoprosthesis length and rotation settings after the stem is implanted. This facilitates the correct orientation of the elements of the endoprosthesis in a way that minimises the risk of dislocation.

Conflict of interest: No conflict of interest.

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706. Haematological toxicity associated with hyperthermic intraperitoneal chemotherapy: Comparison of mitomycin C and oxaliplatin

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Background: The combined modality treatment of cytoreductive surgery (CRS) and hyperthermic intraperitoneal chemotherapy (HIPEC) had emerged as an effective tool for treating appropriately selected patients with peritoneal pseudomyxoma and mesothelioma, as well as with peritoneal metastases from appendiceal and colorectal cancer. In all these indications intraperitoneal administration of mitomycin C and oxaliplatin is the most common.

The purpose of the study was to assess the safety and haematological toxicity of both chemotherapeutic agents.

Material and methods: CRS followed by HIPEC was performed 180 times between November 2010 and December 2015 for patients with various peritoneal surface malignancies in good general condition (ECOG ≤ 1). Analysis was narrowed to the 102 procedures with the intraperitoneal use of either mitomycin C ($n = 60$; dose 20 mg/m^2 for 60 min in 42°C) or oxaliplatin ($n = 42$; dose 300 mg/m^2 for 30 min in 43°C), both with open Coliseum technique by means of SunChip® (Gamidatech, Eau-bonne, France). Haematological toxicities were graded according to the National Cancer Institute's Common Terminology Criteria for Adverse Events (version 4.0). Previous systemic chemotherapy was used in 69 (68%) patients. Median body surface area was 1.74 m^2 (range 1.34–2.2).

Results: Median time of hospital stay after CRS and HIPEC was 12 days (range 4–56). Ninety nine adverse events occurred in platelet or neutrophil counts. Ten of those events were grade II/III in 9 patients.

No significant relationship was demonstrated between the frequency and severity of haematological toxicities and following factors: gender, age, BMI, type of peritoneal malignancy, completeness of cytoreduction, cytotoxic drug used, and time of hospitalization. Also, previous chemotherapy did not increase the risk of complications. Low number of grade II and III events (9 cases representing 8%) and the lack of grade IV toxicities was observed.

Conclusions: CRS and HIPEC with both drugs using open technique with relatively short intraperitoneal administration time (30–60 min) is equally safe treatment for peritoneal surface malignancies.

Conflict of interest: No conflict of interest.

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707. Surgical treatment of symptomatic pericardial cyst: A case series and our results for period 2005–2016

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Introduction: Pericardial cysts are rare. These benign intrathoracic lesions are most commonly located either at a cardiophrenic angle or, rarely, in the posterior or anterior superior mediastinum (5%). The majority of pericardial cysts (70%) are asymptomatic and have an uneventful natural course. Symptomatic pericardial cysts present with temperature, fever, dyspnoea, chest pain, or persistent cough; uncommonly, a pericardial cyst may present with haemoptysis, or pleural effusion, pleural empyema, pneumonie, very rarely pneumothorax. We describe our patients with symptomatic pericardial cysts who were treated with thoracotomy after echocardiographically guided percutaneous aspiration on two patients, no video-assisted thoracoscopic surgery, or conservative therapy is used.

Aim of study: Analyse of our patients treated with pericardial cysts, their diagnosis, treatment and treatment results.

Materials and methods: We analyzed 11 patients diagnosed and treated with pericardial cyst for the period 2005–2016. 8 female patients and 3 male patients. Average of age 43 years old (ranging from 21–57 years old). Four (4) patients diagnosed incidentally without clinical signs, while 7 are presented with clinical symptoms and clinical signs, cough, chest pain, sweat, dyspnoea, fever, anorexia.

One of the patient presented with a giant pericardial cyst right mediastinum which was treated first with the repeated puncture of the pericardial cyst which later was infected.

Diagnosis is performed through the history of the disease, chest radiography, CT scanner also MRI in two patients.

Results: All patients were treated by surgical thoracotomy approach. Posterolateral thoracotomy approach on 8 patients, anterolateral thoracotomy 2 patients and total median sternotomy in one patient. Mean size of pericardial cyst 7 × 12 cm (ranging 3–25 cm). Cardiophrenic location 7 patients, and anterior mediastinal superior location 5 patients. To all patients was performed radical extirpation on one case sub total resection because, basal part of the pericardial cyst was of adhered with of great vascular structures and was performed inner mucosal layer extirpation. Morbidity 1%. Long airlock 3%, pleural empyema one patients, hemothorax one patients, bilateral pneumothorax one patient, bilateral pneumothorax one patient, treated by bilateral drainage.

Conclusions: Pericardial cysts are rare and usually clinically silent. Occasionally they cause complications, some of which are severe and even life-threatening. Early diagnosis of pericardial cyst plays an important role in the results of the surgical treatment. Surgical treatment is better of choice.

Conflict of interest: No conflict of interest.

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708. Long-term survival in patients with adrenocortical carcinoma K. Nowak¹, R. Samsel², A. Cichocki², K. Roszkowska-Purska³, L. Papierska¹

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Background: Adrenocortical carcinoma (ACC) is an extremely rare and aggressive cancer with poor prognosis. The aim of the study was to

evaluate the long-term survival and recurrence-free survival (RFS) in patients with ACC, what has never been described before on such a large cohort of Polish patients. Additionally, prognostic factors of overall survival (OS) and RFS were identified.

Material and methods: We present a retrospective analysis in 52 patients diagnosed with ACC. Recurrent disease was defined as a new lesion confirmed in imaging. OS and RFS were calculated using Kaplan–Meier method. Additionally, a number of factors both histological and clinical were analyzed. Multivariate Cox proportional hazard regression model was performed with adjustment for sex, age and ENSAT staging as covariates.

Results: The study included 36 females and 16 males of median age 48 and 57 respectively. 46 patients underwent surgical resection, 6 had unresectable disease. 46 patients received adjuvant mitotane. 28 patients suffered from recurrent disease. 34 patients died due to disease progression. The 5-year overall survival for stage I, II, III and IV disease was 75%, 66.5%, 29.2% and 0%, respectively. The median of overall survival was 43 months (2.3–165.18) and 28.6 months (2–132.8) for recurrence-free survival. Age, male sex, stage, mitotic rate >20/50 high power fields, tumor necrosis, tumor invasion of vessels, neighbouring structure or adjacent organs and time from first imaging to surgery over 70 days were associated with decreased both RFS and OS. Unresectable disease, macroscopically involved margins or tumor infiltration of capsule with crossing its border were only related to poor OS. Ki67, hormonal activity, tumor size, thrombus in vena cava had no influence on RFS or OS.

Conclusions: The 5-year survival, median of RFS and OS were worse than previously reported by other authors. Our study indicates a major role of prognostic factors on survival in patients with ACC. Due to the aggressive behavior of ACC and high percentage of relapse it is crucial to conduct more studies in order to help improving survival.

Keywords: Adrenocortical carcinoma, Adrenal cortex, Long-term survival

Conflict of interest: No conflict of interest.

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709. Metastases to surgical scars from primary operation for intraabdominal malignancies, revisited during secondary cytoreductive surgery for recurrent peritoneal disease

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Background: Cytoreductive surgery (CRS) with Hyperthermic Intra-peritoneal Chemotherapy (HIPEC) is commonly used for the treatment of peritoneal surface malignancies. Most patients present with metachronous peritoneal metastasis appearing months or even years after resection of the primary tumor. One of the possible recurrence sites is the surgical scar from previous operations. The aim of the present study was to evaluate the presence of malignant tissue in surgical scars resected during CRS and HIPEC.

Material and methods: A retrospective study based on a prospectively maintained database. All surgical scar tissue of previous surgical procedures aimed at primary tumor resection was routinely resected during CRS.

Pathology reports of patients who underwent CRS and HIPEC as a second abdominal operation for metachronous peritoneal metastasis were analyzed for the presence of malignancy in the scar tissue.

Results: 158 patients underwent CRS and HIPEC between 6/2007 and 3/2015. Fifteen patients were excluded from the study due to incomplete datasets. Only patients with abdominal scars of previous surgery for the primary tumor resection in the pathology reports were included (n = 110).

Evidence of malignancy in the scar tissue was found in 37 cases out of the 110 studied (34%), with the following occurrence:

Primary colorectal cancer: 23 out of 72 (32%)

Appendicular carcinoma: 7 out of 21 (33%)

Rest (various cancers): 7 out of 17 (41%)

We found that cancer load as estimated by the preoperative peritoneal cancer index (PCI) was a significant risk factor for scar involvement (OR = 1.07. P = 0.01). Scar involvement was directly correlated with shorter disease free survival with a median disease free survival of 15.1 months (± 3.4 , CI 95%) comparing to 40.7 months (± 17.4 , CI 95%) (p = 0.001) As to immediate surgical outcomes, wound dehiscence was correlated with the presence of scar involvement (P = 0.04).

Conclusion: The high incidence of surgical scar recurrence in the presence of peritoneal metastasis, calls for resection of old surgical scars during CRS in order to achieve complete cytoreduction. This recommendation, applies for all types of malignancies treated with CRS and HIPEC.

Conflict of interest: No conflict of interest.

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Poster Session: Sentinel Node Biopsy

725. Near-infrared fluorescence of indocyanine green using for sentinel node biopsy in skin melanoma

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Abstract

Background: Sentinel lymph node biopsy (SLNB) has become the standard method of determining regional lymph node involvement in cutaneous melanoma. Although traditionally performed via injection of radioisotope tracers, fluorescent lymphangiography with indocyanine green (ICG) is an attractive alternative.

Material and methods: Between 02.2015 and 12.2015 twenty-eight patients diagnosed with skin melanoma underwent SLNB using ICG with RI (radioisotope). Preoperative lymphoscintigraphy was performed. The second generation of Quest Artemis- handheld near-infrared fluorescent camera was used. The number of patients with visible fluorescent path was recorded. Furthermore, the number of SLNs detected by fluorophores percutaneously and total number of intraoperative SLNs detected by fluorophores and/or RI was noted.

Results: A total of 59 lymph nodes were identified from the 28 patients (range 1–10). There were no complications related to ICG administration. Rates of SLN detection were 92.9% for RI and 96.4% for ICG. In 28.5% of cases percutaneous lymphatic drainage was observed and 25% of SLNs revealed percutaneous fluorescence. The average number of detected SLNs using RI was 2.11 per patient; using ICG was 2.00 per patient. BMI affect significantly on detection of SLNs.

Conclusions: Fluorescent lymphangiography using ICG is an effective method of SLN identification in patients with cutaneous melanoma. The accuracy of the SLN procedure using NIR fluorescence was similar to that of radiocolloids. SLN detection by ICG add the value of percutaneous lymphatic drainage and SLN assessment.

Conflict of interest: No conflict of interest.

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726. Sentinel node biopsy in breast cancer using near infrared guided indocyanine green in comparison with gamma emitting radioactive colloid tracer

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Abstract

Background: Sentinel node biopsy (SNB) is a gold standard in staging of early breast cancer. Nowadays, routine mapping of lymphatic tract is based on two tracers: human albumin with radioactive technetium, with or without blue dye. Most recently, the use of near infrared (NIR) guided indocyanine green (ICG) has attracted considerable interest. ICG has been used in various surgical settings from NIR guided SLNB to breast tissue perfusion assessment of free flaps in reconstructive surgery and assessment of post-surgical complications such as lymphedema. ICG has demonstrated much applicable versatility.

Material and methods: Between 02.2015 and 12.2015 forty-nine patients diagnosed with breast cancer underwent SLNB using ICG with RI (radioisotope). The second generation of Quest Artemis- handheld near-infrared fluorescent camera was used. The number of patients with visible fluorescent path was recorded. Furthermore, the number of SLNs detected by fluorophores percutaneously and total number of intraoperative SLNs detected by fluorophores and/or RI was noted.

Results: The overall detection of SLNs in breast cancer using ICG fluorescence was identical to RI (98% vs. 98%), and the combination of both methods achieved a improvement compared with RI alone (100% vs. 98.0%). In 85% of patients percutaneous fluorescent of lymphatic path was recorded, but only in two cases SLNs revealed percutaneous fluorescence. The average number of detected SLNs using RI was 2.12 per patient; using ICG was 2.26 per patient. BMI didn't affect SLN detection (p = 0.512). There were no complications related to ICG administration.

Conclusions: The results of this study confirm the high sensitivity of ICG fluorescence for SLN detection in early breast cancer. The use of both NIR fluorescence and radiocolloids lead to a 100% SLN detection rate. The use of NIR guided fluorophores in SLNB for breast cancer seems to provide the additional benefit of real time visualization and localization of SLNs.

Conflict of interest: No conflict of interest.

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Poster Session: Soft Tissue Sarcoma

750. Results of surgical treatment of patients with intra-abdominal desmoid tumors

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Background: Intra-abdominal desmoid tumors (DT) are characterized by severe clinical course, and high recurrence rate (up to 80%) after both curative or cytoreductive surgical treatment. The involvement of major vessels (aorta, inferior vena cava, mesenteric vessels) and retroperitoneal ureter results in limited resectability due to infiltrative growth pattern. The aim of the study was to estimate resectability, immediate postoperative outcome, the recurrence rates and survival of patients with intra-abdominal desmoids tumors.

Material and methods: Forty three patients with Intra-abdominal DT were observed in P.A. Hertenzen's Moscow Cancer Research Institute between 1990 and 2016 years. There were 11 (26%) males and 32 (74%) females. The median age was 42 ± 14.9 years (ranged from 20 to 73 years). Twenty three patient (53%) underwent surgical treatment followed conservative therapy in 20 patients (chemotherapy, antiestrogens, distant radiotherapy or combinations). Among them 12 (52%) patients underwent potentially curative surgery (R0), and 7 (30%) – cytoreductive or palliative surgery (R1/R2). Exploratory laparotomy was performed in 4 (18%) patients with unresectable tumors.

Results/Discussion: The rate of postoperative complications was 26% (grade II – IIIa, Clavien–Dindo). No postoperative mortality was achieved. Long-term outcome were observed in 19 (83%) patients during follow up period from 1 to 168 months (median 36 months). One patient (5%) died from bowel obstruction caused by disease progression. The others are alive. The recurrence rate was 16% in the group of patients underwent curative surgery (R0).

Conclusions: The surgical treatment for intraabdominal desmoid tumors is characterized by low resectability and the high local recurrence rate. Disease-free survival was observed in selective cases. Nevertheless, cytoreductive surgery followed by systemic therapy can prevent life-threatening complication and provide long-term survival and good QOL.

Conflict of interest: No conflict of interest.

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751. Laparoscopic versus open wedge gastric resection of gastrointestinal stromal tumors (GIST): Comparison of outcomes from a two-center case series

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Background: The resection of gastrointestinal stromal tumor (GIST) with microscopically negative margins is considered to be the principle of treatment in localized cases, the question if laparoscopic approach brings better outcomes is still unanswered. The indisputable advantages of laparoscopy in terms of quality of life are confronted with oncological effect of the procedure. Recurrence free survival and complications rate tend to be the most precise factors to evaluate this issue. Aim of our study was to compare the outcomes of laparoscopic and open wedge resection from a two-center case series in primary small and medium size gastric GIST.

Material and methods: A total of 70 patients who underwent elective GIST resection in Maria Skłodowska-Curie Memorial Cancer Center and Institute of Oncology in Warsaw and in Department of General, Oncologic and Digestive Tract Surgery at Medical Centre of Postgraduate Education in Warsaw, Poland between 2003 and 2014 were enrolled in this study. Only patients with histologically confirmed GIST tumors localized in the stomach were studied. There were 70 open wedge resections (OWR) and 14 laparoscopic wedge resection (LWR). Clinical, pathologic and survival variables were analyzed.

Results: We analyzed the tumors in size up to 10 cm in maximal diameter. There were no differences in age distribution, tumor size and location within the stomach between two groups. Median mitotic index was similar in OWR (2/50 HPF; range: 0–25) and in LWR group (3/50 HPF; range: 0–6) in OWR group. In LWR group there were not GIST recurrences, in OWR 2 patients (3%) recurred. Median postoperative follow-up time was 30 months. Intra- and postoperative complication were noted in 10 of 70 OWR cases (14.3%): 3 – grade I, 4 – grade II, 2 – grade III I 1 – grade IV according to Clavien–Dindo classification. 3 patients required additionally splenectomy in OWR group. In LWR 1 postoperative complications were observed (7%) and in 2 cases the conversion from LWR to OWR was necessary (14%). No patient required re-operation in both groups. In OWR group 32 patients were assessed as group III according to the American Society of Anesthesiology (ASA) scale, in LWR group 2 patients were in group III; all other patients belonged to group II. Median time of operation in OWR was 95 min vs 100 min in LWR (not significant statistically; NS). Median hospitalization time (range) after OWR was 6 days (3–10) and 6 days (4–15) after LWR was (NS).

Conclusion: As compared to OWR of small and medium size gastric GIST LWR gives similar oncological and surgical results and is associated with low complication rate. In our opinion laparoscopic resection is safe and effective treatment option for small and medium stomach GIST but its cost-efficacy value can be questionable.

Conflict of interest: No conflict of interest.

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752. Vena cava resections en bloc with retroperitoneal liposarcoma

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Background: Surgical resection of the inferior vena cava (IVC) en bloc with large retroperitoneal tumors, most commonly renal carcinomas or retroperitoneal sarcomas, is a challenge in order to perform a radical operation. Whether reconstruction should be performed or not, as well as occurrence of postoperative lower extremities edema are subject to various parameters.

Material & methods: A 61-years-old female patient presented to us with a huge, palpable retroperitoneal tumor, extending to the perirenal fat on CT scan. The IVC appeared compressed by the tumor, however the legs were not clinically edematous. The abdomen was approached through a sternopubic midline incision, which was extended to the right transversely. Intraoperatively, the tumor was also noted to involve the lower pole of the right kidney. In an effort to define the tumor's relation to the vena cava, massive bleeding was encountered. Therefore, it was decided to perform salvage en bloc resection of the tumor with the right kidney and IVC segment extending below the renal veins to the iliac bifurcation, without reconstruction. Total volume of blood units transfused amounted to 1800 ml. The resected specimen measured 34 × 18 × 5 cm. Histopathological analysis revealed a low-grade retroperitoneal liposarcoma which encompassed the IVC.

Results: The patient's postoperative course was uneventful. Low compression leg stockings were utilized and there was no edema immediately after surgery, or even to date.

The patient presented with small metastatic deposits to the lungs in a follow-up CT scan performed 20 months after the operation and she is currently undergoing chemotherapy.

Conclusion: In order to achieve radical excision of large, retroperitoneal sarcomas, it is feasible to resect the IVC en bloc with the tumor, even on an emergent basis and without performing any reconstruction. Venous circulation of the lower extremities remains uninfluenced, as a result of the collateral circulation developed due to the IVC occlusion or compression for a long period of time. Surgeons must, therefore, not hesitate to perform en bloc resections in selected cases, in order to achieve radical tumor excision.

Conflict of interest: No conflict of interest.

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753. Results of surgical treatment for desmoid tumors of the abdominal wall

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Background: The annual incidence of the of the abdominal wall desmoid tumors (DT) is estimated at 2–4 cases per 1 million people, which amounts less than 0.01–0.03% of all soft tissue tumors. DT is more likely to develop in women (96.5%) of reproductive age. Abdominal wall desmoids is separate form of the DT, which requires the special therapeutic approach. The aim of the study was to decrease the recurrence rate and improve the functional and cosmetic results after surgical treatment of patients with abdominal wall desmoids.

Materials and methods: Forty seven patients with abdominal wall desmoids were operated in P.A. Herzen's Moscow Cancer Research Institute between 2009 and 2016 years (46 female and one male). The tumor was localized in the right or left rectus abdominis muscle in 18 (38.2%) and 19 (40.4%) cases, respectively. In 3 (6.3%) patient the oblique muscles were involved and in remaining 5 (10.6%) – tumor invaded multiple abdominal muscles (rectus, oblique and transverse). Subtotal resection of the involved muscle with the aponeurotic sheath en bloc was performed in patients with desmoids in rectus abdominis muscle. In case of lateral localization a wide excision of the oblique and transverse muscles was performed. Abdominoplasty with composite mesh was performed in 46 (97.8%) cases. 10 (21.7%) patients underwent removal of both rectus muscles with total abdominoplasty.

Results/Discussion: All patients achieved a good functional and cosmetic results as well as they sustained normal physical activity level. The symmetry of the abdominal wall was maintained. There were no post-operative hernias. Of all primary operated patients, relapse occurred

in 1 (2.1%) cases. Two patients carried pregnancy and gave birth to healthy babies after abdominoplasty.

Conclusions: Surgery is the main treatment for abdominal wall desmoids. Subtotal removal of the affected rectus muscle and reconstruction of the postoperative abdominal wall defects with a composite mesh provides the best aesthetic and functional results with minimal recurrence rate.

Conflict of interest: No conflict of interest.

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755. Gastrointestinal stromal tumors: The clinical and histopathological presentation of 25 cases

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Background: Gastrointestinal Stromal Tumors (GIST) are originated from mesenchymal cells and express the cKIT (CD117) protein; the most involved are gastrointestinal organs, and rarely extraintestinal retroperitoneum, mesentery and omentum. They are localised commonly in the stomach (50–60%), followed by small bowel (20–30%), colon-rectum (10%), oesophagus (5%), and other intra-abdominal sites (5%). Histologically were classified as spindle cells (70%), epithelioid (50%) and mixt (5%).

Material and methods: 25 patients were operated and followed between 2002–2015 at GOP Taksim Education and Research Hospital; the median follow time was 3.4 (5 months–13 years).

Results: The ratio between F/M was 15/10; average age:60.4 (29–82) years. Four patients were diagnosed incidentally at patients operated for other reasons: gastric cancer, sigmoid volvulus, colon cancer, renal cancer. Twenty two patients were classified according with Fletcher system (3 patients were stage 4). The average of Ki67 of stage 4 patients was 15.6 (7–25), intermediate and high risk patients was 9 (2–25). Twenty four (96%) patients were operated, one patient classified as stage 4 is still on follow-up without surgery; cases with high risk and stage 4 were treated with Imatinib. One patient with stage 4, had developed intolerance to Imatinib during the three years of follow-up. One patient was resected and follow up during 13 years, developed local recurrence before 5 years, but continue to live without recurrence.

Conclusions: we analysed the clinical and pathological characteristics of GIST admitted and treated during the past 13 years; the most common site of tumor origin was stomach; the size, mitotic index and Ki67 values were found high in intermediate, high risk group and metastatic diseases.

Conflict of interest: No conflict of interest.

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756. Resection of primary leiomyosarcoma of the inferior vena cava (IVC) with reconstruction: A case series

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Introduction: Complete gross surgical resection, including surrounding organs (mostly kidney and adrenal gland) is the mainstay of treatment of primary inferior vena cava (IVC) leiomyosarcoma. The site of the lesion was classified by Kieffer in three segments: below the renal veins (I); inflow of the renal veins (II); above the renal veins (III).

Materials and methods: From January 2005 to March 2016, 5 cases of IVC leiomyosarcoma involving segments I and II were treated. The resection of IVC was conducted at 1 cm from the tumor edge, and the adequacy of margins routinely evaluated on frozen section. Preoperative radiation therapy (RT) was delivered through external beams modality at a median dose of 50 Gy in two cases. Preoperative anthracycline-based regimens were used in one patient.

Results: Primary repair of IVC was performed in one patient in which a small segment of IVC was involved. Reconstruction of IVC with renal vein reconstruction with an armed PTFE graft was performed in two cases with segment I-II sarcoma. In one case of segment II sarcoma a dacron prosthesis was employed, while in one case of segment I sarcoma inferior vena cava was ligated below the venal veins due to the angiographic demonstration of a good collateral circulation. In two cases a concomitant nephrectomy and adrenalectomy were performed due to vascular/parenchymal involvement. Early clinically relevant complications were detected in two patients (symptomatic graft thrombosis, venal rein thrombosis). No reoperations were needed. No late relevant complications were observed. Overall graft patency was 80%. At a

median follow up of 31.6 months, local recurrence, distant metastases, and survival rate were 20%, 60%, and 60%, respectively.

Discussion: This series shows that major vascular resections are feasible and safe in the context of surgery for retroperitoneal sarcoma. 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 complex patients.

Conclusions: The observed outcomes suggest that survival is dependent upon complete clearance of the primary pathology and tumour biology rather than vascular-related complications, as stated by current literature.

Conflict of interest: No conflict of interest.

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Poster Session: Urological Cancer

775. Extended versus standard pelvic lymphadenectomy in radical cystectomy for urinary bladder cancer, a comparative study

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Objective: Compare extended lymphadenectomy to standard lymphadenectomy regarding occurrence of complications, operative duration blood transfusions, Cancer-specific survival (CUSS), recurrence-free survival (RFS), Number of total and positive LN yield, density, and effect on survival.

Material and methods: We retrospectively identified 204 patients had urinary bladder cancer confined to bladder wall from the period January 2000 to January 2013 underwent radical cystectomy in South Egypt Cancer Institute Assuit university, patients were divided into 2 groups Group I (147 patients) had a standard pelvic lymph node dissection (PLND) Group II (57 patients) had Extended PLND in each group we evaluated the Oncological, operative data, Peri-operative and late complications.

Results: There is improvement in recurrence free survival (RFS) in group II with percentage 84%, 73% and 67% for 2, 3 and 5 years, respectively where that of Group I is 77%, 67% and 54%.

Conclusions: Performing an extended lymphadenectomy till the origin of inferior mesenteric artery for bladder cancer is potentially curative with improved RFS, DSS survival without adding to the overall operative time and morbidity compared with a standard PLND.

Conflict of interest: No conflict of interest.

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776. Functional outcome improvement with Studer's orthotopic Neobladder after radical cystectomy, 10 years'

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The objective of this study was to retrospectively study the feasibility and results of Studer's orthotopic bladder in the last decade.

We retrospectively identified 39 patients who underwent Radical cystectomy and Studer's Orthotopic Neobladder in South Egypt Cancer Institute (SECI) for the period January 2004 to January 2014. We evaluated oncological and functional outcomes—peri-operative and late complications.

Results: There were 39 patients (37 men and 2 women) studied in total. The median age was 55 years. Median operating time was 315 min. Median blood loss 1000 ml. Median hospital stay was 14 days. Bilateral nerve sparing in 25 patients (64.1%). Seminal sparing in two patients (5.1%). Early complication in 12 patients (30.8%). Late complication in 8 patients (20.5%). Overall 5-year survival was 28 patients (71.8%). Overall cancer-specific mortality was 6 patients (15.4%). Surgery-related overall mortality was 2 patients (5.1%). Overall recurrence rate in 6 patients (15.4%), with local pelvic recurrence in two patients (5.1%) and distant metastasis in 4 patients (10.3%). 27 patients (69.2%) >patients received adjuvant chemotherapy. 26 patients (66.7%) patients received adjuvant radiotherapy. Pathological TNM staging; IIA, IIB, IIIA, IIIB, IVA was 4 patients (10.3%), 4 patients (10.3%), 14 patients (35.9%), 3 patients (7.7%), 14 patients (35.9%), respectively. Continence after 6 months; Day-time, Night-time were 33 patients (84.6%), 18 patients (46.2%), respectively. Continence after 1 year; Day-time, Night-time were 36 patients (92.3%), 35 patients (89.7%), respectively. Ability to empty in 36 patients (92.3%). The radiological evaluation in each patient were revised; the oncological outcome were revised with RECIST criteria (version 1.1) while the bladder capacity and postmicturition residue were calculated by prolate ellipsoid equation. Median bladder capacity after 6 and 12 months were 320 mL and 480 mL, respectively. Median residual urine after 6 and 12 months were 30 mL and 15 mL, respectively.

Conclusion: Studer's Orthotopic Neobladder is a safe and effective option for urinary diversion in selected patients with good oncological and functional outcomes, and has an acceptable early and late complication rate.

Conflict of interest: No conflict of interest.

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777. Image guided treatment of lymph nodal recurrence after radical prostatectomy

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Background: Advances in imaging techniques are allowing early diagnosis and localization of tumor recurrence after local treatment failure. In this context, patients with lymph nodal recurrence (LNR) after radical prostatectomy (RP) can benefit from a rescue lymphadenectomy (LDNR) or radiotherapy (RT). We analyze our series of treated patients diagnosed with LNR after RP.

Material and methods: Between May 2012 and March 2016, 15 patients, with a mean age of 67 years (60-82) were included. Pathological stage of PR: 6pT2 and 8 pT3. Two patients had Gleason 6 and 12 Gleason ≥ 7 . The diagnosis was made by PET-CT cholina in 10 patients and by magnetic resonances in 4 patients. The LDNR was bilateral and RT was applied on the affected unilateral lymph nodes with 3–6 months of neoadjuvant androgen deprivation (DA). Biochemical recurrence (BR) after LDNR was defined as rising PSA >0.2 ng/ml and after RT increase $>10\%$ PSA compared to pre-treatment value.

Results: LNR were diagnosed at a median 33 m after PR. Median PSA at diagnosis was 2.5 ng/ml (range 0.57–4.18) and all were located in the pelvis. Eleven received salvage RT and 4 LDNR ($n = 4$). After RT, with a mean follow-up of 25 months, 7 patients were free of biochemical recurrence. Two patients treated with RT plus short-term AD are free of BR 4 and 3 years after this treatment. With LDNR and a mean follow-up of 15 months all had BR. Not a patient had any toxicity for both treatments.

Conclusions: The LDNR and RT in patients with LNR are safe and feasible. Urologists and radiation oncologist must inform to the patients about these treatments. It requires a longer follow up to objective their both long term potential benefit.

Conflict of interest: No conflict of interest.

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780. Factors affecting urinary retention after transperineal template biopsy of the prostate

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Introduction: Transperineal template biopsy of the prostate for diagnosis of prostate cancer is associated with transient voiding impairment. Urinary retention is a recognised possible complication, often requiring catheterisation and further management. We present potential patient and procedure-related factors, which influence occurrence of urinary retention after transperineal template biopsy.

Patients & methods: Retrospective data collection of 154 consecutive cases of transperineal template biopsies performed at a single institution (January–July 2015) were analysed. 30 patients were excluded due to incomplete data, leaving 124 cases available for inclusion and further analysis. Median age was 67 years (range 46–79).

Results: Incidence of urinary retention was 11/124 patients (8.9%) and this developed <24 hours after the procedure. Prostate volume was significantly greater in comparison with the non-retention group (mean 87.5 vs. 57.7 cc, $P = 0.0084$). Prostate volume in the retention group was found to be 45 cc or greater. The number of biopsies taken was positively associated with development of urinary retention (median 36 vs. 32 biopsies, $P = 0.021$) and unrelated to prostate size ($R^2 = 0.2$).

Patient age, presenting PSA, IPSS score and histopathological outcome were independent of urinary retention.

96.8% (120/124) patients were given prophylactic tamsulosin on the day of procedure, and 28/124 patients (22.6%) were already taking regular tamsulosin. All patients in the retention group had tamsulosin on the day of procedure and 7 for the 11 urinary retention cases were already taking tamsulosin regularly.

Conclusions: A larger prostate size and a greater number of biopsies taken are significant independent factors conferring an increased risk of urinary retention. This suggests that targeted biopsies alone, instead of the full template may avoid this complication in the at-risk groups identified above. Rates of urinary retention may have been greater without pre-procedural tamsulosin; however, a conclusion cannot be reached regarding its efficacy without intentional randomisation.

Conflict of interest: No conflict of interest.

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