8th Congress of the Baltic Association of Surgeons

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8th Congress of the Baltic Association of Surgeons

Tallinn, Estonia

10.09-12.09.2015

Abstracts

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Dear friends,

The Baltic Association of Surgeons and the Estonian Association of Surgeons are pleased to invite the surgeons of the Baltic Sea region to the 8th Congress of the Baltic Association of Surgeons to be held in Tallinn on September 10-12, 2015. The main goal of the BAS Congress is to bring together and unite Estonian, Latvian and Lithuanian colleagues as well as colleagues from our neighbouring countries, and to develop cross-border cooperation to better manage the challenges of today.

Cooperation does not mean absence of conflict but rather a process involving the use of discord to stimulate mutual adjustment. Cooperation is not equivalent to harmony: harmony requires complete identity of interests, but cooperation can take place in situations that combine a mixture of conflicting and complementary interests. Therefore, cooperation does not necessarily need to be unanimous in all cooperative arrangements but should proceed through a process of negotiation. In short, cooperation is not a smooth and idealistic entity.

The Baltic States, bound together by history and geography, have experienced various types and ways cooperation, both fruitful and unsuccessful. The former Latvian President and orthopaedic surgeon Valdis Zatlers in his 2011 interview evaluated Baltic cooperation on a five-point scale with grade "5-". Even though the minus means space for improvement in relations, the grade indicates ample healthy optimism, which comes often scarce at complicated times. Adapting the President's evaluation to surgery, one can say that our cooperation is viable, which is clearly illustrated by the next, 8th BAS Congress. Yet there could be many more joint undertakings also during the interim period – why not through the establishment of the Baltic Journal of Surgery, cross-border quality registries or coordinated marketing activities for improved capability of regional healthcare exports.

In healthcare and in surgery, our challenges and opportunities are very much alike. Aging and obese population, increase in the prevalence of cancer, tight healthcare budget, labour outflow from the healthcare sector, new developments in the IT sector, increase in patient awareness and demands, orientation towards export markets, EU created opportunities and challenges, etc. Current healthcare models might not be able to manage those tasks, but what models are better?

As the finding of solutions to all problems might be beyond one small country, I am convinced that splitting tasks, and learning from each other's successes and failures are our chance. Smart specialization in E-health, export of healthcare services, and expensive or resource-intensive healthcare services are just one of the few possibilities. New models have to look further than just the next curve on the road to the future. Let's not forget that in the eyes of the rest of the world, the Baltic States are seen economically, politically and regionally as one whole. Three small countries together provide more opportunities in every sense than each of them would do individually. The success of one is passed over to the others as are the problems. Hence it is unavoidable to keep in line with the fate of one's colleagues in a neighbouring country. Besides, one can always find many more arguments for getting together, for exchanging experience and cooperation than for mucking about.

Welcome to Tallinn 2015!

Dr Jüri Teras
President of the BAS Congress 2015

BAS VIII Congress program

10.09.2015	
GRAND HALL	
09.30-11.00	**SESSION I** **FINDING NEW MODELS IN HEALTHCARE** Toomas Hendrik Ilves (EST); Chris Holtby (UK); Andres Võrk (EST); Tanel Ross (EST)
11.00-11.30	Break, exhibition
11.30-13.00	**SESSION II** **TECHNOLOGICAL REVOLUTION IN MEDICINE** Jüri Vain (EST); Jaan Tallinn (EST); Taavi Kikas (EST); Jouni Ruoppa (FIN)
13.00-14.00	Break, exhibition
14.10-16.00	**SESSION III: CONGRESS OPENING** **QUALITY IN SURGERY** Graeme Poston (UK) *Quality assurance, centralisation and outcomes in complex cancer surgery* Torbjörn Holm (SE) *The Swedish colorectal cancer registry- what is it and how is it used to improve quality in surgery?*
16.00-16.30	Break, exhibition
16.30-18.00	**SESSION IV** **ABDOMINAL WALL CLOSURE** Martin Schilling (CH) *Abdominal wall closure in 21 century* Ceith Nikkolo (EST) *Does mesh pore size have an impact on reducing chronic pain after inguinal hernioplasty?* Rytis Rimdeika (LIT) *Reconstruction of sternal defects after cardiac surgery* Igor Ivanovs (LAT) *Tapp inguinal repair using meshes without fixation*
18.00	Welcome reception in Congress Venue

11.09.2015	
GRAND HALL	
08.00-09.30	**SESSION V** **TRANSPLANT SURGERY** Krister Höckerstedt (FIN) *Transplant surgery in Scandinavia* Tanel Laisaar (EST) *Transplant surgery in Estonia* Kestutis Strupas (LIT) *Abdominal organ transplantation in Vilnius UH "Santariskiu klinikos"* Jaanus Kahu (EST) *Renal transplantation*
ARTIS HALL	
08.00-09.30	**SESSION VI** **BARIATRIC SURGERY** Richard Welbourn (UK) *Beyond restriction and malabsorbtion* Almantas Maleckas (LIT) *Surgery in treatment of type 2 DM* Ilmar Kaur (EST) *5 year follow up results of bariatric surgery in Estonia* Olegs Kozlovskis (LAT) *Closure of mesenteric window in gastric bypass surgery* Žygimantas Juodeikis (LIT) *Laparoscopic adjustable gastric banding: long –term results of a prospective study*
09.30-10.00	Break, exhibition

GRAND HALL	
10.00-11.30	**SESSION VII** **COLORECTAL SURGERY I** Graeme Poston (UK) *The multidisciplinary management of metastatic colorectal cancer* Paul Sugarbaker (USA) *Preoperative assessment of colorectal cancer patients with peritoneal metastases for complete cytoreduction*
11.30-13.00	Break, exhibition

GRAND HALL	
13.00-14.30	**SESSION VIII** **COLORECTAL SURGERY II** Torbjörn Holm (SE) *Abdominoperineal excision for low rectal cancer- indications and technique* Eligijus Poskus (LIT) *Evolution of laparoscopic colorectal surgery in Vilnius UH "Santariskiu klinikos"* Indrek Seire (EST) *Colorectal cancer registry - who needs it?* Ints Brunenieks (LAT) *Treatment of obstructed defecation syndrome*
ARTIS HALL	
13.00-14.30	**SESSION IX** **PLASTIC SURGERY I** Lauri Maisvee (EST) *Free vascularized bone grafts in head and neck reconstruction. North Estonian Medical Centre experience* Kalvis Pastars (LAT) *Outcome study of 87 patients with late stage oral cavity cancers: reconstruction, recurrence, survival rate and quality of life* Kalvis Pastars (LAT) *Reconstruction of oesophagus for patients with esophageal defect or stenosis* Janis Zarins (LAT) *Clinical and pathomorphological results of 40 patients with head and neck reconstruction using microvascular flaps and bone grafts* Romek Märtsin (EST) *Definitive treatment of soft tissue defects in patients from Ukrainian war-zone- a series of plastic surgical cases performed in North Estonian Surgical Centre* Janis Zarins (LAT) *Treatment options and functional outcome of severly damaged open tibial fractures*
14.30-15.00	Break, exhibition

GRAND HALL	
15.00-16.30	**SESSION X** **GENERAL AND EMERGENCY SURGERY** Martin Björck (SE) *Abdominal compartment syndrome* Guntars Pupelis (LAT) *Surgical management of necrotising pancreatitis* Haralds Plaudis (LAT) *Minimally invasive management of complicated gallstone disease* Mindaugas Kiudelis (LIT) *Patient support in early trauma period* Sten Saar (EST) *Severe trauma in Estonia: 254 consecutive cases analysed*
ARTIS HALL	
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16.30-17.00	Break, exhibition

GRAND HALL	
17.00-18.30	**SESSION XII** **Vascular surgery** Martin Björck (SE) *Acute mesenterial ishaemia* Arminas Skrebunas (LIT) *Outcomes of uncomplicated type B aortic dissection treatment* Heli Järve (EST) *Acute mesenteric ischaemia: surgical management and previous diagnostic procedures at Tartu University Hospital 2006–2014*

ARTIS HALL	
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GALA DINNER	

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GRAND HALL	
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11.00-12.30	**SESSION XV** **INNOVATION IN SURGERY** Andreas Kirschbaum (GER) *Laser-assisted pulmonary metastasectomy-indications, technique and experience* Giampera Francica (IT) *Percutaneous Laser Ablation: technology and application fields*
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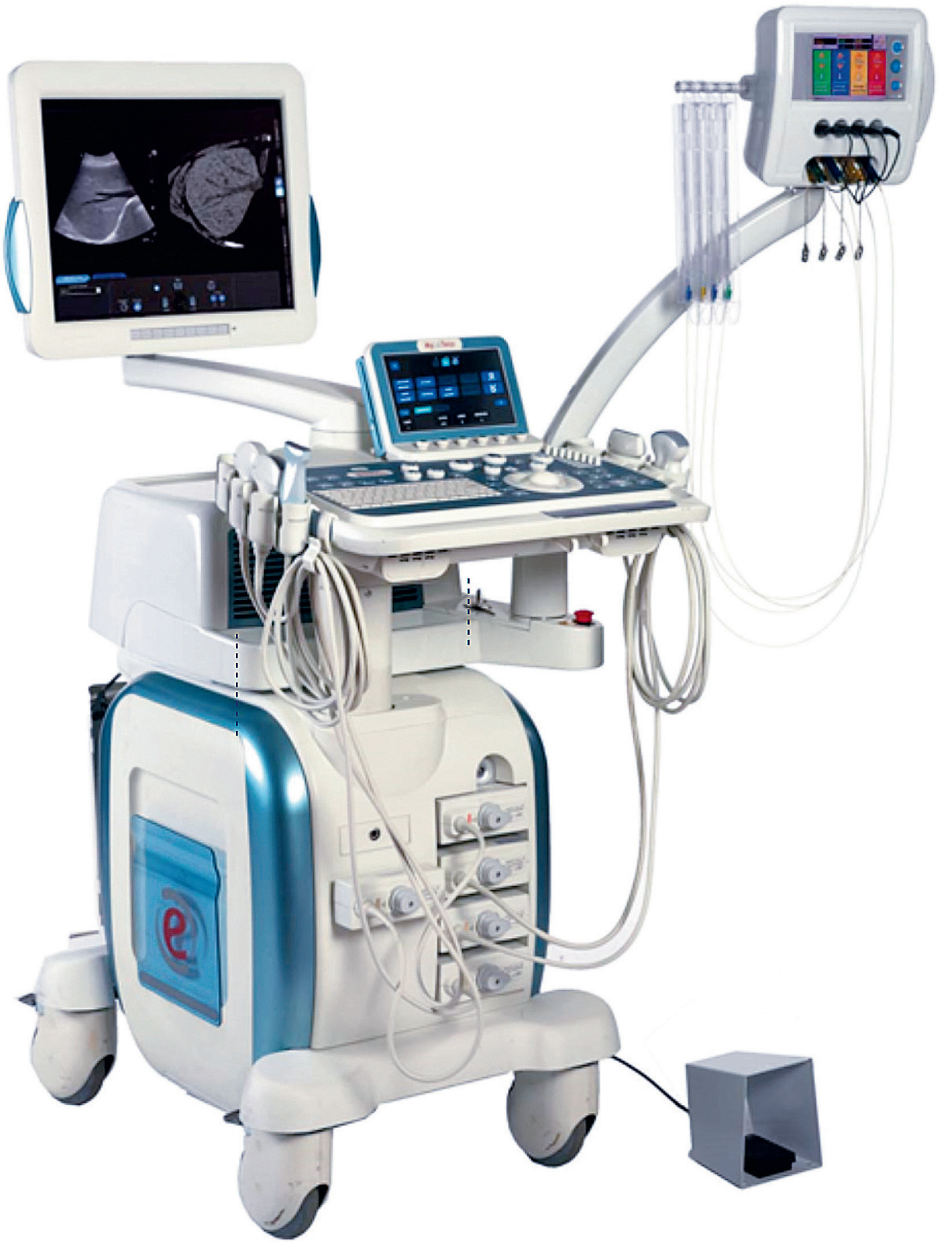

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Invited Congress Faculty

TRANSPLANT SURERY:

prof Krister Hökerstedt, Finland
Krister Hökerstedt, MD, PhD is the pioneer of hepatic transplantation in Scandinavia. He made the first ever hepatic transplantation in Scandinavia in 1982 and has work for many years promoting transplantation in Finland. Prof Hökerstedt is holding the position of Chairman of Scandiatransplant since 2010.

COLORECTAL SURGERY:

prof Torbjörn Holm, Sweden
Torbjörn Holm, MD, PhD is a Professor of Surgery at the Department of Molecular Medicine and Surgery, Karolinska Institute in Stockholm, Sweden. Professor Holm has made significant advancements in surgical management of locally and regionally advanced rectal cancer and he is currently the Chair of the Division of Coloproctology at the Karolinska University Hospital.

VASCULAR SURGERY:

Prof Martin Björck, Sweden
Martin Björck (MD, PhD), professor-chair of Vascular Surgery, Institution of Surgical Sciences, Department of Vascular Surgery, Uppsala University Hospital, Sweden. His main research interests are in abdominal aortic aneurysm, intestinal ischemia and abdominal compartment syndrome. Professor Björck is a principal initiator and designer of abdominal aortic aneurysm screening programme in Sweden. Professor Björck is associate editor in European Journal of Vascular and Endovascular Surgery and board member of several scientific journals.

BARIATRIC SURGERY:

Prof Richard Welbourn, UK
Richard Welbourn is a Consultant Surgeon in Musgrove Park Hospital, Taunton, where he developed a regional bariatric surgery programme in 2003. He led the unit to become the first International Center of Excellence for Bariatric Surgery outside the USA. The unit has performed well over 2,000 procedures, mainly gastric bypass and gastric banding. He is one of the most well-known bariatric surgeons in the UK and has been elected President of the British Obesity and Metabolic Surgery Society since January 2013. He was the lead author of the first National Bariatric Surgery Registry report in April 2011.

SURGICAL ONCOLOGY:

Prof Paul Sugarbaker, USA
Paul H. Sugarbaker, MD, is the medical director for the Center for Gastrointestinal Malignancies at MedStar Washington Hospital Center. Acknowledged as a national and international expert in surgical oncology, he is best known for his expertise in gastrointestinal surgical oncology for rare diseases, such as pseudomyxoma peritonei, peritoneal mesothelioma, abdominal sarcomas and peritoneal carcinomatosis from colorectal cancers.

Prof Graeme Poston, UK
Graeme J. Poston, Consultant Hepatobiliary Surgeon has over 20 years experience in Hepatobiliary surgery and has been a pioneer in this area. He has an international reputation and has been awarded a number of personal accolades for his work in this area. Currently Professor of Surgery, University of Liverpool.

ABDOMINAL WALL CLOSURE, HERNIA SURGERY:

Prof Martin Schilling, Switzerland
Martin Schilling, MD, PhD is professor of surgery in Luzern, Switzerland. He has worked in several clinics in Germany and is an internationally recognized lecturer in abdominal wall closure and skin and soft tissue infections. He has conducted and published several studies on abdominal wall closure and is the author of several publications in gastrointestinal surgery.

INNOVATION IN SURGERY:

Dr Andreas Kirschbaum, Germany
Andreas Kirschbaum, MD, PhD is assistant professor of surgery in University of Marburg and chief of thoracic surgery in University Hospital Marburg, Germany. He is a thoracic surgeon and surgical intensivist with medical fields of interest in laser surgery, video and robotic assisted thoracic surgery.

Dr Giampiero Francica, Italy
Giampiero Francica, MD, PhD, chief of interventional ultrasound unit in Castel Volturno, Italy, is acknowledged speaker on ultrasound topics in Italy and abroad. He has visited several hospitals around the world to illustrate laser ablation in liver and thyroid applications though both seminars and live sessions in operating room. He has published extensively on several fields of medicine.

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1. ABDOMINAL SURGERY

101. Surgical challenge: retroperitoneal tumour mimicking gastric cancer

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INTRODUCTION. The evaluation, treatment and diagnostics of retroperitoneal tumours are challenging as these neoplasms are relatively rare and they can mimic each other by the way of growth and appearance. In addition, these tumours frequently present as an advanced disease in an anatomically complex location.

MATERIALS AND METHODS. The clinical, radiological imaging, endoscopic and treatment data were reviewed from medical histories. Evidence-based methods of tissue examination, including histochemistry and immunohistochemistry (IHC), were used to detect the histological origin of tumour.

RESULTS. A 60-year-old woman underwent emergency hospitalisation due to acute abdominal pain. Computed tomography revealed a large pathological mass that was located under the left side of the diaphragm. It was tightly associated with the stomach. On fibrogastroscopy, gastric fistula was evident. Gastrointestinal stromal tumour was suspected. Partial gastrectomy, splenectomy, resection of pancreatic tail and part of the diaphragm along with the tumour were performed. The gross examination disclosed a large yellow mass, measuring 20x19x11cm and showing infiltration into the stomach, spleen and pancreas. Atypical spindle cells with high mitotic rate, herringbone pattern, focal necrosis and invasion in gastric wall, spleen and diaphragm but not in pancreatic tissues were detected by microscopic evaluation. On IHC, only vimentin, CD99 and Bcl-2 were expressed, but pan-cytokeratin, CD117, CD34, S-100 protein, desmin, actin and HMB-45 were negative (all IHC reagents: Dako, Glostrup, Denmark). The proliferation fraction by Ki-67 was 73.6%. According to morphology and IHC, retroperitoneal fibrosarcoma was diagnosed. Although microscopic tumour had spread to the soft tissue, the resection line was evident, the postoperative period was uneventful. No distant metastases were found.

CONCLUSIONS.

- Here we present a well-documented case of fibrosarcoma that represents a rare entity in the era of immunohistochemistry.
- Retroperitoneal tumours can attain large size despite the clinically silent course before affecting surrounding tissues or organs.
- Radiological data can be difficult to interpret, especially under the conditions of marked tumour invasion and related anatomical deformities. Consequently, there is a substantial risk of positive resection margins.
- Definitive tumour diagnosis can be reached by a combination of histochemical and immunohistochemical investigations.

102. Laparoscopic intraoperative sonoscopy and choledochoscopy in patients with suspected choledocholithiasis

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INTRODUCTION. Surgical treatment of emergent patients with a complicated gallstone disease is challenging due to limited time for preoperative MRCP or ERCP and often more complicated surgical intervention due to oedema and inflammation. Laparoscopic common bile duct clearance (LCBDC) can be applied in the management of elective patients, however, definition of indications for urgent LCBDC is still a matter of debate.

AIM. The aim of the study was to share our experience with one-stage LCBDC with assistance of intraoperative ultrasonoscopy (IOUSS) and choledochoscopy.

MATERIALS AND METHODS. A total of 320 patients with suspected choledocholithiasis (dilatation of common bile duct > 6 mm, elevated bilirubin levels, biliary pancreatitis and/or cholangitis) were selected for one-stage LCBDC from 2012–2014. IOUSS was done in all patients and only patients with proven choledocholythiasis were included in the study. Patients were stratified into two groups according to presence (CH+) group or absence of cholangitis (CH-) group. Diagnosis was based on the criteria recommended in the Tokyo guidelines 2013. Patient demographics, comorbidities, preoperative imaging, perioperative inflammatory response, type of surgical intervention, complication rate and outcomes were compared for the groups.

RESULTS. Choledochoscopy was done in 99 patients (CH+, n = 60; CH-, n = 39) and 57 of them had jaundice, 60 had cholangitis, 23 had biliary pancreatitis and 51 had acute cholecystitis. Preoperative non-invasive imaging was done in 32–46% of the patients without a difference between the groups. Preoperative hospital stay was four days in both groups, operative time was 95–105 minutes, conversion rate was 3–7% without a difference between the groups. T-tubes were placed in 9 patients. Bile duct clearance was achieved in 94.9%. Preoperative inflammatory response was markedly higher in the CH+ group, however, the level of liver enzymes, activity of lipase and alkaline phosphatase were not different. Macroscopic signs of infection, inflammatory changes of the gallbladder and signs of bile duct inflammation during choledochoscopy were more evident in patients with cholangitis. Postoperative inflammatory response was not statistically different between the groups. Overall complication rate was 8.3% and 5.1%. Laparoscopic clearance of the biliary tree in our cohort of 99 was associated with one lethal outcome in the CH+ group, resulting in 1% mortality in the cohort and similar 12-month readmission rate for the groups.

CONCLUSION. LCBDC with assistance of IOUSS and choledochoscopy is a feasible and safe procedure that can be provided in urgently admitted patients with choledocholithiasis combined with acute cholangitis and pancreatitis.

103. Postoperative pancreatic fistula after pancreaticoduodenal resection

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INTRODUCTION. Pancreatic cancer treatment options have developed in recent years, allowing to extend patient inclusion criteria for surgical treatment, which in turn increases the amount of possible complications in the postoperative period. According to data worldwide, the most common serious complication is fistula formation. The diversity and perfection of surgical techniques allows to select optimal tactics, as well as the application of an appropriate method for single, complex cases, given the high likelihood of complications. Considering the growing incidence of pancreatic cancer in the last decade, the diversity of surgical treatment is crucial for patient selection and stage of preoperative evaluation, as well as in terms of potential complications in patients with pancreatic tumors, which gives a more comprehensive overview of postoperative survival and quality. Pancreatic duodenal fistulas have been defined and studied in depth in recent years, which may contribute to the decrease of their number.

OBJECTIVE. To identify the pancreatic oncology operation- pancreatic duodenal area resection -surgery technique and to evaluate the postoperative period, the existence and treatment of the most common complication (PD fistulas), to compare the results of P. Stradins Clinical Surgery Clinic with relevant literature data.

MATERIALS AND METHODS. Literature review and retrospective study based on the data for the patients treated at VSIA" P. Stradiņa KUS" Surgical Clinic, which have been verified as PD fistula , in the period from July 2009 to July 2014 (5 years) .

RESULTS. There were 126 (30.8%) proven cases of POPF according to **ISGPF** classification types A, B, C out of 408 cases of pancreas operations because of malignancy. Pancreatoduodenal resection was done with biliodigestive anastomosis PJ ≥ PG (71.6 / 28.3%) Pancreatoduodenal fistulas type A occurred in 32.6% of registered cases, type B in 46.8% and the rest 20.6% were pancreatoduodenal fistula type C. Women 56.9%. Average age 64.9 years, 16.9% diabetes mellitus, 53.55% perioperative jaundice, 33.8% perioperative biliodigestive stenting.

CONCLUSIONS. POPF is the main complication according to literature data, which is not drastically different from the findings, High- ASA class III / IV and EM transfusion non- risk factor, Selection of patients prior to surgery is of utmost importance.

104. Intraoperative ultrasound navigation in the surgical management of acute necrotizing pancreatitis

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INTRODUCTION. Surgical management of acute necrotizing pancreatitis includes percutaneous drainage of the symptomatic acute necrotic collections (ANC) and minimally invasive or open surgical debridement of infected walled of necrosis (WON). The aim of the study was assessment of recent experience with intraoperative ultrasound navigation in the surgical management of acute necrotizing pancreatitis.

MATERIALS AND METHODS. Retrospective clinical study including the time period from January 2004 to December 2014. According to surgical approach, patients were allocated in two groups: with conventional open surgery, the CON group, and with preoperative percutaneous drainage of ANC and / or intraoperative ultrasound navigation providing focused open necrosectomy, the FON group. Host response to the surgical intervention was assessed as secondary to the incidence of organ failure (≥ grade 3 dysfunction according to SOFA score), level of C-reactive protein (CRP) and procalcitonin PCT. Infection rate, incidence of sepsis, postoperative complications and main outcomes were compared for the groups.

RESULTS. In total 128 patients with acute necrotizing pancreatitis underwent surgical treatment. Of these, 65 patients underwent CON and 63 were operated with intraoperative ultrasound navigation using the FON technique. Patient age, etiology, time from the onset of the disease and extent of necrosis did not differ between the two groups. Incidence of organ failure was similar on admission, however, it was slightly higher before the surgical intervention in the FON group (54% *vs.* 47.7%). Preoperative incidence of sepsis was 60.3% in the FON group and 49.2% in the CON group. CRP and PCT levels decreased in a seven-day period in the majority of patients from both groups and was significantly lower in the FON group from the 3rd postoperative day, $p = 0.001$. Intraoperative bleeding rate was considerably lower in the FON group, 11% *vs.* 26%, $p = 0.029$. Need for repeat operation was 46% and 61.5% in the FON and CON groups, respectively. Median hospital stay was 48 and 59 days in the FON and CON groups, respectively; median ICU stay was 13 and 19 days, respectively. Mortality was 11.1% in the FON group and 13.8% in the CON group.

CONCLUSIONS. Percutaneous drainage of ANC and intraoperative ultrasound navigation using FON technique are associated with reduced intraoperative and postoperative complication rate. The technique is less invasive than conventional surgical strategy in patients with necrotizing pancreatitis and a passing learning curve may significantly improve outcomes.

105. Granulomatous appendicitis as a rare cause of appendectomy in childhood

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INTRODUCTIONS. Granulomatous appendicitis is a rare condition, accounting for ~ 2% of all cases of appendicitis. Yersinia infection and Crohn disease constitute the main etiology of granulomatous appendicitis, however, the initial belief that it represents a manifestation of Crohn disease is incorrect. Only 5–10% of patients with granulomatous appendicitis develop Crohn disease. Other causes of granulomatous appendicitis include tuberculosis, parasitic infections, sarcoidosis and foreign body reaction. Recently, interval appendectomy has been suggested as an important cause of primary granulomatous appendicitis [Bronner, 2004; Abdull Gaffar, 2010].

MATERIALS AND METHODS. Clinical and histopathological data of two clinical cases of granulomatous appendicitis in Children`s Clinical University hospital were reviewed in order to demonstrate this rare pathology.

RESULTS. 1) A 11-year-old boy was admitted to the hospital with complaints of abdominal pain, vomiting and fever. During surgery gangrenous appendicitis with periappendicular abscess was found. Histological investigation of an appendectomy specimen showed multiple small transmural granulomas with necrotic center consisting of epitheloid cells and both multinucleated Langhans-type and foreign body- type giant cells. Histochemically no Ziehl-Neelsen positive *Mycobacterium* nor PAS positive fungal hyphae were found. Immunohistochemically CD68 showed strong positivity in both epitheloid and giant cells. The patient received antibacterial therapy and was discharged from hospital after 14 days.

2) A 13 year-old-boy who had had periappendicular abscess and antibacterial therapy one year earlier was admitted to the hospital for operative therapy due to recurrent fever.

Histological investigation of an appendectomy specimen showed calcified material in the lumen of appendix and multiple macrophagal foreign body type granulomas in mucosa and submucosa with some multinucleated giant cells but without necrosis. Histochemically PAS positive fungal hyphae were not detected. There were no additional clinical or histopathological data about Crohn disease. The patient received antibacterial therapy and was discharged from hospital after 9 days.

CONCLUSIONS. Primary granulomatous appendicitis is one of the important differential diagnoses in case of acute appendicitis; however systemic causes of granulomatous inflammation should be excluded by appropriate investigations and long term follow-up.

106. Transabdominal preperitoneal (TAPP) inguinal hernia repair using meshes without fixation

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INTRODUCTION. Nowadays different mesh fixation techniques are used during laparoscopic inguinal hernia repair. Patient safety, reduction in chronic postoperative groin pain and decreasing amount of recurrent hernia are the main goals. The aim of the study was to analyze the outcome and postoperative complications rate after TAPP inguinal hernia repair with two different types of meshes.

METHODS. A total of 42 patients (37 male and 5 female) with median age of 51 (IQR = 61–43) years were included in the study. The patients were divided into two groups. Group 1 (n = 25) consisted of patients who underwent operation using self-gripping Parietene ProGrip mesh without additional fixation. In Group 2 (n = 17) anatomical Parietex Folding Mesh was used, which was fixed with 2–3 sutures. Perioperative data were collected retrospectively from patient files. Follow-up after 6 to 33 (median 17.5) months was performed prospectively. Operative time, length of hospital stay, discomfort and pain during work and physical activity (VAS scale), foreign body feeling and hernia recurrence were assessed.

RESULTS. In total, 53 surgical repairs (unilateral n = 31, bilateral n = 11), (primary hernia n = 49, recurrent- n = 4) were done using TAPP approach. Median operation time in Group 1 was 75 (IQR = 93–65) minutes, in Group 2- 105 (IQR = 133–73) minutes (p = 0.025). Median hospital stay in both groups was 1 day. At mean follow-up at 17.5 months, there was only one report (Group 2) of hernia recurrence out of 53 (1.88%). Majority of patients (81%) in both groups had non-significant physical activity limitation or no limitation at all. There was no significant difference in foreign body feeling (8% (n = 2), for Group 1; 11.8% (n = 2) for Group2) or in moderate pain during physical activity (8% (n = 2) for Group 1 and 17.1% (n = 3) for Group 2). No one patient from this cohort suffered severe pain during physical activity.

CONCLUSIONS. Laparoscopic TAPP approach, using self-gripping Parietene ProGrip without fixation and Parietex Folding Mesh with minimal fixation, is a safe and rapid technique with low chronic postoperative pain and hernia recurrence rates. Main benefit from using Parietene ProGrip mesh is reduced operative time, because there is no need for additional mesh fixation.

107. Endovascular embolization haemostasis in patients with non variceal upper gastrointestinal haemorrhage

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INTRODUCTION. The guidelines of the non variceal upper gastrointestinal haemorrhage (NVUGIH) have been changed several times in the last decade. An important role in modern medicine is played by angiography and endovascular embolization haemostasis. The aim of this study is to clarify the efficacy of endovascular treatment of NVUGIH and to report the first experience with this method at a university hospital.

MATHERIAL AND METHODS. In total 500 patients with NVUGIH between November 2010 and January 2015 were treated in Riga East Clinical University Hospital. Peptic ulcer disease, Mallory – Weiss syndrome, Dieulafoy's lesion, gastrointestinal oncologic diseases and erosive gastritis were the main sources of bleeding. In subsequent data analysis were included patients with peptic ulcer disease (n = 379) Forrest classification 1A-2C. Patients with high risk of repeated bleeding who underwent endovascular embolization haemostasis (EEH) were included in the EEH group and patients who underwent surgical treatment were included in the ST group.

RESULTS. Endoscopic haemostasis was successful in 207 cases (54.8%). Surgical intervention and haemostasis were performed in 77 patients (20.3%). Altogether 62.4% of the operated patients underwent surgical haemostasis after failed endoscopic haemostasis and, 37.6 % of the operated patients underwent surgery because of high risk of repeated bleeding. In total rebleeding occurred in 53 patients at a median of two days (IQR = 3–1) after the first attempt of haemostasis.

The EEH group consisted of 11 patients (81.8% male patients with median age 65 years (88–48)) and the ST group consisted of 28 patients (57.1% male patients with median age 61 years (73–55)).

Ulcer size and frequency of comorbid conditions were not different for the groups, median number of transfused packed red blood cell units was significantly lower in the EEH group compared to the ST group, median of 3 (IQR 5–2) units vs. 5 (IQR 7–3) units, respectively, p = 0.046. Total hospital stay was shorter in the EEH group, median of 6 (IQR 9–6) days *vs.* 12 (IQR 18–9) days in the ST group, p = 0.001, however ICU stay was not different for the groups. Mortality in the EEH group was 9.1% (one deceased patient) and 7.1% in the ST group (two deceased patients), p = 1.000.

CONCLUSION. Preventive endovascular embolisation haemostasis is a reasonable alternative to surgical haemostasis in patients with high risk of rebleeding.

108. Laparoscopic surgery of acute small bowel obstruction

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INTRODUCTION. Indications for laparoscopic approach in the treatment of acute small bowel obstruction (SBO) still are not well defined and strong evidence is lacking to confirm successful outcomes. The aim of the study is to demonstrate the feasibility and advantages of laparoscopic surgery in cases of acute SBO.

MATERIALS AND METHODS. Medical data of 109 patients who were surgically treated in our institution was analyzed in the time period 2011–2014. Initial laparoscopic surgery (LAP group) was performed in 33 patients, median age 52 (67–34) years, open surgery (OPEN group) was performed in 76 patients, median age 61 (75–50) years. Demographic data, clinical presentation of the disease, complication rate and outcomes were analyzed and compared.

RESULTS. Length of anamnesis before surgical intervention was not different between the groups, 12 (7–24) hours in the LAP group *vs.* 12 (5–48) in the OPEN group. Complete laparoscopic treatment was performed in 75.8% (n = 25) of the patients. Laparoscopy diagnosed the site of obstruction in 28 of 33 patients. Both groups were statistically comparable in terms of etiology: internal incarceration was observed in 48.5% of cases in the LAP group vs. 50% in the OPEN group; multiple adhesions: 42.4% (LAP) *vs.* 31.6% (OPEN); other causes: 10.1% (LAP) *vs.* 13.2% (OPEN). Conversion to laparotomy was performed in 8 (24.2%) patients due to limited visualization because of distended bowels (5 cases), in two cases because of intestinal resection and in one case due to iatrogenic bowel injury. The median procedural time was similar: 70 (108–50) minutes in the LAP group and 70 (95–45) minutes in the OPEN group. Postoperative complication rate was 3% (1 case) in the LAP group and 7.9% (6 cases) in the OPEN group, median postoperative hospital stay was 4 (5–3) and 7 (9–6) days, respectively, p = 0.001. Early oral intake (24 hours postoperatively) was tolerated well by 87.9% of patients in the LAP group *vs.* 60.5% in the OPEN group, p = 0.006.

CONCLUSIONS. Shorter hospital stay, reduced complication rate and early oral intake are the main benefits of laparoscopic approach for SBO. Limited visualization during surgical intervention is the main reason of conversion. Laparoscopic management of acute SBO is a feasible diagnostic and therapeutic approach in a selected patient group.

109. Independent mortality risk factors in patients with acute upper non-variceal gastrointestinal bleeding in Latvia

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INTRODUCTION. According to the WHO, persons older than 65 years are regarded as the elderly. Comorbid conditions are the main determinants of the poor outcome in patients with upper nonvariceal gastrointestinal bleeding (UNGIB). The aim of the study was to determine main risk factors in the elderly population and in adult patients who were treated with UNGIB at the Riga East University Hospital.

METHODS. Retrospective case control study within the period from 2010 till 2014. Patients were divided into the elderly group (EG) age > 65 years and the adult group (AG), < 65 years. All patients had endoscopic haemostasis within a 24-hour period from admission with intravenous proton pump inhibitor coverage and treatment in the ICU when indicated. Interval data are presented in median with the interquartile range (IQR). Risk factors are presented with odds ratios (OR) and confidence intervals (CI) 95%.

RESULTS. A total of 500 patients with UNGIB were treated, including 215 elderly and 285 adults. In EG 56% of the patients were female vs. 25% in AG, p < 0.001. Peptic ulcer was the most frequent source of bleeding, with 89% of all cases with a predominance of stomach ulcer in EG, 50% *vs.* 37% in AG, p = 0.004. Patients in EG had significantly more co-morbidities: cardiovascular (79%), kidney (25%), cerebral (26%), metabolic (26%) and cancer (8%) without difference in respiratory and liver diseases. EG were dependent on daily medication in 75% of cases compared to AG who had hazardous habits, smoking in 41% and alcohol consumption in 42% of cases. Surgical treatment was performed in 20% of patients from AG *vs.* 13% in EG, p = 0.028. Comparison of the outcome data is presented in Table 1. Re-bleeding rate in the whole cohort was 12.8% and mortality reached 10.2%. Kidney disease, OR 4.6 (CI 1.9–11.4) and respiratory disease, OR 3.2 (1.01–9.9) were the mortality risk factors in EG, however surgical intervention was the main risk factor in AG, OR 10.7 (CI 2.3–50). Relative risk of mortality was 2.9 times higher in EG (CI 1.6–5.3) than in AG.

Table 1. Patient data

	EG n = 215	AG n = 285	P
Red packed blood cells transfusion, units	3 (IQR4–2)	4 (IQR5–2)	0.001
ICU stay, days	3 (IQR5–2)	3 (IQR5–2)	0.333
Hospital stay, days	8 (IQR10–6)	7 (IQR9–5)	0.011
Mortality rate, %	16.3	5.6	<0.001

CONCLUSION. Elderly patients had significantly higher mortality rate due to kidney and respiratory disease yet surgical intervention was the main risk factor associated with mortality in adult patients. Overall mortality rate is comparable with the results reported in developed European countries.

110. Does mesh pore size have an impact on reducing chronic pain after inguinal hernioplasty?

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PURPOSE. The primary aim of the present single-centre single-blinded randomised study was to determine whether mesh pore size influences the rate of chronic pain at 3-year follow-up. Another aim was to evaluate the rate of foreign body feeling, recurrences and risk factors for development of chronic pain.

METHODS. The patients were randomised into two study groups: the UM group received Ultrapro mesh (pore size 3–4 mm) and the OM group received Optilene LP mesh (pore size 1 mm). Pain scores were measured on a visual anlogue scale. The feeling of a foreign body was a yes-or-no question. All patients were examined three years after operation to detect recurrent hernia.

RESULTS. A total of 65 patients in the UM group and 63 patients in the OM group were included in analysis. Of the patients, 33.9% in the UM group and 15.9% in the OM group reported having experienced pain during different activities at 3-year follow-up ($p = 0.025$). The feeling of a foreign body in the inguinal region was experienced by 23.1% of the patients in the UM group and by 15.9% in the OM group ($p = 0.375$). There was 1 hernia recurrence in the OM group. Severe preoperative pain and younger age were identified as risk factors for development of chronic pain.

CONCLUSION. Mesh with larger pores compared with mesh with smaller pores has no advantages in reducing the rate of chronic pain or foreign body feeling. It might be that as development of chronic pain after inguinal hernia repair is multifactorial, we failed to find a plausible explanation for the significantly higher rate of chronic pain in the study group where the mesh with larger pores was used. Considering that younger age is a strong risk factor for development of chronic pain, inguinal hernia repair could perhaps be postponed in asymptomatic cases among younger patients until there develop complaints. The low recurrence rate shows that material-reduced lightweight meshes are not associated with an increased risk for hernia recurrence.

111. Minimally invasive management of complicated gallstone disease

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The growing incidence of gallstone disease can be considered as a consequence of Western diet and life style. It has been proved that almost 10–18% of patients admitted with signs of symptomatic gallstone disease have concomitant stones in the bile ducts. Early recognition of clinical symptoms, changes in laboratory and sonoscopy data indicating an increased risk of choledocholithiasis are of outmost importance for the definition of an adequate investigation plan and surgical strategy. Certain prognostic criteria for concomitant bile duct stones have been developed, however, a definition of a precise management algorithm for patients with suspected choledocholithiasis is still lacking.

Preoperative radiologic imaging, using magnetic resonance cholangiopancreatography (MRCP), is the gold standard for patients with suspected choledocholithiasis, however, its application in urgently admitted patients has its limits. With the progression of technology and minimally invasive surgery, different methods have been used for the treatment of complicated gallstone disease. Endoscopic or percutaneous transhepatic approach is used for preoperative drainage and clearance of the common bile duct in cases of acute cholangitis. Endoscopic retrograde cholangiopancreatography (ERCP) may be used before, during or after laparoscopic cholecystectomy when it is indicated, however, it is associated with a considerable number of complications. An alternative approach has been developed and recommended for patients with common bile duct stones (CBDS) providing laparoscopic common bile duct exploration (LCBDE). One-stage LCBDE with cholecystectomy could save the function of the sphincter and prevent unnecessary second hospitalizations or a delayed cholecystectomy resulting in shortened hospital stay, lower costs and earlier return to everyday activities. LCBDE can be performed whether through the cystic or common bile duct. Results from different studies demonstrate that LCBDE is associated with successful stone clearance rates ranging from 83% to 96%, and the mortality rates are very low. LCBDE can nowadays be considered as a method of choice for one-stage clearance of CBDS in a selected subgroup of patients.

112. Surgical management of necrotizing pancreatitis

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According to the current concept of the management of necrotizing pancreatitis, definitive surgical necrosectomy is recommended after the fourth week from the commencement of the treatment. However several steps in surgical treatment include also percutaneous drainage of symptomatic acute necrotic collections (ANC) in the early phase and infected pancreatic necrosis, preferably when formation of walled of necrosis (WON) is evident, in the late phase of the disease. Early surgical intervention is indicated for a selective category of patients when conservative treatment is associated with failure to treat abdominal compartment syndrome, persistent small bowel ileus, necrosis of the colon, intra-abdominal bleeding and persistent sepsis despite the percutaneous drainage of infected ANC. The choice of surgical access is based on the experience and availability of the multidisciplinary team and could be realised through the trans-oral endoscopic approach in the case of WON closely related to the stomach, through the lumboretroperitoneal approach using a video assisted or laparoscopic technique or with assistance of ultrasound navigation as focused open necrosectomy (FON). Open surgical approaches are recommended in cases of bilateral and multiple localisation of necrosis when minimally invasive techniques are not sufficiently effective and lumboretroperitoneal debridement is gaining more acceptance compared to transabdominal approach. Recently a recognised "step up" principle has been increasingly used, starting with percutaneous catheter drainage of infected ANC or WON with switching to definitive surgical debridement when indicated. However, indication for any type of intervention is mainly based on the clinical course of sepsis and development of complications associated with conservative treatment.

113. An unusual case of small bowel obstruction: perineal hernia

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INTRODUCTION. Perineal hernias are rare in humans and are usually caused by previous perineal operations such as abdominoperineal resection (APR) or pelvic extentration. Between 0.62–3.5% patients may require perineal hernia repair following rectal resections. We present here a case of perineal hernia causing small bowel obstruction in a woman who had hysterectomy 20 years earlier. No other similar cases have been reported in the literature.

CASE. An 82-yearold woman with a one- day history of painful vaginal prolapse and vomiting presented to a gynaecology team. Her past medical history included total abdominal hysterectomy 20 years earlier and hypertention. Initial examination revealed a vaginal vault prolapse which, despite multiple attempts, was not amenable to reduction. She underwent a CT scan of the abdomen and pelvis, which showed a small bowel loop in the perineal hernia, causing small bowel obstruction. She underwent an emergency laparotomy and hernia with its contents reduced en-masse. Small bowel was bruised but healthy and therefore did not require resection. She passed uneventful recovery and was discharged a week later with gynaecological follow up to repair the vaginal vault.

DISCUSSION. Perineal hernias are caused by weakness of the endopelvic fascia due to previous perineal operations. Most reported cases occur following abdominoperineal resection. To our understanding, this is the first case of its kind to cause small bowel obstruction with herniation into the prolapsed vaginal vault.

114. Laparoscopic cholecystectomy in a patient with a lumboperitoneal shunt

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INTRODUCTION. Since the debut of laparoscopic cholecystectomy in the late 1980s, this method has been the treatment of choice for symptomatic gallstone disease and the most common abdominal operation in Western countries. Surprisingly little has been published in the scientific literature about the performance and safety of this procedure for patients with a lumboperitoneal (LP) shunt. A review of publications revealed several articles describing laparoscopic procedures in the presence of ventriculoperitoneal shunts, but only two regarding LP conduit (Charalabopoulos et al., 2013). Here we present such a case.

MATERIALS AND METHODS. Analysis of the patient's medical history with emphasis on the description of surgical treatment and outcome along with a review of Pubmed publications on the subject.

RESULTS. A 41-year-old female had recurrent right upper quadrant abdominal pain irradiating to scapula. After several such episodes an abdominal ultrasound evaluation was performed which disclosed multiple small stones within the gallbladder. Given the history and presence of gallstones, a laparoscopic cholecystectomy was scheduled. Preoperatively, blood and biochemical tests were within reference intervals, but the past medical history revealed a LP shunt placement in the preceding year due to idiopathic intracranial hypertension. Abdominal radiographs were performed which showed a LP shunt in the left flank with the tip of the catheter in the pelvis. A neurosurgeon consulted the patient and approved the operation. A standard technique was used regarding port placement and pneumoperitoneal pressure. No such modifications as previously suggested alterations in port placement or using lower pneumoperitoneal pressure of 7 mm Hg were made in this case. Cholecystectomy was uneventful and the patient was discharged on the following day.

CONCLUSION. Considering available evidence as well as experience with this patient, we conclude that performing laparoscopy in a patient with a LP shunt is safe. Additional factors that need consideration are a valve versus valveless and laparoscopically versus conventionally placed catheter. Although rare complications have been registered, current research suggests that clamping of the catheter during laparoscopy to prevent retrograde flow is not necessary. In addition, as fluctuations in intracranial pressure during laparoscopy are not clinically important, no additional anaesthetic monitoring is indicated.

115. Laparoscopic common bile duct exploration for choledocholithiasis during pregnancy: a case report

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INTRODUCTION. After appendicitis, cholecystitis is the second most frequent acute surgical condition encountered in obstetrical patients. Complications associated with choledocholithiasis are uncommon during pregnancy, however, when it occurs, prognosis for poor outcomes increases dramatically. Timely and appropriate treatment is imperative in these patients. Laparoscopic common bile duct exploration (LCBDE) can be safely performed during the first and second trimesters of pregnancy, but only a few such cases have been reported.

MATERIALS AND METHODS. Case report

RESULTS. A 28- year-old female (22nd week of pregnancy) was admitted to the Riga East Clinical University Hospital with recurrent right upper quadrant pain that had lasted for 3 days. Her medical history included a symptomatic gallstone disease with recurrent biliary colics. Blood tests on admission revealed elevated direct bilirubin level (31.55 mol/l), multiple small calculi in the gallbladder and slightly dilated (0.93 cm) common bile duct was seen on abdominal ultrasound, accounting for a 50% overall risk of choledocholythiasis. After consultation with a gynaecologist the patient was considered for surgery due to complicated gallstone disease and suspected choledocholithiasis. On the third day after admission one stage laparoscopic cholecystectomy and intraoperative ultrasound (IOUS), followed by LCBDE under general endotracheal anaesthesia, were performed. The patient was placed in the Trendelenburg position, the first trocar was entered by using the Hasson technique and pneumoperitoneum of 12 mmHg was maintained. A small 3 mm solitary cholesterol stone was revealed on IOUS and transcystic LCBDE was done using a 2.2 Fr nitinol extraction basket for stone removal. Troacar insertion sites were infiltrated with 20 ml Chirocaine solution (5 mg/ml) for postoperative pain control. Overall operating time was 60 min. On the third postoperative day foetal ultrasound was performed that showed no pathological findings. The post-operative course was uneventful and the patient was discharged on day 5 after surgery, overall hospital stay was 8 days.

CONCLUSIONS. LCBDE is a safe and feasible procedure that can be applied for one stage management of choledocholithiasis in women in the gestational period. The multidisciplinary approach is crucial for achievement of good treatment results.

116. Early preventive continuous veno-venous hemofiltration in the management of patients with severe acute pancreatitis

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INTRODUCTION. The role of the preventive continuous veno-venous hemofiltration (PCVVH) in the treatment of patients with severe acute pancreatitis (SAP) is controversial. Early commencement of the procedure to prevent formation of the third space could be crucial. The aim of the study was to determine the therapeutic efficiency of the early commencement of the PCVVH in the treatment protocol of the acute phase.

MATERIALS AND METHODS. Patients with severe acute pancreatitis who were treated in our institution and had received PCVVH during the period from 2000 to 2013 were prospectively included. The SAP was classified according to the revised Atlanta classification. The patients were stratified in Early group (PCVVH started within the 48 hours after admission) and Late group (PCVVH started later than 48 hours). Incidence of organ failure (≥ grade 3 dysfunction), magnitude of the inflammatory response according to the C-reactive protein (CRP), lipase activity, rate of the infection, need for surgical intervention and main outcomes were compared for the groups.

RESULTS. Of the total of 207 patients, 146 received PCVVH within 48 hours and 61 > 48 received it several hours after admission. Pulmonary failure was observed less frequently in the Early group, p = 0.032. Maximal median lipase activity was not different and reached 3965.4 U/l and 4394.5 U/l, respectively; median CRP concentration decreased faster in the Early group within the first 7 days after admission, p = 0.041. Infection rate and need for surgical intervention was lower but not significantly lower in the Early group (30.1% *vs.* 42.6%). Significantly longer hospital and ICU stay (22 *vs* .26, p = 0.043; 9 *vs.* 13, p = 0.049) and higher mortality rate (12.3% *vs.* 16.4%) was observed in the Late group.

CONCLUSIONS. Early PCVVH is a safe and effective treatment modality for prevention of the formation of the third space in patients with severe acute pancreatitis. Early PCVVH is associated with reduced incidence of pulmonary failure, facilitates faster normalization of the systemic inflammatory response leading to shorter hospital and ICU stay and decreased mortality.

117. Double invagination as the cause of ileus in a male with Peutz-Jeghers syndrome

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INTRODUCTION. Peutz-Jeghers syndrome (PJS) is an autosomal dominant genetic disease characterised by gastrointestinal polyps and mucocutaneous pigmentation. PJS is a rare condition – it has an incidence of approximately 1 in 25,000 to 200,000 births. PJS is caused by mutation in the STK11 gene. The STK11 functions as a tumor suppressor gene that prevents excessive cell growth and uncontrollable division. Because of this mutation, PJS patients have an increased risk for cancer.

CASE DESCRIPTION. A 30-year-old male presented to the emergency room at Tartu University Hospital in April 2015 complaining recurrent upper abdominal pain and nausea that had lasted for a week. The pain intensified after eating. The patient had passed slightly loose stools at a frequency of 2–3 times a day. He experienced modest paucity of bowel gas for the last few days. Anamnestic information included hereditary intestinal polyposis: Peutz-Jeghers syndrome had been diagnosed in 1996. Ileus was operated in 1999 and in 2002. The father had died of gastrointestinal cancer, the sister had undergone surgery due to gastrointestinal cancer and a niece had had polyps removed.

Intestinal invagination was suspected at an emergency ultrasound; for this reason computed tomography was performed for specification. Invagination and primary ileus were suspected at CT. Analysis showed microcytic hypochromic anemia with a haemoglobin level of 62 g/l. Therefore, a gastroscopy was performed: several polyps were identified in the stomach and in the duodenum. In addition, the patient was suffering from severe iron deficiency (3.2 µmol/l). Peristalsis was normal, invagination was palpated in the right-hand upper and lower abdomen. Signs of peritoneal irritation were negative. The patient was hospitalised in the surgery department. Anaesthetic, spasmolytic therapy and blood transfusion were indicated. Due to intensification of abdominal pain, it was decided to perform an emergency laparotomy. The cause of ileus was revealed during surgery – double invagination – ileoileal of approximately 7 cm in the final section of the jejunum and ileocecal of approximately 50 cm. Intussusceptions were disinvaginated. Since polyps were found in the entire intestinal tract, it was not possible to perform resection. Initially, the patient's condition improved during the immediate postoperative period, but later he felt pain again after eating. A colonoscopy was performed and polyps were removed from the descending colon, but the entire colon could not be examined due to severe pain. A repeated colonoscopy was done under general anaesthesia; a large polyp was removed from the anastomosis region of the small and large intestine. Additionally, approximately 30 cm of the small intestine was inspected and one polyp was removed. Histological examination showed hyperplastic polyps.

Following the surgery all abdominal complaints and pain were resolved. The patient had no problems with eating. As the general physical condition of the patient was good he was discharged from hospital. The patient will continue dynamic examinations carried out by a surgeon.

118. Patient with urinary retention caused by a large scrotal inguinal hernia. Case report

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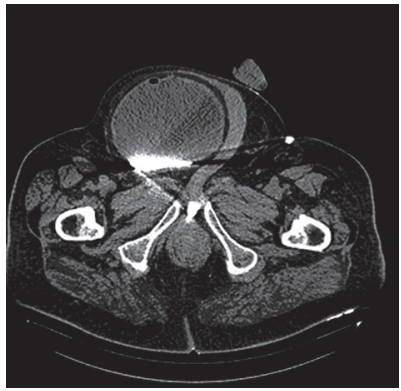
INTRODUCTION. Inguinal hernias are one of the most frequent hernias in surgical practice. Inguinal hernias make up approximately 65–75% of all hernias and 90% of them occur in males. Their incidence rate increases with age. Urinary retention can be one of the complications after an inguinal hernia operation. The current case history describes a patient with urinary retention caused by a large scrotal inguinal hernia with a herniation of the urinary bladder into the scrotum.

CASE DESCRIPTION. A 78-year-old male patient contacted the general surgeon and the urologist in December 2013 when he presented in the emergency department due to urinary retention. Sonography found bilateral swelling of the kidneys. A permanent catheter was introduced and a large fixed scrotal hernia was detected. The patient thought that his bladder was in the scrotum, as he needed to massage the scrotum whenever urinary urgency occurred'. A week later the catheter was removed and Combodart tablets were prescribed. The patient continued treatment at home without a catheter for a month. He presented in January 2014 due to heart failure with decompensation and anasarca. Sonography showed retention in the kidneys. A catheter was inserted. As the urinary bladder could not be punctured, sonography was undertaken. The bladder could not be visualised in its typical location and there was a large amount of fluid in the scrotum. A CT scan with cystography showed bilateral hydronephrosis with dilated ureters and bladder herniation into the scrotum.

DESCRIPTION OF THE OPERATION. An inguinal herniotomy and an open insertion of a suprapubic epicystotomy were carried out.

SUMMARY. Inguinal hernias with the urinary bladder involvement, which cause urinary retention and UTIs, are usually found in overweight elderly male persons. If a patient with urinary retention and a large scrotal hernia presents, one should always consider the involvement of the urinary bladder. The treatment method of choice is a surgical treatment which involves replacement of the urinary bladder into its anatomical location and a reconstruction of the inguinal canal.



Picture 1. Herniation of the urinary bladder through the right inguinal canal into the scrotum.

119. Surgical treatment of posttraumatic diaphragmatic rupture: 8-year experience

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INTRODUCTION. The aim of the study is retrospective evaluation of the 8-year experience of surgical treatment of posttraumatic diaphragmic rupture at the Republican Vilnius University Hospital.

METHODS AND MATERIALS. The medical data of 15 patients with diaphragmatic rupture treated at the Republican Vilnius University Hospital during 2007–2014 was evaluated. Patients` age, gender, mechanism of injury, degree of diaphragmatic injury, type of surgery performed, duration of operation and length of hospital stay were analysed.

RESULTS. During the 8-year period 15 patients with traumatic diaphragmatic rupture were operated at our hospital. The patient group consisted of 13 men (86.7%) and 2 women (13.3%) with a mean age of 16.9 ± 43m (22–77 yr.). Five patients (33.3%) had penetration, 10 (66.7%) had high-energy blunt chest trauma. In 10 cases (66.7%) the left dome and in 5 cases (33.3%) the right dome of the diaphragm was injured. Of all cases 80% were diagnosed as rupture of the 3rd or 4th degree. Prolapsing viscera were observed in 8 cases (53.3%). Thoracotomies were done in 13 (86.7%), laparotomies in 1 (6.7%) and laparoscopic repair of the diaphragm in 1 (6.7%) patient. The duration of open thoracotomies was 99.6 min. ± 39.7 (35–165), the length of overall hospital stay was 21.7 d. ± 13.8 (5–51) and it was statistically significantly different from that for the laparoscopic type of operation, at 3 days ($p < 0.001$). The duration of laparoscopic operation was 90 min. which was not statistically significantly different from that in the case of open type operations ($p = 0.38$).

CONCLUSION. Traumatic diaphragmatic rupture is a rare but potentially life-threatening pathology, accompanied by evisceration of abdominal organs into the chest cavity (53.3%). The open type operation is preferred in the case of injuries of the abdominal and thoracic organs. In the case of isolated diaphragm injury the laparoscopic approach is recommended which is characterized by a shorter hospitalization period.

120. Hepatic surgery: a single center five-year experience

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INTRODUCTION. Different focal liver lesions including benign liver tumours, primary malignant tumours and metastases from other organ malignancies frequently affect the liver. The aim of the study was to analyse the results of hepatic surgery for the last five years and start a database of liver operations at Pauls Stradins Clinical University Hospital.

MATERIAL AND METHODS. During the time period between 2010 and 2015, 59 patients with focal liver lesions were operated on at Pauls Stradins Clinical University Hospital. Patient overall condition was analysed using Child-Pugh and "model of end stage liver disease" (MELD) scores. Demographic data, data for operation and postoperative outcome were analysed.

RESULTS. Mean patient age was 57 ± 13 years. Women were operated more often than men (36 women and 23 men). Mean operative time was 195 ± 70 min. Mean hospital stay was 9 ± 3 days. Forty-three patients (72.9%) underwent one-segment resection, 11 patients (18.6%) underwent hemihepatectomy and 5 patients (8.5%) underwent multiple segment resection. Main short term clinical outcomes included development of hyperbilirubinemia in 6 (10%) patients, pulmonary edema or embolism in 4 (7%) patients, and acute kidney injury (AKI) in 2 (3%) patients within one week postoperatively. Median MELD score was 7.1 ± 1.4 and Child-Pugh 5 ± 1 was prior to surgery. MELD score was statistically higher preoperatively for patients with postoperative hyperbilirubinemia, 8.5 vs. 6.9 ($p = 0.01$), in contrast to Child-Pugh which was consistent. Morphological findings revealed that the most freaquently operated pathology was liver metastasis with a total of 29 cases (19 colon cancer, 5 breast cancer and 1 pericytoma metastasis), followed by primary malignant liver tumours with 18 cases (15 HCC, 2 cholangiocarcinomas and 1 gallbladder carcinoma). Benign lesions were operated in 12 cases (5 hemangiomas, 4 echinococcus, 2 liver cysts and 1 adenoma).

CONCLUSIONS. Careful patient selection using Child-Pugh score and a multidisciplinary approach in management during the postoperative period is essential in avoiding onset of postoperative complications.

121. Overview of cholecystectomy bile duct injuries requiring establishment of biliodigestive anastomosis (Clavien Dindo-Class IIIb complications)

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INTRODUCTION. Laparoscopic cholecystectomy (LC) is indisputably considered the golden standard for the treatment of symptomatic gallstones. Compared to open cholecystectomy (OC) there occurs less wound pain in laparoscopic surgery, duration of stationary treatment is shorter, patients may begin working sooner, and, finally, cosmetic outcome will be far better. According to literature data, compared to OC, iatrogenic bile duct injuries occur more frequently in LC. The incidence of iatrogenic bile duct injuries in OC is 0.1–0.2%, while in LC the corresponding figure is 0.4–0.7%. Iatrogenic bile duct injuries, especially in cases where definitive reparative treatment is delayed, deteriorates the patients` quality of life by increasing their risk of illness, disability and mortality. In case of serious injuries (exposed biliary stricture, complete cross-section) establishment of biliodigestive anastomosis, either immediately during initial surgery or, as indicated, 6–8 weeks after the injury, is considered to be the golden standard.

METHODS. This is a one-center retrospective study, where all cases of biliodigestive anastomosis establishment were reviewed during a 10 year-period (2004–2014). From among all these cases, there were selected those which required establishment of an anastomosis due to cholecystectomy caused bile duct iatrogenic injury.

RESULTS. During the years 2004–2014, at the North Estonian Medical Centre Foundation, (NEMC)15 patients had a biliodigestive anastomosis due to iatrogenic biliary tract injury during cholecystectomy. The male to female ratio for these patients was 1:2 (5 male, 10 female), mean age was 62.3 y. One injury occurred during open operation, the other injuries had occurred during previous LC. Mortality in the study group was 13%, 2 patients died due to septic organ failure caused by recurrent cholangitis.

DISCUSSION AND CONCLUSIONS. Although NEMC is a referral teaching hospital and the number of both emergency cholecystectomies and those performed by resident surgeons is high, only 1 reviewed case was initially operated at NEMC. The other cases were referrals from smaller hospitals in Estonia where the total number of cholecystectomies performed annually is low. High suspicion rate in the case of abnormal postoperative bilirubin levels must be present as many cases were referred several months post injury, the longest waiting time before injury diagnosis was 11 months.

2. VASCULAR SURGERY

201. Acute mesenteric ischaemia: surgical management and previous diagnostic procedures at Tartu University Hospital 2006–2014

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INTRODUCTION. Acute mesenteric ischaemia (AMI) is a rare condition but it continues to have high mortality rate worldwide. The aim of this study was to assess the diagnostic and surgical procedures performed in patients suffering from AMI and operated on at Tartu University Hospital in 2006–2014.

MATERIALS AND METHODS. This is a retrospective study of 106 patients who were operated on for AMI at Tartu University Hospital during 2006–2014. Data were collected from medical records. The history of complaints, comorbidities, the results of the diagnostic radiological and laboratory tests, the type of surgical procedures and outcome, as well as the time until treatment were recorded.

RESULTS. Altogether 176 cases of AMI managed at our hospital during the study period were recorded. The study group consisted of 106 surgically treated patients with a mean age of 75 y. The average history of complaints was 33 h. The main complaint was abdominal pain (82%) while typical diarrhoea was observed in only 33% of the cases. For 57 patients (54%) concomitant atrial fibrillation was recorded. The best diagnostic results were obtained with CT-angiography performed in about 77% of the cases; its availability improved significantly during the study period. Ultrasound was used for 54 patients (51%) with only 3 adequate descriptions of the occluded superior mesenteric artery (SMA), while 3 cases showed misleading information about normal blood flow inside the SMA. Laboratory tests showed mostly elevated white blood count (76%) and C-reactive protein level (75%). Diagnostic laparotomy remained the single surgical intervention for 50 patients (47%) with no survivors afterwards. Embolectomy or bypass surgery was performed in 43 cases (41%) within 10 simultaneous bowel resection procedures. Subsequently, 8 bowel resections were needed during a second-look operation for 17 patients. Survival rate was 56% (24 pts). Bowel resection as a main surgical procedure, without revascularisation, was performed in 13 cases with 3 second-look operations afterwards. Survival rate for this group was 54% (7 pts). Overall mortality rate after surgical management was 71% (75 patients died and 31 survived).

CONCLUSION. Our study confirmed the superiority of CT- angiography over other diagnostic techniques in the case of suspected acute mesenteric ischaemia. However, despite the progress in diagnostic and surgical procedures, mortality rate for these patients remains still high.

202. Case report of a spontaneous rupture of the common iliac artery and its treatment

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INTRODUCTION. Spontaneous iliac artery rupture is a very rare and devastating situation that requires immediate action by the vascular surgeon. When spontaneous rupture of any magistral artery occurs, especially without previous aneurysmal diagnosis or marked arterial hypertension and before the age of 50, there is strong suspicion for a connective tissue disorder or syndrome.

MATERIALS AND METHODS. A 38 year-old man presented with sudden onset of lower abdomen right side pain and acute right limb ischemia. A CT-angiogram revealed right common iliac artery distal part dissection and rupture with retroperitoneal haematoma, which caused preclusion of the external iliac artery.

RESULTS. After considering open repair and endovascular repair, the latter was chosen. Combination of stentgrafting and regular stent replacement was performed. Arterial integrity was restored and the patient was treated successfully. The patient was discharged 3 days later. Ambulatory additional diagnostics was performed and a medical geneticist was consulted. Considering the patient's familial background and initial spontaneous iliac artery rupture, the Ehler-Danlos syndrome was diagnosed

CONCLUSION. Arterial rupture without earlier very evident aneurysmal formation in a young person is extremely rare among the Estonian population. In this case we draw atention to the need for constant alert and prevalence to treat even those rare cases as promptly as possible to manage the situation.

203. Pelvic varicose embolization to treat chronic lower abdomen pain: experience at East Tallinn Central Hospital

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INTRODUCTION. Pelvic varicoses, mainly originating from ovarian or internal iliac veins are common finding in women who have given birth. So far it has been considered a harmless change which requires no correction. Recent research shows a strong link not only between chronic pain and pelvic varicosis but also with vulvar varicoses, recurrent leg varicoses and also even haemorrhoids.

MATERIALS AND METHODS. At East Tallinn Central Hospital pelvic varicoses have mainly been treated because of the congestion syndrome. During 4 years there have been 20 ovarian vein embolizations, 2 of them repeat procedures. Of the 18 initial procedures, the feeder vein was left ovarian vein was involved in 12 cases, in 6 other cases the feeder vein of varicosis was the right ovarian vein. The patients´ age range has been 25–60 years (mean age 41). The duration of chronic pain has been 1 year to 20 years (mean 4 years). Patient selection has been done by a multidisciplinary team consisting of gynaecologist, urologist, physiotherapist, anaesthesiologist, vascular surgeon. Mean follow up of the patients has been 12 months (range 3–30 months).

RESULTS. Subjective patient self-evaluation after the procedure was positive – according to the visual analogue scale, the patients had pain relief of 7 to 1–2 points. All patients described the post embolization syndrome which lasted 10–14 days. Recurrent patients (2) presented at 12 and 18 months from the initial procedure and their left ovarian vein was partially recanalised and varicoses were again present.

CONCLUSION. Pelvic congestion syndrome is a continuing source of female chronic abdominal pain. As asymptomatic pelvic varicoses are very common among childbearing women, evaluation should be used to select right patients for pelvic vein embolization with promising relief of the chronic pain syndrome.

204. Gastroduodenal artery aneurysm - an algorithm of diagnosis and treatment

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INTRODUCTION. A. astroduodenalis (gastroduodenal artery – GDA) aneurysm is a rare pathology, its incidence is up to 1.5% amongst all visceral artery aneurysms (VAA). Depending on etiological factors they are divided into true (idiopathic) aneurysms and pseudoaneurysms (frequently in patients with pancreatitis and atherosclerosis). In case of aneurysm rupture, death occurs in up to 40%.

AIM OF STUDY. A retrospective analysis of the clinical files of patients admitted with GDA and bleeding.

MATERIALS AND METHODS. In the time period from 2014 to 2015 two patients with GDA aneurysms and bleeding were admitted to Pauls Stradins Clinical University Hospital, Department of Surgery.

RESULTS. Both patients were male. Patient No. 1 was 64 years old, admitted in the summer of 2014 with a ruptured a. pancreatoduodenalis aneurysm 10 mm in diameter and an intraabdominal hematoma. Patient No. 2 was 30 years old, admitted in January 2015 with a GDA aneurysm and an ulcer of the duodenal bulbus that had eroded to the GDA. Before admittance to Pauls Stradins Clinical University Hospital, patient No. 2 underwent several abdominal surgeries with unsuccessful hemostasis. Digital subtraction angiography (DSA) with aneurysm embolization was performed in both patients. No active bleeding was observed after manipulation. Both patients were discharged on the seventh day after the manipulation.

CONCLUSIONS. Since GDA is such a rare pathology, the patients should be treated via the multidisciplinary approach according to a consensus algorithm. Nowadays DSA is the golden standard for its capacity for diagnosing as well as for treating this condition (*via* endovascular embolization). Surgical treatment remains an option for hemodynamically unstable patients and for those who do not reach the desired effect after embolization.

3. BARIATRIC SURGERY

301. Evaluation of adipose tissue composition by ^{1}H NMR and its relationship with ultrasonoscopic measurements in obese patients

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INTRODUCTION. Central obesity is associated with numerous pathophysiologic processes and comorbidities. The aim of the study – to find relationship of differences in the composition and distribution of fat tissue in obese patients.

MATERIALS AND METHODS. 30 obese patients (17 women, 13 men) were recruited in a prospective study. Mean age 43.8 yrs, mean BMI – 48.7 kg/m^2. Body fat distribution was measured by ultrasonoscopy. Samples of adipose tissue (AT) were taken from subcutaneous, preperitoneal and visceral compartments during bariatric surgery. AT composition was determined by proton nuclear magnetic resonance (^{1}H NMR).

RESULTS. The composition of saturated and unsaturated fatty acids in subcutaneous (28.1% and 71.9%), preperitoneal (28.8% and 71.2%) and visceral fat (26.4% and 73.6%) compartments was different. In patients with metabolic diseases, subcutaneous fat thickness was higher compared with metabolically healthy individuals (4.46 cm *vs.* 2.52 cm, $p < 0.001$). Saturated fats from the preperitoneal compartment correlated with waist circumference ($p < 0.001$, $r = 0.69$), weight ($p < 0.001$, $r = 0.62$) and BMI ($p < 0.001$, $r = 0.61$). Saturated fats from visceral AT correlated with visceral fat thickness ($p < 0.05$, $r = 0.51$).

CONCLUSION. The percentage of saturated and unsaturated fatty acids in subcutaneous, preperitoneal and visceral fat compartments is different in obese patients. Subcutaneous fat thickness is related to metabolic diseases in obese patients. This study may potentially provide additional data for the assessment of AT compartments, especially preperitoneal, and their influence on metabolic diseases.

302. Laparoscopic adjustable gastric banding: long-term results of a prospective study

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INTRODUCTION. Gastric banding is one of the most common bariatric operations. This study evaluated the efficacy and safety of laparoscopic adjustable gastric banding (LAGB) in morbidly obese patients 5 years after operation.

MATERIALS AND METHODS. A total of 103 consecutive morbidly obese patients who underwent LAGB surgery between January 1, 2009, and January 31, 2010 were contacted for evaluation. Weight loss, complications, comorbidities, quality of life and mortality were evaluated.

RESULTS. The overall follow-up rate was 89.3% (92 of 103 patients). There were 29 (30.2%) males and 67 (69.8%) females. The mean age of the patients was 50.4 years (range, 26–69 years). Mean BMI before the operation was 47.5 kg/m^2 (range 35–68.3). Thirty-day mortality rate was zero. During the 5-year period 4 (3.8%) patients died from unrelated causes. Late complications were diagnosed in 11 (10.7%) patients: there were 7 (6.8%) band erosions, 3 (2.9%) pouch dilatations and one (0.9%) intolerable dysphagia. The band was removed in 3 (2.9%) patients and 3 (2.9%) patients had a revision surgery. The overall (intention-to-treat) mean excess weight loss (EWL) was 52.4% (range 9.9–109.2%). Thirty four (33.2%) patients have reached good or excellent weight loss results (≥ 50% of initial excess weight loss). The quality-of-life score (using the modified Moorhead-Ardelt quality of life questionnaire) was satisfactory.

CONCLUSIONS. The LAGB demonstrated durable weight loss with 52.4% EWL maintained to 5 years and low (10.7%) complication rate.

303. Laparoscopic adjustable gastric banding: a prospective randomized study comparing long term results of two different bands in 103 patients

Žygimantas Juodeikis, Bronius Buckus, Gintautas Brimas – Republican Vilnius University Hospital, Vilnius, Lithuania

INTRODUCTION. Laparoscopic adjustable gastric banding (LAGB) is one of the most common bariatric procedures. Various types of bands are used for this operation but there is insufficient data comparing different bands in long term. The aim of this study was to analyze long term (more than 5 years) results comparing MiniMizer Extra and SAGB adjustable bands.

MATERIALS AND METHODS. One hundred and three patients were included in the prospective randomized study. All patients underwent LAGB between January 1, 2009, and January 31, 2010. The SAGB was used in 49 and MiniMizer Extra in 54 patients. The primary endpoint was weight loss, and secondary endpoints were complication rate, correction of co-morbidities and improvement in quality of life.

RESULTS. Overall follow-up rate was 89.3% (92 of 103 patients). Initial weight loss was faster in the MiniMizer Extra group, but no difference was found in weight loss parameters, resolution of co-morbidities or improvement in quality of life after 5 years. No significant difference was found in the proportion of patients who reached good or excellent weight loss results (≥ 50% of initial excess weight loss) in MiniMizer Extra and SAGB groups (43.8% vs. 32.4%, $p > 0.05$). There were no early complications and there was no difference in the incidence of long-term complications in either group.

There were six band penetrations in the MiniMizer group and one in the SAGB group ($p > 0.05$). One eroded band was eliminated endoscopically and one was eliminated laparoscopically, while five eroded bands are still in place.

CONCLUSIONS. LAGB can be performed safely with the SAGB or the MiniMizer Extra with similar long term results with respect to weight loss and morbidity. No significant differences were found between the compared bands. Further results need to be confirmed by longer follow-up.

304. Prospective study evaluating laparoscopic gastric sleeve operations with 1- year follow-up

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INTRODUCTION. The aim of the study was to evaluate the results of laparoscopic gastric sleeve (LGS) operations (with 1-year follow-up) performed at Tartu University Hospital.

METHODS AND MATERIALS. The prospective data of 253 consecutive patients who underwent LGS operation within 6 years between 01.01.2018 and 31.12.2013 (including the learning curve) were collected. All operations were performed laparoscopically using a standard technique with 32-40 Fr bougie. Patient age, gender, Body Mass Index (BMI), preoperative comorbidities, operation details and perioperative complications were analysed. At 1 year follow-up visit, BMI, Excess Weight Loss (EWL), prevalence of anaemia, vitamin B12 and ferritin deficiency and state of comorbidities were analysed.

RESULTS. The patient group consisted of 214 women (85%) with an average age of 43 years (21–67) and 39 men (15%) with an average age of 46 (24–64) years. Average BMI was 45 (32–67) for women and 50 (40–75) for men. Preoperatively, 38 patients (15.0%) had type II diabetes, 143 patients (56.5%) had hypertonic disease, 91 patients (36.0%) had sleep apnoea, 50 patients (19.8%) had dyslipidemia and 61 patients (24.1%) had degenerative joint disease. Out of 253 LGS patients 42 underwent simultaneous operations (laparoscopic cholecystectomy 37, laparoscopic herniotomy 2, crurorаphy 3). There were no conversions to laparotomy. In 25 patients (9.9%) complications were observed perioperatively or during the 30-day postoperative period. Non-surgical complications occurred in 11 cases (4.3%), intraoperative complications occurred in 7 cases (2.8%) and reoperations and/or rehospitalisations (during the 30-day postoperative period) occured in 13 cases (5.1%). Mortality rate was 0. Altogether 214 patients out of 253 (85%) were included in 1-year follow-up. Average EWL 1 year after operation was 75.8% (0–138.5). In 87.4% of the patients (187/214) EWL was > 50%. Remission or relief occurred in 81% (95/116) of the hypertension patients and in 95% (36/38) of the diabetes patients; remission of dyslipidemia occurred in 78% (39/50) of the patients. One year after the operation anaemia was observed in 14% (27/193) of the patients, ferritin deficiency in 15% (29/193) of the patients and vitamin B12 deficiency in 7.8% (15/192) of the patients.

CONCLUSIONS. LGS showed good 1-year follow-up results in weight reduction (EWL 75%) and in the rate of resolving comorbidities. The operations were performed without conversion to open laparotomy and without mortality, with a complication rate less than 10%.

305. Surgery in the treatment of type 2 diabetes mellitus

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INTRODUCTION. The prevalence of type 2 diabetes mellitus (T2DM) increases worldwide. There is an established relationship between T2DM and obesity. Surgical treatment is widely used for weight loss and control of metabolic disorders associated with obesity. Randomized controlled studies (RCTs) have found surgery to be superior to best medical treatment in this group of the patients. However, which surgical operation is the most effective for the treatment of obese patients with T2DM is still to be found out in future RCTs.

OBJECTIVES. To investigate the effect of variations in the length of biliopancreatic limb on the rate of remission of T2DM in obese patients undergoing Roux-en-Y Gastric Bypass (RYGB).

METHODS. During the period 2010.09–2013.09, sixty-seven obese patients (BMI 35–50) with T2DM who underwent RYGB surgery were included in a multicenter randomized controlled study. The patients were divided into two groups: BP – 50 cm (34 pts) and BP – 150 cm (33 pts). Length of the alimentary limb was the sam in both groups – 100 cm. Age, sex, BMI, duration of diabetes and surgery, inhospital stay, use of antidiabetic medications, decrease of HbA1C and fasting glucose level (FGL), postoperative complications and remission of diabetes (HbA1c ≤ 5.6%, FGL ≤ 5.6 mmol/l.) were analyzed and compared for the groups.

RESULTS. There were no significant differences between the groups in patient characteristics before surgery. Sixty (89.5%) patients reached 12 months of follow-up. The %EWL was higher in the BP 150 cm group compared with BP 50 cm group, but with no significant difference (74.3% *vs.* 66.4%; p = 0.167). The HbA1C and FGL decreased similarly in both groups (HbA1C(50cm) 5.59 ± 0.9 *vs.* (150 cm) 5.44 ± 0.78; p = 0.482; FGL (50 cm) 4.99 ± 0.98 *vs.* (150 cm) 5.10 ± 0.72; p = 0.669). Percentage of patients without antidiabetic medications (83.3% *vs.* 63.3%; p = 0.69) and complete remission of T2DM (58.3% *vs.* 33.3%; p = 0.28) were superior in BP 150 cm group, however, did not reach significant difference.

CONCLUSION. Patients with BP limb 150 cm had significantly higher %EWL and complete T2DM remission rates.

306. Five-year follow-up of the results of bariatric surgery in Estonia

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INTRODUCTION. Bariatric surgery has gained widespread acceptance in Estonia with more than 600 procedures performed in a year. The leading methods of surgery have been laparoscopic sleeve gastrectomy (LSG) and laparoscopic Roux-en-Y gastric bypass (LRYGB). The objective of this study was to determine long term outcomes for patients undergoing LRYGB and LSG in Estonia.

METHODS. A follow-up study of bariatric patients undergoing primary LSG or LRYGB at three leading hospitals in Estonia. Inclusion criteria: patients with a history of primary LSG or LRYGB at least 5 years before inclusion. Exclusion criteria: any revisional bariatric surgery, patient's death or lost to follow-up during the study period. Outcomes: percentage of excess weight loss (%EWL), resolution of co-morbidities, nutritional complications.

RESULTS. Initially 286 consecutive patients having primary LSG (74) or LGBP (212) were identified, after applying exclusion criteria 196 (69%) (55 LSG and 141 LGBP) were left for the study. Mean time from surgery to follow-up was 73.4 months. There were 23.6% of males in the LGS group and 22.0% of males in the LGBP group (p = NS). Preoperative BMI was 49.1 and 48.3kg/m^2 (p = NS), mean age was 44.5 and 41.4 years (p = NS) in the LGS and LGBP groups, respectively. Preoperative prevalence of type 2 diabetes was 24.6% *vs.* 22.2%, arterial hypertension 61.5 *vs.* 50.6% and dyslipidemia 33.8 *vs.* 12.3% in the LGS and LGBP groups, respectively. Mean EWL% was 53% (SD ± 23.3) for LSG and 60% (SD ± 22.3) for LGBP patients (p = 0.13). Younger age had significant positive correlation with EWL%. Gender and surgical method did not influence EWL% outcome. Resolution of diabetes, arterial hypertension and dyslipidemia occurred in 58.3%, 33.3% and 58.8% of the patients after LSG; and in 64.7%, 38% and 30% after LGBP. The LGBP patients were more prone to develop nutritional deficiencies than the LSG patients. Anemia occurred in 15.9% *vs.* 23.2% (p = 0.34), low ferritin in 19.1% *vs.* 37.5% (p = 0.037), vitamin B12 deficiency in 0% *vs.* 18.5% (p = 0.003), vitamin D deficiency in 83.7% *vs.* 87% (p = 0.62) and folic acid deficiency in 12.8% *vs.* 5.3% (p = 0.3) in the LSG and LGBP groups, respectively.

CONCLUSION. Long term results of weight loss surgery in Estonia are favourable regardless of the surgical method used and are in concordance with published data.

4. COLORECTAL SURGERY

401. High-dose barium enema haemostasis is effective in non-oncologic large bowel bleeding

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INTRODUCTION. High-dose barium enema filing for colonic diverticular bleeding is an optional type of haemostasis. The aim of study was assessment or three-year experience with high-dose barium enema haemostasis in cases of diverticular and other types of non-oncologic large bowel bleeding.

MATERIALS AND METHODS. Barium enema haemostasis was applied in proven diverticular bleeding, ischemic colitis and in cases with severe sepsis. Intensity and duration of bleeding, individual risk factors, completeness of haemostasis, hospital stay and main outcomes were analysed.

RESULTS. A total of 205 patients, mean age 71 (range 54–95) years, were treated at our institution during the last three years for large colon bleeding. The main reasons for bleeding were colon diverticula in 170 patients, large bowel ischemia in 9, anticoagulant over dosage in 11, and other causes in 15 patients. Majority of the patients (n = 190) were hemodynamically stable during the treatment period, however, in 9 patients bleeding was associated with severe sepsis and shock when barium enema was applied. Complete haemostasis was achieved in 191 patients, one patient underwent surgery, two underwent endovascular embolisation and 11 patients underwent repeat barium enema haemostasis. Finally haemostasis was achieved in all patients but 5 of them died because of septic shock.

CONCLUSIONS. High-dose therapeutic barium enema is justified in cases of non-oncologic large colon bleeding including critical patients with severe sepsis.

402. Treatment of obstructed defecation syndrome in Latvia

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INTRODUCTION. Constipations are one of the most common complaints in European population. When in general population the incidence of chronic constipation is 17%, then in age over 70 years chronic constipation account for 20.6% among men and for 25.0% among women. Half of them are obstructed defecations syndrome (ODS) patients. Mainly they can be treated conservatively, but in cases of obstructed defecation type of constipation surgery as final treatment can be performed. There is still no consensus on the most effective treatment in this case, but one of the most promising techniques can be the Stapled Transanal rectal resection. This type of procedure is one of the most widely used procedures in Latvia.

This procedure in Latvia has been performed since 2010. Operations are performed at 2 hospitals: P.Stradins University Hospital and Riga Eastern University Hospital. In our study we compared early and late postoperative results after Contour Transstar operation for patients with defecography-diagnosed rectocele and internal rectal prolapse and compared the influence of different dephecography findings on postoperative results.

METHOD. Comparison was carried out for patients (n=88) with ods score before operation, and 12, 24 and 36 months after operation. The operations were done in patients with defecography-diagnosed rectocele and internal rectal prolapse. We compared postoperative ODS score results between patients with additional defecography findings – enterocele, syndrome of m.puborectalis and anal dilatation. For postoperative specimens, tensile tests were made to estimate such biomechanical properties of rectum wall as ultimate stress, ultimate deformation and tangential modulus of elasticity. We compared biomechanical results for the front and posterior rectum wall and for patients with ODS and control group specimens from cadavers.

RESULTS. Mean ODS score before operation was 18.08 ± 7.09 ($p < 0.05$), 12 months after operation it was 5.11 ± 7.03 ($p < 0.01$), 24 months after operation ODS score was 3.71 ± 4.63 ($p > 0.01$), 36 months after operation ods score was 6.71 ± 9.26 ($p > 0.01$). Three years after operation there were patients with ODS score from 0 to 22. For ODS patients with enterocele preoperatively, ODS score was 17, at 36 months postoperatively it was 3 ($p < 0.01$). For ODS patients with syndrome of m.puborectalis, ODS score preoperatively was 24, at 36 months postoperatively it was 3 ($p < 0.01$). One ODS patient with anal dilatation preoperatively had ODS score 23 and at 36 months postoperatively it was also 23.

Ultimate stress in ODS group were $ó_a^* = 0.201 \pm 0.11$ MPa in anterior wall and $ó_p^* = 0.30 \pm 0.096$ MPa ($p < 0.016$) in posterior wall, in control group $ó_a$

* = 0.196 ± 0.065 MPa and ó$_{p}^{*}$ = 0.308 ± 0.085 (p < 0.041), respectively. Ultimate deformation in the ODS group in anterior and posterior wall was å$_{a}^{*}$ = 117.08 ± 25.95% and å$_{p}^{*}$ = 146.86 ± 28.33% (p < 0.007) and in the control group å$_{a}^{*}$ = 91.31 ± 17.71% un å$_{p}^{*}$ = 24.94% (p < 0.032), respectively. Tangential modulus of elasticity in in anterior wall was lower in the ODS group than in the control group E = 0.321 ± 0.131 MPa *vs.* E = 0.596 ± 0.161MPa (p < 0.037). Tangential modulus for posterior wall was E = 0.397 ± 0.152 MPa *vs.* E = 0.57 ± 0.191 MPa (p < 0.042), respectively.

CONCLUSION. Intermediate results of contour transstar operation are still good after 36 months. Guarantees for excellent results are precise investigation and ODS score count before operation. Contour Transstar operations are indicated for ODS patients with ODS score above 15. Indications for operation are not clinical and are based on defecography findings of ODS score above 15.

Anterior and posterior rectal wall was less fragile and more elastic in the ODS group than in the control group. Stiffness was higher in the control group than in the ODS group when comparing anterior wall and posterior wall between the groups. Biomechanical results show that rectocele in ODS patients is a secondary change and not a primary symptom.

Depending on biomechanical findings after morphological examination (amount of collagen, elastic fibers, glial cells, Cajal cells, neurons etc.), it can be possible to develop modified methods of the STARR procedure (anterior wall resection only etc).

403. Complication following Longo procedure: complete obstruction of rectum

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INTRODUCTION. The Longo technique was developed with the aim to minimize post-operative pain and risk of recurrence while treating the major hemorrhoid symptoms of bleeding and prolapse. Early complications include bleeding, tenesmus, prolapse, fecal or urinary incontinence, pain, perianal hematoma, anorectal thrombosis, obstipation, and anal fissure. The aim is to present a rare case of complete obstruction of rectum after Longo procedure.

MATERIALS AND METHODS. Case report.

RESULTS. During an eight-year period 529 patients having grade II or III haemorrhoidal disease underwent Longo procedure with a 9.3% rate of early complications at Riga East Clinical University Hospital "Gailezers". Longo procedure was done in a 38-year-old woman due to grade II haemorrhoidal disease. After the procedure the patient developed spazmatic abdominal pain and did not defecate for three days. Radiologic and endoscopic examinations revealed complete obstruction of the rectum above the the staple line. On postoperative day 4 incision of the rectal mucosa was done. The patient was discharged 5 days after the second intervention without complaints.

CONCLUSION. We demonstrated a rare complication following Longo operation. To our knowledge, no similar complication has been reported in the available literature.

404. Assessment of the measuring properties of the Obstructed Defecation Syndrome Scale is needed: an example of Estonian data

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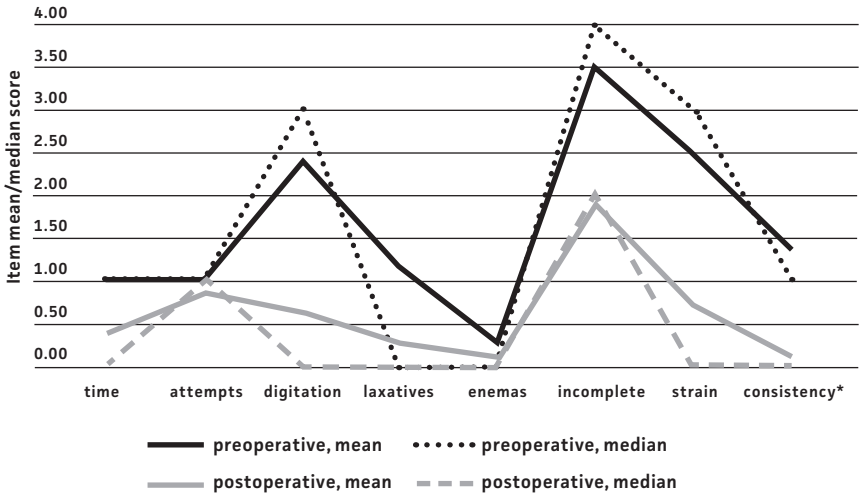
INTRODUCTION. The Obstructed Defecation Syndrome (ODS) Scale is a clinician-reported measure assessing severity of ODS (*Altomare 2007*). There are 8 items inquiring about different signs/symptoms, with 4 or 5 possible answers with scores ranging from 0 (symptom-free) to 3 or 4 points (severe symptoms). The total ODS score is the sum of all points. The ODS scale is used throughout Europe. However, little is known about its scaling properties. The aim of the presentation was to describe the performance of the ODS scale and its items on an Estonian sample of women with ODS.

MATERIALS AND METHODS. The patients, operated on using STARR due to ODS, were assessed preoperatively, and after 1, 6, and 12 months postoperatively. Data for 55 patients who completed full 12-months follow-up was used for description of the scale and its 8 items.

RESULTS. In comparison with preoperative figures, the decrease in the mean total ODS score was 8 points by 12 months postoperatively; the difference is statistically significant (Wilcoxon sign rank test).

The items' preoperative profile has three peaks formed with the mean values of "anal/vaginal digitation", "incomplete/fragmented defecation" and "straining at defecation" (2.40, 3.51 and 2.49 respectively), figure. The



*** the item is scored from 0 to 3; the values are adapted for 5-point scale by multiplication by 1.33**

Figure. The profile of parents' symptoms severity by ODS items preoperatively and postoperatively (n = 55).

preoperative profile's lowest point is determined by the mean score of the item "use of enemas" (0.27). The postoperative profile's highest point is mean score of the item "incomplete/fragmented defecation" (1.87). Postoperatively the profile's two lowest points are means of the items "stool consistency" (0.10) and "use of enemas" (0.11).

The change in the mean of scores for the ODS score items varied from 0.16 ("N attempts to defecate" and "use of enemas") to 1.78 ("digitation" and "straining at defecation"). The change in scores was statistically significantly different from 0 in 6 cases; the exceptions were the items "N attempts to defecate" and "use of enemas" (Wilcoxon sign rank test, Bonferroni correction). A statistically significant difference is demonstrated between the median changes in the scores of ODS items (Friedman test).

CONCLUSION. The results demonstrated a difference in the performance of the mean scores of the ODS scale items at two time points in the SATRR operated patients. This raises the issue of applicability of the total ODS score as the sum of the items' scores. Our next step will be assessment of the measuring properties of the ODS scale using Rasch analysis.

405. A prognostic scoring system to predict the risk of converting laparoscopic colorectal procedures to open surgery

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INTRODUCTION. Laparoscopic colorectal surgery has clear advantages of reduced post-operative pain, quick recovery and early discharge. However, laparoscopic colorectal surgery can be technically demanding with a steep learning curve and conversion from laparoscopic to open surgery and has been associated with poorer clinic outcome. This study aims to identify the risk factors associated with conversion of laparoscopic colorectal surgery to open surgery and to develop a generic predictive model for assessing the risk of conversion.

METHODS. The study included all consecutive patients undergoing elective laparoscopic colorectal surgery between 2003 and 2012. Clinical variables were collected from a locally maintained database including age, gender, BMI and ASA grade, surgical procedure performed, and length of hospital stay. All procedures were carried out or directly supervised by laparoscopically trained surgeons. The primary end-point was conversion of laparoscopic to open surgery defined as "early or unplanned" need for a midline laparotomy.

RESULTS. A total of 671 laparoscopic colorectal resections were performed during the study period. The median age of the patients was 68 (interquartile range 60–76) years and the median BMI was 26.6 (IQ range, 24.0–29.7). Surgery was performed for malignant disease in 460 cases (68.6%). Conversion to an open procedure was required in 94 (14%) cases. Male gender (OR 1.66; CI 0.97–2.87; p = 0.057), body mass index (BMI) ≥ 27 kg/m^2 (OR 1.730; CI 1.01–2.95; p = 0.044), and left sided/rectal resections (OR 2.54; CI 1.30–4.97; p = 0.007 & OR 2.94; CI 1.44–6.01; p = 0.003 respectively) were associated with conversion to laparotomy in multivariate analysis. A scoring system was constructed using these three variables to estimate the probability of conversion to open surgery. Applying the model yielded an area under the receiver–operator characteristic curve of 0·68 for prediction of conversion to open surgery (p < 0.001).

CONCLUSION. The predictive scoring system is useful in predicting the risk of conversion to open surgery in laparoscopic colorectal surgery. It may be useful for trainee surgeons to identify suitable initial cases as they embark on the learning curve toward being competent in laparoscopic colorectal surgery.

406. Laparoscopic colorectal resections for deep infiltrating endometriosis: initial experience at Tartu University Hospital

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INTRODUCTION. Deep infiltrating endometriosis is often associated with severe symptoms seriously affecting quality of life. Common symptoms are dysmenorrhea, dyspareunia, chronic pelvic pain, infertility, painful defecation, constipation, intestinal obstruction and –bleeding. Medicamentous therapy is often ineffective and surgery is the treatment of choice in these situations. The aim of operation is to remove all endometriotic nodules entirely. Rectum and rectosigmoid junction is frequently involved and cooperation between gynecologist and colorectal surgeon is paramount for good treatment outcome. The goal of this paper was to present our initial experience of laparoscopic operations in deep endometriosis.

MATERIALS AND METHODS. Seven women with deep infiltrating endometriosis were operated at Tartu University Hospital between 28.01.2014–26.03.2015. Mean age of the patients was 33 (23–42). Operations were carried out by one colorectal surgeon in co-operation with gynecologists. An overview of the details of the procedure and patient outcomes are described.

RESULTS. All procedures were completed laparoscopically and endometriotic lesions were removed successfully. There were two rectal wall shavings, one full thickness rectal wall discoid resection, three anterior rectal resections with stapled anastomosis and one pelvic sidewall resection with ureterolysis. These patients recovered with no complications, median hospidal stay was five days. At follow-up visits three patients were symptom-free and all other patients had significant improvement in symptoms. One patient became pregnant with a IVF procedure.

CONCLUSION. Colorectal resection in deep infiltrating endometriosis is the treatment of choice resulting in a significant improvement in syptoms.

407. Successful conservative treatment of complicated colonic diverticular disease Hinchey grade III-IV

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INTRODUCTION. According to the WHO guidelines about 15–25% of patients who present with the first episode of acute diverticulitis have a complicated disease that requires surgery and 15–30% of patients will need surgery during their admission, resulting in 18% mortality rate. The aim of the study is to share our experience in the treatment of patients with complicated colonic diverticular disease Hinchey grade III-IV.

MATERIALS AND METHODS. Preliminary assessment of the results after commencement of the conservative treatment strategy in patients with complicated colonic diverticular disease Hinchey grade III-IV.

RESULTS. A total of 516 patients with colonic diverticular disease were treated at our institution during the two-year period, from 2013 to 2014. From among the whole cohort 345 patients had uncomplicated diverticulitis, 131 were treated for diverticular bleeding and 40 patients had complicated diverticulitis with perforation. Mean age of the patients with complicated perforative form was 51 (range 38–72) years. According to the Hinchey classification, 34 patients corresponded to grade III and 6 patients corresponded to grade IV. In total, 10 patients from this group underwent emergent surgical intervention (Hartmann's procedure in 3 cases, sigmoidostomy in 4 cases, and laparoscopic drainage in 3 cases). The majority of the cohort, 30 patients, were treated sucessfully conservatively. This strategy resulted in two lethal outcomes associated with septic shock.

CONCLUSIONS. The treatment of complicated diverticular disease requires a multidisciplinary approach. According to our data, a selected group of patients with Hinchey grade III diverticular disease might be successfully treated by nonoperative management when patients respond well to conservative treatment.

408. Colorectal cancer registry – who needs it?

Indrek Seire – North Estonia Medical Centre, Tallinn, Estonia

INTRODUCTION. Despite the rapid development of medicine in Estonia (including treatment of multimodal cancer), we still do not have a registry of different cancer localizations.

Even with its long tradition, the existing Estonian Cancer Registry (which does provide reliable data of cancer incidence and mortality in general) does not offer detailed data of the site-based diagnostic and treatment of cancers.

What is evident, as the experience of developed countries has shown, is that the establishment of a site based cancer registry helps raise the quality of the treatment process.

MATERIAL AND METHODS. As an initiative of the North Estonian Medical Centre, in cooperation with the Estonian Association of Oncologists, the idea of creating a colorectal cancer registry is introduced. In our presentation we demonstrate a computer-based database, which covers the diagnostic details and the whole treatment process.

In the ideal case, the database should be capable of rapidly analysing the data that has been entered, as well as of allowing comparison with other countries with similar results.

In the pilot stage, only primarily diagnosed colorectal cancer cases, requiring surgical treatment, where entered in the database. All parameters where manually entered to ensure a high level of data quality. In the future, the manual process of entering data will be replaced with a direct link to hospital databases, which will automate the data entry process.

Our presentation also describes problems associated with data entering and processing, as well as with data quality; a possible solution for creating a a nation-wide colorectal cancer registry is proposed.

5. SURGICAL ONCOLOGY

501. Initial experience in combining cytoreductive surgery and hyperthermic intraoperative intraperitoneal chemotherapy at East-Tallinn Central Hospital, Tallinn, Estonia

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BACKGROUND. Peritoneal surface malignancies include peritoneal metastases from gastrointestinal and gynecological tumors and primary peritoneal malignancies. In recent years, the understanding of peritoneal surface malignancies has evolved into the concept that peritoneal metastases represent a locoregional disease stage. Therefore, current treatment approach consists of complete cytoreductive surgery (CRS) and hyperthermic intraoperative intraperitoneal chemotherapy (HIPEC) which aims at definitive disease eradication.

METHOD. This paper presents an overview of initial experience in combining cytoreductive surgery and hipec in treatment of peritoneal surface malignancies of different origin at one centre (East-Tallinn Central Hospital, Tallinn, Estonia).

RESULTS. The first combined procedure was done on a 57-year-old gastric cancer patient in October 2011.

In the period from October 2011 to April 2015, 47 combined CRS and HIPEC operations were done by a multidisciplinary team. Of 47 HIPEC procedures 10 were combined with hyperthermic intraoperative thoracoabdominal chemotherapy (HITAC). Age of the patients was between 19–77 years. Distribution by sites: gastric cancer – 7 cases; ovarian cancer – 27 cases; colorectal cancer – 9 cases; endometrial cancer – 1 case; sarcoma – 1 case. The average PCI was 8.3. Completeness of cytoreduction score (CC) was 0 in 29 cases and 1 in 17 cases. There occurred no postoperative mortality.

CONCLUSIONS. In our initial experience, combined cytoreductive surgery with hipec/ hitac is a feasible and safe procedure.

502. Perineural invasion in gastric cancer

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INTRODUCTION. Gastric cancer ranks high in cancer incidence and mortality worldwide (Carcass, 2014). It has marked invasive capacity that can be estimated either by molecular studies or by morphological parameters. Hypothetically, invasive properties can be reflected by perineural invasion. However, the reported frequency of perineural growth is controversial, ranging 6.8–75.6% (Deng *et al.*, 2014).

MATERIALS AND METHODS. The aim of our study was to explore the frequency of perineural invasion in association with essential oncologic parameters of gastric carcinoma as grade and mural invasion. The study was designed as retrospective investigation of 247 consecutive, surgically treated gastric cancer cases (2008–2014) from a single university hospital. Standardized pathology protocols and histological slides were reviewed. The cancers were characterized by histological types as recommended by the World Health Organization (Lauwers *et al.*, 2010), grade (G1–4) and mural invasion – pT according to pTNM classification, 7th ed. (Grazioso *et al.*, 2013). The pT1 cases were excluded from further analysis due to anatomically limited growth. Perineural invasion was considered positive if cancer cells were found in the perineurium (Shen *et al.*, 2010). A descriptive statistical analysis was performed including calculation of the 95% confidence interval (CI) by CIA software (Altman *et al.*, 2000).

RESULTS. The study group included 153 men (61.9%; 95% CI: 54.2–69.6) and 94 women (38.1%; 95% CI: 28.3–47.9). Patients' age ranged 24–88 years, mean 66.0 years (95% CI: 65.8–66.2). The histological tumour spectrum comprised 195 adenocarcinomas (79.0%; 95% CI: 73.2–84.7), 45 signet ring cancers (18.2%; 95% CI: 6.9–29.5) and 7 mucinous cancers (2.8%; 95% CI: 1.2–5.6). By pTNM, 20 pT1aG1 tumours were found and excluded as specified in Materials and Methods. The frequency of perineural invasion by pT was the following: pT1b, 20.0% (95% CI: 4.3–35.7); pT2, 48.1% (95% CI: 29.3–67.0); pT3, 50.0% (95% CI: 38.3–61.7); pT4a, 86.6% (95% CI: 79.8–93.4) and pT4b, 87.5% (95% CI: 64.6–100.0). Evaluating grade, perineural invasion was found in 21.0% (95% CI: 9.9–32.1) of G2 and 70.9% (95% CI: 64.1–77. 6) of G3 tumours.

CONCLUSION.

- Perineural invasion is common in locally advanced tumours (pT3–4). It is statistically significantly more frequently found in pT4a compared with pT1b–3 tumours.
- Perineural invasion is statistically significantly more frequent in high grade (G3) cancer.

503. Regional lymph node status in synchronous colorectal carcinoma

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INTRODUCTION. Synchronous colorectal neoplasias are defined as two or more primary tumours of large bowel, if these tumours are identified in the same patient at the same time. Such a finding has a negative prognostic role (Nosho *et al.*, 2009; Takeuchi *et al.*, 1997).

MATERIAL AND METHODS. The aim of our study was to evaluate the lymph node status in patients affected by multiple colorectal carcinoma. In a retrospective study, 788 consecutive colorectal cancer patients who underwent potentially curative surgical treatment in a single university hospital were identified by archive search. The number of retrieved and metastatic lymph nodes was detected and analysed in regard to the presence of multiple primary colorectal carcinoma in the removed bowel. The tumours and lymph node metastases were assessed according to the World Health Organisation classification (Bosman *et al.*, 2010; Edge *et al.*, 2010). Descriptive statistical analysis was performed (Altman *et al.*, 2000).

RESULTS. The mean number of investigated lymph nodes per patient was 12.9 (95% confidence interval: 12.4–13.5). More than 12 lymph nodes were retrieved in 46.7% (43.4–50.3) of the patients (369). The mean count of the investigated lymph nodes was 13.0 (12.1–13.8) in N0; 12.9 (11.9–13.9) in N1 and 13.0 (11.9–14.1) in N2 cases. Synchronous colorectal carcinoma was found in 27 patients or 3.4% (2.4–4.9). In these cases, lymph node metastases (N1–N2) were present in 11 patients constituting 40.7% (24.5–59.3). In patients with single colorectal carcinoma N+ was found in 39.7% (36.3–43.2).

CONCLUSIONS.

- The mean number of retrieved lymph nodes corresponds to internationally recognized recommendations for colorectal cancer investigation. At this quality level, there is no association between the mean number of investigated lymph nodes and pN finding.
- The presence of the second colorectal cancer is associated with a trend of more frequent lymph node involvement.

504. Tumour volume: lack of biological significance in colorectal cancer

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INTRODUCTION. The volume of colorectal cancer (CRC) has been explored as a prognostic or predictive factor (Garland *et al.*, 2014). In contrast, some studies pointed to anatomic correlations: right-sided tumours had larger volume (Snaebjornsson *et al.*, 2010). The aim of our study was to assess the volume spectrum of colorectal carcinoma in relation to anatomic location and biologically significant parameters as the local spread and lymph node metastases.

MATERIALS AND METHODS. In a retrospective study, 457 consecutive CRC patients who underwent potentially curative surgery at a single university hospital within a 3-year period were identified by archive search. The CRC diagnosis was assessed by World Health Organisation and American Joint Committee on Cancer classifications (Bosman *et al.*, 2010; Edge *et al.*, 2010). Tumour localisation (proximal versus distal: *dx. vs. sin.*) and 3-dimensional size were assessed. The CRC volume was calculated by the ellipsoid formula, and divided into 5 groups (Table 1). Descriptive statistical analysis was performed, including detection of 95% confidence interval (CI) by the CIA software (Altman *et al.*, 2000).

RESULTS. The study included 457 CRC patients comprising 128 or 28.0% (95% CI: 24.1–32.3) of proximal and 329 or 72.0% (67.7–75.9) of distal tumours. The mean CRC volume was 23.0 cm^3 (18.4–27.6), *dx.* – 28.9 cm^3 (21.5–36.4), *sin.* – 20.7 cm^3 (15.0–26.4).

Table 1. The volume spectrum of colorectal carcinoma

Tumour volume group		Frequency, %	95% CI
I	Less than 5 cm^3	35.4	31.2–39.9
II	5–10 cm^3	19.7	16.3–23.6
III	10–20 cm^3	20.1	16.7–24.0
IV	20–50 cm^3	14.7	11.7–18.2
V	More than 50 cm^3	10.1	7.6–13.2

Locally advanced tumours were predominant including pT3 in 49.4% (44.9–54.0), but pT4 in 34.7% (30.5–39.2) of the patients. The mean volume of pT3 carcinoma was 25.2 cm^3 (18.2–32.3), but the mean volume of pT4 was 25.9 cm^3 (17.7–34.2). The mean CRC volume in pN0 patients was 21.8 cm^3 (15.4–28.2), but in node-positive patients (pN+) it was 23.7 cm^3 (17.2–30.3).

CONCLUSIONS.

- Right-sided colorectal carcinomas tend to have larger volume.
- There is no statistically significant volume difference between pT3 and pT4 CRC. Despite the predominance of advanced tumours in the study group, the carcinomas remain small or medium-sized.
- In CRC, presence of lymph node metastases is not dependent on tumour size.
- The extent of local invasion and metastatic potential in colorectal carcinoma cannot be explained by tumour size, therefore, molecular mechanisms should be considered.

505. IDH1-R132 immunohistochemistry in human gliomas: a way to improved diagnostics

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INTRODUCTION. Glioblastoma (GBM) is the most aggressive glioma which is defined by World Health Organisation as grade IV tumour (Louis et al., 2007). The majority of GBMs (> 90%) arise de novo and thus represent primary GBM. Primary glioblastomas are more aggressive than secondary GBM, which develop from low-grade gliomas and constitute 5–8% of all GBM. The IDH1 mutations are frequent genetic alterations in low-grade gliomas and secondary GBMs. The leading mutation is IDH1-R132 that occurs in approximately 70% of astrocytoma cases. Mutant IDH1 protein detection by immunohistochemistry can be used to distinguish between secondary and primary GBMs as well as to identify diffuse gliomas in challenging tissue material.

MATERIALS AND METHODS. The study group comprised 122 GBM and 15 diffuse astrocytoma (DA) cases. All tumours were immunostained with IDH1-R132H monoclonal antibody (clone H09, dilution 1:40). Descriptive statistical analysis was performed including calculation of the 95% confidence interval (CI), using the CIA software, according to Altman et al., 2000.

RESULTS. IDH1 R132H protein expression was found in four GBM (3.3%; 95% CI = 1.0–8.4). All cases showed intense nuclear staining. Among the positive cases, only one GBM morphologically showed a component of lower grade glioma confirming thus secondary GBM on morphological grounds. All IDH1 R132H positive GBMs (n = 4) lacked any radiological or clinical evidence of a pre-existing tumour. Eleven DA showed IDH1 R132H expression (73.3%; 95% CI = 50.9–95.7%), but four DA cases were IDH1 R132H negative (26.7%; 95% CI = 4.3–49.1%).

CONCLUSIONS.

- GBMs develop more frequently as primary tumours. In the study group of Latvian patients, the frequency of secondary GBM showed a trend to lower values (3.3%) than those reported in international studies.
- Malignant transformation to secondary GBM might occur clinically silently without the evidence of pre-existing low-grade glioma. Thus, mutant IDH1 protein-specific immunohistochemistry is useful for identification of the secondary nature of GBMs.
- The high expression of mutant IDH1 protein in diffuse astrocytoma is clinically important as it can reveal the tumour in diagnostically complex tissue material. However, a subset of secondary GBMs and DA (26.7%) lack IDH1 R132H mutation.

506. Lymph node involvement in resected primary lung adenocarcinoma and squamous cell carcinoma

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INTRODUCTION. Stage of lung cancer is the most important prognostic factor in affected patients. Regarding surgically resected non-small cell lung cancer, lymph node involvement should be evaluated precisely owing to the significant role in prognostic assessment and selection of adjuvant treatment (Tabata et al., 2014; Travis et al., 2015).

MATERIALS AND METHODS. To evaluate lymph node involvement by anatomical stations in patients with primary lung adenocarcinoma or squamous cell lung carcinoma, the study included 83 consecutive patients who underwent pulmonary and regional lymph node resection due to primary non-small cell cancer. The regional lymph nodes were assessed according to the World Health Organization TNM classification of lung tumours as well as according to the anatomical definitions of lymph node stations and station grouping by nodal zones as proposed by the International Association for the Study of Lung Cancer (Travis et al., 2015).

RESULTS. The study included 83 patients, of whom 61 were male (73.5%; 95% confidence interval (CI) = 63.1–81.8%) and 22 were female (26.5%; 95% CI = 18.2–36.9). The median age of the patients was 67 years (standard deviation, SD ± 9.58). Squamous cell carcinoma was diagnosed in 50.6% (95% CI = 40.1–61.1) of the patients, and adenocarcinoma, in 49.4% (95% CI = 38.9–60). Metastatic lymph node involvement was found in 42.9% (95% CI = 29.1–57.8) cases of squamous cell carcinoma and in 39.0% (95% CI = 25.7–54.3) cases of adenocarcinoma. Squamous cell carcinoma most frequently involved peripheral lymph nodes (61.1%; 95% CI = 38.6–79.7), followed by hilar and interlobar spread (50%; 95% CI = 29.0–71.0) and subcarinal and lower mediastinal zone lymph node metastases (11.1%; 95% CI = 3.1–32.8; each). The metastases of adenocarcinoma were found in peripheral lymph nodes (62.5%; 95% CI = 38.6–81.5), followed by hilar and interlobar involvement (37.5%; 95% CI = 18.5–61.4) and subcarinal and lower zone lymph node metastases (12.5%; 95% CI = 3.5–36.0; each).

CONCLUSIONS.

- Almost half of surgically treated patients with primary lung adenocarcinoma (39%) and squamous cell carcinoma (43%) present with regional lymph node involvement.
- The most commonly affected lymph node stations include the peripheral and hilar and/or interlobar zone while mediastinal lymph nodes are involved with lower but still significant frequency.

507. CRC and HIPEC - start and results in Lithuania

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In 2011 04, 11 first cytoreductive surgeries (CRC) followed by HIPEC procedures were performed at Vilnius University Hospital Santariškių klinikos for patients with pseudomyxoma peritonei. In the same year a CRC and HIPEC program was launched at Klaipėda University Hospital and later at the National Cancer Institute. During a period of 4 years 73 CRC and HIPEC procedures were performed. Indications for CRC and HIPEC were peritoneal pseudomyxoma in 8 cases, ovarian cancer in 20cases, colorectal cancer in 7 cases, mesothelioma peritonei in 1 case, gastric cancer in 1 case and prophylactic HIPEC for colorectal cancer in 1 case. Established CRC and HIPEC centers in Lithuania have received comparable results. Estimated peritoneal carcinomatosis index (PCI) ranged from 0 to 31 with an average of 14. Perioperative mortality and major morbidity (Clavien-Dindo grade III/IV) were 0% and 24%, respectively.

CONCLUSION. Interinstitutional collaboration between different centers and sharing of experience yields a better understanding of the disease, performance of cytoreduction and creates specific interinstitutianal modalities for peritoneal carcinomatosis treatment.

508. Does implementation of VATS lobectomy affect survival of surgically treated lung cancer patients?

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INTRODUCTION. VATS lobectomy has become the standard surgical approach for early stage lung cancer. Although fast recovery and low complications' rate are important, the main outcome of interest in cancer treatment is long-term survival.

The aim of the current study was to compare survival of all consecutive lung cancer patients in one thoracic surgery department treated with lobectomy during three different periods: (I) in the era of open lobectomy, (II) during the period of introduction of VATS lobectomy and (III) the most recent years with VATS lobectomy as the standard approach.

MATERIAL AND METHODS. All lung cancer patients undergoing lobectomy during 2001–2013 were included: (I) 2001–2005 was the pre-VATS period; (II) 2006–2009 VATS lobectomy was introduced into practice; (III) 2010–2013 VATS lobectomy was the method of choice whenever feasible. Data were collected retrospectively from hospital case reports.

Baseline characteristics were compared by chi-squared test and Kruskal-Wallis test; log-rank test was used for survival analysis, three-year mortality proportion was compared by chi-squared test.

RESULTS. Altogether 423 patients (317 male and 106 female; mean age 64.7 years) were included [period I: 140 open lobectomies (incl. 6 sleeve lobectomies); period II: 119 open (incl. 8 sleeve lobectomies) and 19 (13.8%) VATS lobectomies; period III: 92 open (incl. 20 sleeve lobectomies) and 53 (36.6%) VATS lobectomies]. The study groups did not differ in respect of gender and cancer stage, there was a slight trend of patients' age increasing over the years. The morphology of cancer had changed over time (the proportion of adenocarcinoma increased from 21% to 55%, $p < 0.001$).

The log-rank test did not reveal survival difference between the study groups ($p = 0.24$); the 3-year survival rates of 57%, 67% and 63%, respectively, were not significantly different ($p = 0.21$).

CONCLUSIONS. Implementation of VATS lobectomy for treatment of lung cancer did not affect the long-term survival of lung cancer patients treated by lobectomy.

509. Rectal cancer. Outcome after laparoscopic surgery

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Although laparoscopic surgery for colon cancer is accepted in treatment guidelines, the laparoscopic approach for rectal cancer is recommended only in clinical trials. According to previous studies, open conversion, which is more frequent in laparoscopic rectal surgery than in laparoscopic colon surgery, may affect short-term and long-term survival. Based on accumulated evidence from well-organized clinical trials, laparoscopic surgery will likely be accepted as a treatment choice for rectal cancer. In the future, extended laparoscopic rectal surgery might be feasible for additional procedures.

Herein, we review the short-term results from our studie, especially RCT to date, to elucidate the current situation and future perspectives in terms of laparoscopic surgery for rectal cancer in Latvia.

Laparoscopic surgery for rectal cancer requires a longer operative time, but it is associated with less blood loss according to previous RCT. The operative time for laparoscopic rectal surgery ranges from 104 to 230 min, which was longer than that for open. laparoscopic (105 operations) and open (120 operations) surgery was performed by several surgical teams. Blood loss in laparoscopic rectal surgery ranges from 70 to 740 (average 155 ml), which was 103 ml less than in open procedures. The rate of conversion to open surgery was 4.2%. Conversion was required mainly because of the patient's anatomy, tumor extent and surgeon's experience.

The risk factors for conversion were peritoneal metastasis, high BMI and low anterior resection. Therefore, adequate preoperative evaluation and patient selection based on the experience of the surgical team is essential to minimize conversion rate. Postoperative morbidity and mortality were similar between laparoscopic surgery and open surgery. Among several RCT, the morbidity and mortality of laparoscopic rectal surgery were 14.8% and 1.05%, respectively. The rates of anastomotic leakage were similar between laparoscopic surgery and open surgery. The duration of hospital stay after laparoscopic surgery was shorter than after open surgery. After laparoscopic rectal surgery, patients tolerate early ambulation, have a bowel movement on postoperative day 3–5, and can resume normal food intake on postoperative day 5–7. The incidence of positive CRM was not significantly different between laparoscopic surgery and open surgery.

We hope laparoscopic surgery will be accepted as the treatment choice for rectal cancer because of its favorable short-term results without deterioration of long-term results. Laparoscopic rectal surgery should still be performed only by well-experienced surgeons.

510. Complication risks in colorectal cancer surgery

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BACKGROUND. Every year ~ 800 new colorectal cancer cases are diagnosed in Estonia. More than 700 colorectal cancer patients die yearly in Estonia. To reduce mortality, we need to diagnose the disease at an early stage and to use adequate multidisciplinary treatment. Perioperative risk for complications depends on the patient (age, weight), the disease (emergency, localization) and the surgical technique (operation time, surgical qualification).

METHODOLOGY. A total of 296 patients diagnosed with colorectal cancer, who were operated between September 2008 and November 2012 at East-Tallinn Central Hospital, Surgery Department, were analysed to find out the perioperative risk factors. Fisher's exact test was used to test statistical significance.

RESULTS. According to our data, 78% of the patients had colon cancer and 21% had rectal cancer. Evaluation of emergency patients showed that most of the patients had bowel obstruction because of the tumor (70%), 11.4% had significant bowel bleeding and 18.4% had perforated colon cancer. Surprisingly there was no statistically significant difference between perioperative complications in elective and emergency cases, with 20.2% in elective surgery and 15% in emergency surgery cases.

The perioperative complication rate was 17.2%. The most frequent complications were anastomotic leakage (4.3%) and wound infection (4.3%). Less common were postoperative pneumonia, dynamic ileus and wound dehiscence. Relaparotomies were performed in 6% of the cases mostly because of the anastomotic leakage. Perioperative 30 day mortality was 2.4%.

The most important patient related risk factor is age, which significantly increases mortality, as all lethal cases involved patients over 70 years of age and 6 cases out of 7 were emergency situations. Considering the influence of surgical qualification on complications, we found that in the case of surgeons with experience under 5 years the rate of perioperative complications was 14% and in the case of those with experience over 5 years the rate of complications was 19%, which is not a statistically significant difference. Operative time did not play any role in the risk of complications. However, complications did prolong hospital stay.

CONCLUSIONS. Our study showed that the only statistically significant risk factor in the perioperative period was patient's age over 70 years. Although other patient related, tumor related and surgery related factors did not show any statistically significant difference, we noted some increase in perioperative complications in emergency operations. Contrary to the literature, surgeon`s experience did not decrease complication rate but increased it, which can be explained by the selection of patients assigned to junior surgeons.

511. Diagnostic role of CD56, HBME-1 and cyclin D1 in the differential diagnosis of thyroid cancer

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INTRODUCTION. Thyroid cancer accounts for ~1–2% of all malignancies and 90% of all neuroendocrine tumors. The yearly incidence of thyroid cancer steadily increases worldwide. Differential diagnosis can be challenging due to overlapping morphological features and lack of univocal diagnostic criteria. The aim of this study was to evaluate the diagnostic role of molecular markers on histological samples of different thyroid tumors.

MATERIALS AND METHODS. Retrospective analysis of thyroidectomy specimens was made at a single institution between 2009 and 2012. After the histological verification of diagnosis the study group consisted of 105 malignant thyroid lesions including 70 papillary carcinomas (PC), 31 follicular carcinomas (FC) and four medullary carcinomas (MC). Immunohistochemical investigation was performed using three markers: CD56, HBME-1 and cyclin D1. The results were scored semiquantitatively by staining intensity (scale 0–3).

RESULTS. Considering the average expression and contrast between tumor and surrounding tissues, CD56 expression was weakened in PC but enhanced in FC (2.59 ± 0.72) as well as in the tissue surrounding FC (2.08 ± 0.85) and MC (3.0 ± 0). A strong expression of HBME-1 was found practically only in PC (2.84 ± 0.31). Cyclin D1 showed a very high expression in cancers: MC (3.0 ± 0), PC (1.78 ± 0.46) and FC (1.98 ± 1.06), respectively. It is noteworthy that expression in the tissue surrounding cancer was very weak or negative.

CONCLUSION. The expression of CD56 is low in PC and in the tissue surrounding PC. HBME-1 is found in PC only. Cyclin D1 is consistently strongly expressed in cancers contrary to the surrounding tissue. Our results indicate that cyclin D1 can assist in decision making about the malignant nature of the thyroid tissue. Immunohistochemistry is a useful tool in the differential diagnosis of thyroid cancer.

512. Follicular variant of PTC (fvPTC) in patients from two European areas – does subtyping of PTC matter?

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INTRODUCTION. The follicular variant of papillary thyroid cancer (fvPTC) is known to be more frequent in patients from low iodine areas than in patients from iodine rich areas. We question whether fvPTC is clinically distinct from the classic type PTC (cPTC) in respect to lymph node metastases, i.e. or whether it just presents the typical type PTC in rather low iodine areas. The population from North-East has sufficient iodine intake whereas the population from West present with grade 1 iodine deficiency.

MATERIALS AND METHODS. Retrospective analysis of the distribution of follicular variants in PTC and diagnosis of clinical overt and histologically proven lymph node metastases in 691 patients with operated PTC in two European patient cohorts (North East (NE) n = 128 pat. and West (W) n = 563 pat. Europe).

RESULTS. The distribution of fvPTC was similar in both areas (23.8% *versus* 29%) despite the difference in iodine intake (Table 1). Lymph node metastases were diagnosed less often in fvPTC than in the classic type PTC (11.1% *versus* 25.2%)($p < 0.001$). Additionally, lymph node metastases were diagnosed more often in all PTC as well as fvPTC in patients from W (23.6% and 11.9%) than in patients from NE (13.3% and 8%)

Table 1. Distribution of the variants of thyroid cancer

PTC subgroup	NE / W (n)	NE / W (% of total)	NE / W (clin ln –; n)	NE / W (clin ln +; n; in %)	Chi^2-test (p)
Foll. Variant	37 / 134	28.9% / 23.8%	**34** / **118**	**3** (8%) / **16** (11.9%)	p* = n.s.
subtotal	171	24.7%	152	**19** (11.1%)	p** = 0.0084
PTC classic	91 / 429	71.1% / 77.2%	**77** / **312**	**14** (15%) / **117** (27.7%)	p* = 0.017
subtotal	520	75%	389	**131** (25.2%)	p** = n.s.
Total	128 / 563		**111** / **430**	**17** (13.3%) / **133** (23,6%)	p* = 0.010
	691	100%	541	**150** (21.7%)	p*** = 0.0013

* Chi^2 - between NE / W; ** Chi^2 - between subgroups; *** Chi^2 - between fvPTC and total PTC

CONCLUSION. The follicular variant of PTC is similarly distributed in PTCs from two different European areas with distinct iodine intake and demonstrates consistently lower rates of lymph node metastases compared with the classic type PTC.

513. Outcome of surgical management of primary hyperparathyroidism in multiple endocrine neoplasia type 1. A case report

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BACKGROUND. Primary hyperparathyroidism is the most prevalent abnormality in MEN1, occurring in virtually all persons who inherit the underlying gene defect. Hypercalcemia is often the first manifestation of MEN 1 ,biochemical disease usually becomes detectable during the second or third decade of life.

METHODS. A case report of a female patient, aged 35.

RESULTS. A 35-year-old patient with osseal and gastrointestinal symptoms of hyperparathyroidism was followed by a endocrinologist during 1 year. Ca 3.0 mmol/l, Ca^{++} 1.72 mmol/l, PTH 24.3 pmol/l. Sonographically and scintigraphically, a single gland disease was identified.In 2010 the patient was operated on through a focused lateral approach. The intraoperative PTH assay was used. The left sided double adenomas were diagnosed and removed. Postoperatively, the MEN 1 syndrome was suspected and confirmed by a moleculargenetic test. After 2 years of normocalcemia recurrent hyperparathyroidism occurred: PTH 19.9 pmol/l, Ca^{++} 1.59 mmol/l. Ultrasound examination and SPECT CT did not reveal any metabolic activity. Reoperation: total parathyroidectomy with neck revision, cervical thymectomy and autotransplantation of 50 mg parathyroid gland into left forearm. Postoperatively, PTH 1.75 pmol/l, Ca^{++} 1.36 mmol/l. Two years later another recurrence occurred: PTH 49.9 pmol/l, Ca^{++} 1.40 mmol/l. SPECT CT examination revealed metabolic activity in the autotransplant region. A positive Casanova test confirmed hyperactivity of the transplanted parathyroid tissue. The patient was reoperated and the autotransplanted tissue was removed. Postoperative PTH level 5.9 pmol/l is within normal range but the source has not been localized.

CONCLUSION. This case supports the requirement for exact reliable preoperative localization investigations for primary hyperparathyroidism reoperations and for extraordinary anatomic settings.

514. Methylene blue ex vivo staining of resected colorectal cancer specimens to enhance lymph node retrieval: a randomised controlled trial

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INTRODUCTION. Metastatic involvement of regional lymph nodes is a major prognostic factor of colorectal cancer influencing treatment strategy. An international consensus standard requires retrieval of at least 12 lymph nodes from resected colorectal specimens. The aim of the present study was to assess the effect of staining colorectal specimens with intra-arterial methylene blue for the lymph node yield.

MATERIALS AND METHODS. In a two-year period 236 consecutive radically operated colorectal cancer patients were randomised into methylene blue staining and non-staining groups. Fifteen ml of methylene blue was injected intra-arterially in the operating room after specimen removal. After formalin fixation colorectal specimens were analysed for retrieved lymph node count, diameter and metastatic involvement.

RESULTS. The intervention and control groups were homogeneous in terms of patient characteristics. There was a significant difference in the number of retrieved lymph nodes. Mean number of lymph nodes was 16 (95% CI 14–19) in the non-stained and 30 (95% CI 26–31%) in the stained group ($p < 0.001$). There was also a significant difference in finding 12 and more lymph nodes (93% in the stained and 70% in the non-stained group, $p < 0.0001$). In the stained group more small-diameter (≤ 4 mm) lymph nodes were found and examined (22.5 vs. 10 $p < 0.0001$). In the stained group 33% of the patients and in the non-stained group 25% of the patients (NS) had metastatic involvement only in the small lymph nodes. In subgroup analysis of rectal cancer patients who received neoadjuvant radiotherapy, 12 and more lymph nodes were found in 78% of the patients of the stained group and in 50% of the patients in the non-stained group ($p = 0.026$). However, as there was no significant difference in the rate of patients in metastatic involvement of the lymph nodes between the groups, no upstaging effect occurred in the stained group.

CONCLUSIONS. Methylene blue staining is a simple procedure which enables to find more small lymph nodes and therefore significantly improves the lymph node yield. The method is particularly helpful in patients on receiving neoadjuvant therapy in whom lymph node count without staining would be low.

515. Direct results of hyperthermic intraperitoneal chemotherapy (HIPEC) in treating resectable gastric cancer in Belarus

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AIMS AND OBJECTIVES. Evaluation of HIPEC safety in patients with resectable serosa-invasive gastric cancers.

MATERIALS AND METHODS. Between 2008–2013, 107 patients (pts) with gastric cancer (stage IIB-IIIC, III-IV Borrmann type) were randomly assigned to two groups. Altogrther 57 patients underwent HIPEC combined with radical gastrectomy (HIPEC group) and 50 patients underwent radical gastrectomy without HIPEC (control group). HIPEC was administered for 1 hour with an automatic HIPEC device (HT-1000 Thermochem) immediately after the reconstruction of the alimentary tract and wound closure. Th perfusate used was Ringer's solution (5-6 L) mixed with cisplatin 50 mg/m^2+doxorubicin 50 mg/m^2, warmed at an inflow temperature of over 42^{0}C.

RESULTS. Overall morbidity rate was 28% in the HIPEC group (10 pts, 16 complications) and 16% in the control (7 pts, 8 complications) –c^2 = 0.027, p = 0.869, without any difference in the rate of surgical (c^2 = 0.097, p = 0.755) and non-surgical complications (c^2 = 0.003, p = 0.954). Surgical complications (HIPEC group): postoperative pancreatitis (2 pts/57, 12.5%, II grade CTCAE v.4), pancreatic fistula (1 patient/57, 6.3%, II grade CTCAE v.4), ileal volvulus (1 patient/57, 6.3%, IV grade CTCAE v.4), esophago-jejunal anastomotic leak (2 pts/57, 12.5%, V grade CTCAE v.4). Anastomotic leak occurred in 2 patients of the HIPEC group leading to their death. Operative mortality rate was 5.1%. No fatality occurred in the control group. Development of esophagojejunal anastomotic leak in the HIPEC group and its absence in the control group may be attributed to the influence of the HIPEC administration per se on the temperature of metal staples forming the anastomosis. Surgical complications (control group): wound infection (1 patient/50, 12.5%, grade II CTCAE v.4), postoperative pancreatitis (2 pts/50, 25%, grade II CTCAE v.4), liver necrosis, paralytic ileus (1 patient/50, 12.5%, grade IV CTCAE v.4). Evaluation of HIPEC toxicity showed neither toxic complications of degree III-IV nor haematological toxicity. HIPEC-specific complications were observed, namely, postoperative fever of unclear genesis rising to 38^{0}C and higher and persisting for over three days. Thiscomplication was observed in two HIPEC-treated patients and required administration of anti-inflammatory therapy.

CONCLUSIONS. HIPEC in combination with radical surgery is a safe and feasible multimodality treatment for patients with serosa-invasive gastric cancer.

516. Hyperthermic intraperitoneal chemotherapy (HIPEC) for the prevention of postoperative peritoneal recurrence in patients with serosa-invasive gastric cancer

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AIMS AND OBJECTIVES. Evaluation of HIPEC in reducing peritoneal dissemination risks in patients with resectable serosa-invasive gastric cancers.

MATERIALS AND METHODS. Between 2008–2014, 135 patients with gastric cancer (stage IIB-IIIC, III-IV Borrmann type) were randomly assigned to two groups: 70 patients underwent IHCP combined with radical gastrectomy (HIPEC group) and 65 patients underwent radical gastrectomy without IHCP (control group). HIPEC was administered for 1 hour (Thermochem HT-1000) immediately after the reconstruction of the alimentary tract and wound closure (cisplatin 50 mg/m^2+doxorubicin 50 mg/m^2, inflow temperature 42^{0}C). Laparoscopy second-look was used to detect peritoneal dissemination.

RESULTS. Overall morbidity rate was 25.7% (HIPEC group) and 13.8% (control group) – p = 0.230. Gastrojejunal anastomotic leak occurred in 2 patients of the HIPEC group leading to their death. Postoperative mortality rate was 1.48%. No fatality occurred in the control group. Development of peritoneal dissemination was more frequent in the control group 28/65 (43.1%) *vs.* 14 / 70 (20%) (HIPEC group), p = 0.005 and appeared to develop earlier without HIPEC, 8.0 (5.0–13.0) *vs.* 12.5 (12.0–19.0) months (HIPEC group), p = 0.053. Dissemination-free survival (Kaplan-Meier) for the HIPEC group: 3-year, 0.702 ± 0.0713 (95% CI 0.576–0.857), 5-year, 0.648 ± 0.0838 (95% CI 0.503–0.835); for the control group: 3-year, 0.459 ± 0.0769 (95% CI 0.331–0.637), 5-year, 0.388 ± 0.0769 (95% CI 0.260–0.581), $p_{log\text{-}rank}$ = 0.00398. Multivariate analysis based on the Cox proportional hazards model showed that the combination of radical surgery and HIPEC was accompanied by a reduced risk of peritoneal dissemination (RR 0.40 (95% CI 0.21–0.77), coef. β = -0.916, p = 0.006).

CONCLUSIONS. IHCP appears to be helpful in decreasing peritoneal dissemination risks and may be useful in improving dissemination-free survival among gastric cancer patients.

517. Long-term results of hyperthermic intraperitoneal chemotherapy (HIPEC) in the treatment of patients with advanced gastric cancer

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AIMS AND OBJECTIVES. Evaluation of HIPEC in the treatment of patients with resectable serosa-invasive gastric cancers.

MATERIALS AND METHODS. 135 patients with gastric cancer (stage IIB-IIIC, III-IV Borrmann type) were randomly assigned to: 1) HIPEC group (radical gastrectomy+D2 lymph node dissection+HIPEC (cisplatin 50 mg/m^2+doxorubicin 50 mg/m^2, inflow temperature 42^{0}C); 2) control group (radical gastrectomy+D2 lymph node dissection).

RESULTS. Analysis of long-term results showed no statistical difference in cancer-specific survival (Kaplan-Meier) between the two groups. For the HIPEC group: 3-year, 0.545 ± 0.0763 (95% CI 0.414–0.717), 5-year, 0.384 ± 0.0814 (95% CI 0.253–0.582); for the control group: 3-year, 0.490 ± 0.0789 (95% CI 0.357–0.672), 5-year, 0.368 ± 0.0855 (95% CI 0.234–0.581), p = $p_{log\text{-}rank}$ = 0.602. After division of the patients according to the pN criterion we noted that the HIPEC regimen used was effective only for patients with pN0. Cancer-specific survival for the HIPEC group: 3-year, 0.857 ± 0.132 (95% CI 0.633–1.0), 5-year, 0.857 ± 0.132 (95% CI 0.633–1.0); for the control group: 3-year, 0.489 ± 0.1644 (95% CI 0.253–0.945), 5-year, 0.489 ± 0.1644 (95% CI 0.253–0.945), $p_{log\text{-}rank}$ = 0.0386. No statistical difference was found in cancer-specific survival for pN1 and pN2-3 patients, $p_{log\text{-}rank}$ = 0.96 and $p_{log\text{-}rank}$ = 0.579, respectively. A possible explanation for this may be the high rate of hematogenous metastases in the HIPEC group: 19/70 (27.1%) *vs.* 7/65 (10.8%) in the control group (p = 0.017), despite the decrease in peritoneal dissemination rate, 14/70 (20%, HIPEC group) *vs.* 28/65 (43.1%, control group) – p = 0.005. These findings underline the need for systemic chemotherapy for N1-3 patients with serosa-invasive gastric carcinoma to improve long-term results.

CONCLUSIONS. HIPEC has a potential for improving cancer-specific survival among gastric cancer patients without regional lymph node metastases (pN0). More prospective studies based on a larger cohort of patients are required to further assess the potential of HIPEC in combination with systemic chemotherapy as preventive treatment of gastric cancer associated with a high risk of peritoneal dissemination in pN1-3 patients.

518. Unusual cases of long untreated skin and soft tissue cancers: Buschke-Lowenstein tumor

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INTRODUCTION AND OBJECTIVES. Untreated and abandoned skin and soft tissue cancers (SSTC) are rare in contemporary society but can be devastating and unbearable for both patients and their relatives due to clinical, emotional and social factors.

We report a study of several cases of long untreated skin and soft tissue cancer and present common patterns for patients with no history of mental illness, and behaviour.

PATIENTS AND METHODS. At the North Estonia Medical Centre Foundation Melanoma and Skin Cancer Unit 3 cases of huge (more than 10cm in diameter) squamous cell carcinoma (SCC) were treated from Jan 2010 to Dec 2013. Median age at enrolment was 57 years (range 36 to 70 years). All patients were single and living alone at the time of presentation to the hospital and had had the lesion for several years (range 5 to 10 years).

Wide excision was performed in all cases with neoadjuvant radiotherapy in 1 patient. Exclusion criteria for neoadjuvant radiochemotherapy were the dimensions of tumors.

RESULTS. Mortality in the operated group was 0%, morbidity due to short term postoperative complications was high. The most common complication was wound infection (100%) which was treated with antibiotics according to wound cultures.

One year overall and disease-free survival rates were both 100%. Median follow-up was 29 months (range 3 to 70 months).

A histopathologic evaluation of the tumor was performed in all cases with the result of well-differentiated squamous cell carcinoma. No patients with unusually devastating SSTC were diagnosed with mental disorders.

DISCUSSION AND CONCLUSIONS. Slowgrowing SCC of the genitoanal area or Buschke-Lowenstein tumor is locally invasive and can be visually unbearable and hard to tolerate for both patients and their next of kin. However, overcoming of patients` reluctance to seek medical aid can be challenging. Exophytic, fungating masses with cauliflower-like morphology are usually with low-grade malignancy. Surgical treatment ± radiochemotherapy ensures good local control of the disease with sufficient recurrence free rate.

519. Limb preservation with isolated limb infusion for locally advanced cutaneous melanoma: experience in Estonia

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INTRODUCTION AND OBJECTIVES. Melanoma is a widespread disease throughout the world. As many as 10% of advanced melanoma patients develop in-transit metastases – spreading of the metastases between the primary tumor and the nearest lymph node. The origin of in-transit metastases (ITM) is associated with the thickness of the primary tumor as well as with the presence of lymphovascular invasion, although the exact underlying cause is to date unclear.

The objective of this study was to follow the patients treated with isolated limb infusion (ILI) in Estonia.

METHODS. The North Estonia Medical Centre initiated an ILI program at the end of 2012, being the only center performing the procedure in Estonia.

Between November 2012 and November 2014, 15 ILI procedures were performed on ITM melanoma patients. One procedure was performed for all patients and all cases were unilateral processes. All patients but one were female, the average age of the patients during the procedure was 73.5 years (59–84). The removal of the primary tumor had taken place on average 2.7 years earlier. For each of the patients, metastases were found on the lower limbs and in every case ITMs had been surgically removed from the thighs or feet.

RESULTS. An overall response (OR) rate of 78% was recorded, a single patient had progression of the disease (PD) 2 months after the procedure. The average follow-up period was 10 months. None of the patients died during the follow-up period. All patients experienced side effects the majority of which were grade II (Widerdink toxicity gradation). The most frequent side effect was erythema and swelling of the limb. No limb amputations were performed as a consequence of side effects.

DISCUSSION AND CONCLUSIONS. The ILI procedure is well tolerated by patients and is feasible with satisfactory treatment outcomes also in Estonia. Irrespective of the inconsequential patient sample, primary treatment outcomes are comparable to those of large medical centres; patients with in-transit metastases have the option allowing for confined treatment in Estonia.

520. Abdominal mass as the first sign of diffuse large B-cell lymphoma of mesentery: a case report

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INTRODUCTION. Mesenteric tumours are a uncommon, heterogeneous group of lesions. Incidence ranges from 1 case per 200.000–350.000 population (Seymour, 2014). Lymphoma is the most common mesenteric malignancy. In most cases, these are non-Hodgkin's lymphomas (NHL) of which 30–40% are large B-cell tumours (Martelli et al., 2013; Vaidya, 2014). The median age of patients affected by diffuse large B-cell lymphoma (DLBCL) is between the 6th and 7th decade of life; a slight male predominance has been described. Systemic symptoms (fever, night sweats, weight loss) indicate an advanced disease. Complications such as intestinal obstruction, perforation and haemorrhage are rare (Salemis et al., 2009).

MATERIALS AND METHODS. The patient`s clinical, laboratory and radiological data and the data of surgical treatment were analysed retrospectively. Gross, microscopic and immunohistochemical investigations were performed.

RESULTS. A 74-year-old female was admitted for surgery due to a suspected abdominal tumour. Computed tomography disclosed an intraabdominal mass and malignant mesenteric lymphadenopathy; gastric origin of the lesion was suspected. Upper and lower endoscopy did not show any pathological findings. Preoperative laboratory tests revealed a red blood cell count of 3.8 x 10^{12}/l (laboratory reference range (LRR) 4.2–5.4), haemoglobin 112 g/l (LRR 120–160), white blood cell count 11.1 x10^{9}/l (LRR 4.0–10.0), including 80% neutrophils, 7% lymphocytes and 13% monocytes; CRP 35 mg/l and elevated transaminases (ALAT 82 U/l (LRR 10–49), ASAT 78 U/l (LRR < 34)). At laparotomy, a tumour mass spreading outside the mesentery and involving the jejunum loop was found. Tumour extirpation along with intestinal resection was performed. Grossly, a greyish soft mass was found measuring 9.5 x 9 x 12 cm. Histological examination revealed massive diffuse infiltration of large atypical lymphoid cells in the serosa, muscular layer and submucosa reaching muscularis mucosae. Immunohistochemistry was positive for LCA, CD20, bcl2, CD10 and Kappa and revealed a proliferative index (by Ki-67) 42.1% (focally 81.7%), but was negative for synaptophysin, CD99, EMA, S100, HMB-45, CD3, calretinin, cytokeratin AE 1/3, CD30 and CD34. Consequently, a high grade malignant B-cell tumour, DLBCL, was diagnosed. Further R-CHOP chemotherapy is planned.

CONCLUSION. Although chemotherapy is the treatment of choice for DLBCL, radical surgery is occasionally necessary to establish definitive diagnosis, to relieve symptoms and to decrease the tumour burden.

521. Molecular comparison of hepatocellular carcinoma and liver metastases of colorectal cancer

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INTRODUCTION. By incidence, colorectal cancer (CRC) ranks 2nd in the European and 3rd in the global cancer statistics. Liver cancer is the 6th most frequent malignant tumour in the world, and hepatocellular carcinoma (HCC) comprises 70–85% of these cases. Considering the tumour burden and patient's general status, surgery has a significant increasing role in the treatment of both CRC liver metastases and HCC. Thus, correct diagnosis is mandatory. The aim of the present study was to evaluate the diagnostic and pathogenetic molecular factors in CRC liver metastases and HCC.

MATERIALS AND METHODS. Retrospective archive search was performed at a single university hospital to identify consecutive, morphologically proved cases of CRC liver metastases (30) and HCC (52). By immunohistochemistry (IHC), expression of Ki-67, cytokeratin (CKs) 20, 19 and 7, CDX2, hepatocyte antigen (Hep), TTF-1, CD10, alpha-fetoprotein (AFP), E-cadherin, Bcl-2, p53, vimentin, estrogen (E) and progesterone (P) receptors, chromogranin A (ChrA) and cyclin D1 were detected. The Ki-67 was evaluated as a fraction (%). For other markers, expression intensity (0-3 scale) and relative extent (%) were measured to estblish the final IHC score evaluated further by 95% confidence interval (CI) analysis.

RESULTS. The immunophenotype of CRC liver metastases and HCC is shown in Table 1.

Table 1. The immunophenotype of CRC liver metastases and HCC

Marker	CRC: score [95% CI]	HCC: score [95% CI]
Ki-67	69.70 [62.70–76.70]	26.05 [21.13–30.97]
CK20	1.68 [1.27–2.09]	0.03 [0.01–0.05]
CK7	0.03 [0.01–0.05]	0.16 [0.01–0.31]
CK19	1.92 [1.58–2.26]	0.01 [0.00–0.02]
CDX2	2.71 [2.43–2.98]	0.00 [0.00–0.00]
CD10	1.51 [0.96–2.07]	0.74 [0.41–1.08]
HEP	0.00 [0.00–0.00]	2.20 [1.90–2.50]
TTF-1	0.00 [0.00–0.00]	1.25 [0.94–1.57]
AFP	0.12 [0.00–0.24]	0.83 [0.51–1.15]
Estrogen receptors	0.00 [0.00–0.00]	0.19 [0.05–0.33]
Progesteron	0.00 [0.00–0.00]	0.00 [0.00–0.00]
CyclinD1	0.19 [0.08–0.30]	0.17 [0.05–0.30]
p53	1.97 [1.53–2.41]	0.33 [0.18–0.48]

Marker	CRC: score [95% CI]	HCC: score [95% CI]
Blc-2	0.00 [0.00–0.00]	0.00 [0.00–0.00]
Chromogranin A	0.02 [0.00–0.06]	0.00 [0.00–0.00]
Vimentin	0.00 [0.00–0.00]	0.20 [0.05–0.34]
E-cadherin	2.66 [2.50–2.81]	1.55 [1.27–1.82]

CONCLUSIONS. In the differential diagnostic panel of liver-situated malignancy, the expression of CDX2, CK20 and CK19 is characteristic of CRC, while the expression of Hep, TTF-1 and AFP is characteristic of HCC. The CRC is characterised by a higher proliferation fraction and more frequent expression of aberrant p53 protein while loss of cell adhesion is more marked in HCC.

522. Differences in malignant parathyroid tumors between two primary hyperparathyroidism cohorts in Europe

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INTRODUCTION. The clinical and histological diagnosis (WHO-2004) of parathyroid cancer is applied and supported by genetic findings of changes in HRPT2 gene (CDC73) and mitochondrial DNA (mtDNA). Our aim was to analyse whether regional factors or tumor progression may cause differences in incidence of malignancy, when two separate European PHPT cohorts are compared.

MATERIALS AND METHODS. Retrospective analysis of primary hyperparathyroidism patients from Latvia (n = 288 patients) and northwest Germany (n = 694 patients), operated on between 2005 and 2014.

RESULTS. Five (1.7%) Latvian and two (0.3%) German patients suffered from histologically and clinically proven parathyroid carcinoma (chi-square test; $p < 0.05$). One patient from each group (0.3% and 0.14%) was diagnosed with an atypical parathyroid adenoma. No difference was found between these two groups in age (59.7 *vs.* 57.9), sex or preoperative serum calcium levels (2.9 *vs.* 2.78 mmol/l; $p = 0.072$), but preoperative parathyroid hormone levels were higher (329 *vs.* 183 pg/ml; $p < 0.00001$) in Latvian patients at admission. Single gland disease was found in 263/288 (91.3%) versus to 591/694 (85.1%) ($p < 0.05$).

CONCLUSION. When a stringent (clinical plus histological) diagnosis of malignancy in PHPT was applied, an increased risk for Latvian patients was demonstrated: higher parathyroid hormone levels and a trend towards higher preoperative serum calcium levels. Further genetic investigations on tumor progression have been initiated to explain these differences.

523. Thyroid metastases arising from colorectal cancer

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BACKGROUND. Metastatic lesions of the thyroid gland are rare, possibly due to a high oxygen and iodine environment. To highlight the possibility of cancer metastases into the thyroid gland we are present a rare case of colorectal cancer spread to the thyroid.

MATERIAL AND METHODS. Clinical and treatment data were reviewed including a complete medical history and detailed anamnesis. Radiological and morphological methods as well as immunohistochemistry were employed to reach an evidence-based tumour diagnosis.

RESULTS. A 62-year-old man was referred to a neurologist following a fall. The patient presented with extensive back pain. He had had anterior rectum resection in 2012 due to rectal adenocarcinoma, followed by adjuvant chemo- and radiation therapy. Small nodules were found in the lungs and thoracic spine at computed tomography. Further investigation revealed an additional mass in the dura mater. The patient underwent surgery for the head metastasis and additional radiation and chemotherapy for the remaining metastases (2014). In addition, thyroid ultrasound and scintigraphy revealed multiple thyroid nodules within both lobes, yielding suspected low differentiated thyroid cancer by fine needle aspiration. Subtotal thyroidectomy with partial lymphadenectomy was performed in a two step surgery – as the thyroid tumor had infiltrated the surrounding tissue, radical resection was not possible. By morphology and immunohistochemistry, including cytokeratins 7 and 20, CDX2, and thyroid transcription factor-1, metastatic colorectal cancer was detected in the thyroid and in lymph nodes.

CONCLUSIONS. Colorectal cancer is a common neoplasm in the Western world. As metastases have frequently spread by the portal system, then the liver is the most commonly affected organ followed by the lungs. Clinically documented colorectal cancer metastases to the thyroid are extremely rare. Multinodular goiters and adenomatous change have both been associated with an increased incidence of metastases to the thyroid gland.

524. Breath test for gastric cancer detection

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BACKGROUND. Gastric cancer (GC) is one of leading cause of cancer related death worldwide. Usually, GC is diagnosed in its late stage. Early diagnosed GC could yield 95% 5-year surveillance. There is an urgent need for an non-invasive, easy-to-use diagnostic tool for early gastric cancer detection. Volatile organic compounds (VOC) could provide a novel, non-invasive and quick approach to gastric cancer.

METHODS. 501 volunteers at the Digestive Diseases Centre GASTRO, Riga East University Hospital (Riga, Latvia) were recruited with different upper endoscopy findings, 99 patients with histologically verified gastric adenocarcinomas. Altogether 1002 breath samples were collected. The samples were analysed using (a) gas chromatography linked with mass spectrometry (GC-MS) and (b) cross-reactive nanoarrays-based method in combination with pattern recognition methods.

RESULTS. Altogether 130 volatile components were identified and quantified using GC-MS. Eight VOCs revealed differences between some of the comparisons. Seven VOCs were found at significantly higher concentrations in the cancer group when compared to the controls. These VOCs were 2-propennitrile, furfural, 2-butoxy-ethanol, hexadecane, α-methyl-styrene, 1,2,3-tri-methylbenzene and 2-butanone. Nanoarray analysis had an accuracy of 85%, sensitivity of 84% and specificity of 86% in distinguishing between GC and non-cancer condition.

CONCLUSIONS. VOC-based breath prints detected by nanomaterial-based sensors could be used for identification of GC and for distinction from benign stomach ulcers and less severe stomach conditions. Being a non-invasive, low-cost and fast-prediction approach, breath sample analysis is expected to become a method for screening, surveillance and monitoring for different malignant and non-malignant diseases. However, large multi-centre population-based validation studies in different geographical areas are required.

6. TRANSPLANT SURGERY

601. Kidney transplantations in Estonia during the last 11 years, what has changed?

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INTRODUCTION. We analysed the resultsof 503 kidney transplantations performed at Tartu University Hospital in 2004–2014, of which 434 were primary transplantations (PTx) and 69 were retransplantations (reTx).

MATERIALS AND METHODS. Data were collected from the kidney transplant database. Since 2004 all clinical data (pretransplant factors, posttransplant complications, graft function and survival data) have been prospectively registred in this database. We compared the results of PTx and reTx: rejection risk, immunosupression related complications during the first 12 months and graft survival. We analysed also the impact of changes in the baseline immunosuppression protocol. The standard immunosupression regimen consisted of calcineurin inhibitor, mycophenolate mofetil and methylprednisolone. From 2011 we have used tacrolimus (Advagraft) instead of cyclosporin in reTx-s and highly immunized patients. All patients received induction therapy with anti IL-2 monoclonal antibodies (in PTx) or polyclonal antibodies (in reTx).

RESULTS. The average age of the transplanted patients increased steadily, from 44 to 51 years. The proportion of living donors was between 2.1% and 12.5% (average 6.4%)

Priority is assigned to reTx during deceased donor kidney allocation, which allowed to increase the percentage of reTx-s in this period from 5% to nearly 20%. Despite this, the proportion of patients waiting for reTx increased significantly, from 16% to 59%, in our waiting list.The ReTx did not result in higher rejection or infection rate, compared to PTx. There was even less CMV infections in this group of patients, probably due to more agressive CMV prophylaxis. There were less rejections in the tacrolimus group (23%) compared to the cyclosporin group (35%), which significantly reduced rejection rate after 2011. Surprisingly, this did not result in higher risk for infectious complications. One-year graft survival increased from 88% to 94%.

CONCLUSION. Kidney graft survival is slowly improving although we transplant more elderly patients and paients with high immunologic risk. New immunosuppressive drugs and treatment schemes enable to achieve lower acute rejection rate without increasing the risk of infectious complications.

602. Transplant surgery in Estonia

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Solid organ transplantation is currently a widely accepted treatment option for end-stage organ failure. Being a very small country, Estonia faces different challenges to provide high-quality organ transplantation services.

The first organ transplantation with a deceased donor kidney was performed in Estonia in 1968 and the first living donor kidney transplant in 1972. A liver transplantation programme was initiated in 1999; the first lung transplantation was performed in 2010 and the first combined pancreas-kidney transplantation was done in 2015. Altogether 1064 kidney, 56 liver, 15 lung and 1 pancreas transplantations have been performed up to date.

Besides the above mentioned organs, heart and combined heart-lung transplantations are available for Estonian citizens through contracts with Helsinki (Finland) and Vienna (Austria).

During the last 10 years an average number of kidney transplants per year has been 46 (35.2 per million) ranging from 19 to 60. Living donor kidneys cover only 9.4% of all transplants compared to 90.6% of those from deceased donors. The liver and lung transplant programmes have reached a stable level of the last 4 years – 9 liver and 3 lung transplantations per year (6.9 per million for livers; 2.3 per million for lungs).

Organ transplantation is largely depending on available donor organs. Donor organ usage has been optimized during the last decade. On average, 26 deceased organ donors (19.6 per million) have been used every year in Estonia. Considerable fluctuation can be observed in donation activity – from 10 to 35 actual deceased donors per year. The living donation programme has been less active – from 1 to 5 living kidney donors per year. The mean number of harvested organs per donor was 3.7 in 2014, compared to 2.0 in 2005. The proportion of multiple organ donors has reached 85%.

To improve the availability of donor organs and to increase further the number of organs used per deceased donor, agreements with other countries or international organ exchange organizations are needed. Currently, Estonia cooperates with the other Baltic States, and with Eurotransplant and Scandiatransplant. A certain number of surplus organs have been exported every year. However, in the future full membership of a large organ exchange organization (preferably Scandiatransplant) would be desirable.

The organ donation and transplantation system of Estonia has significantly improved during the past decade. There is a functioning network of procurement hospitals and a majority of donors are treated as multiple organ donors. Estonian patients have access to all types of organ transplants, whether locally or via international collaboration. The biggest challenges for the nearest future are promotion of living donation and membership of an organ exchange network.

603. Abdominal organ transplantation at Vilnius University Hospital "Santariškių klinikos"

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Lithuanian National Transplantations Bureau (NTB) was founded in 1996. Fifteen hospitals all around the country are capable for donor preparation and participate in this activity. Lithuanian NTB receives around 100 notifications about potential donors of visceral organs yearly (106 reports in 2014). Meanwhile, the share of effective donors varies from 12 to 15 per 1 mln of population.

The first kidney transplantation in Lithuania was performed on 18 February 1970, but the first experiments were started already in 1927. For the first time in Lithuania living donor kidney transplantation in a child was performed in 1974. Since 2010, incompatible blood group donor kidney transplantations have been introduced in clinical practice. Starting from 1970, already 1771 kidney transplantations have been performed so far.

Heart transplantations were launched on 2 September 1987. Heart transplantations in children were started in 2001. Artificial heart ventricles are used increasingly more often before transplantation.

Liver transplantations were introduced on 3 May 2000, with a total number of 68 operations performed so far. Liver transplantations are performed also using donors with a non-identical but compatible blood group.

The first simultaneous kidney-pancreas transplantation was done in 2008. Until now, there have been performed15 kidney-pancreas transplantations.

7. TRAUMA AND EMERGENCY SURGERY

701. Procalcitonin test is a reliable criterion for assessment of treatment efficacy in surgical patients with severe sepsis

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INTRODUCTION. Surgical ICU patients need special assessment of preoperative and postoperative risk factors that are significant for development of septic shock, reflecting at the same time the efficacy of the treatment strategy. The aim of the study was to determine the reliability of the procalcitonin test as a prognostic criterion for evaluation of the efficacy of the therapeutic strategy.

MATERIALS AND METHODS. Patients with severe sepsis who were treated at the surgical ICU during the period from November 2010 to September 2014 were prospectively included. Response to provided treatment was assessed by analysing the dynamics of procalcitonin (PCT), C-reactive protein (CRP), incidence of organ failure (organ dysfunction ≥ grade 3 according to SOFA score) and incidence of development of septic shock.

RESULTS. In total, 187 patients with severe sepsis, median age 73 years (IQR 80–59), were treated at the surgical ICU. Of the patients, 51% were male. The main etiologic factors were acute appendicitis and a pathology of the lower gastrointestinal tract. Only open surgical intervention was performed in 145 patients, vacuum assisted abdominal closure was performed in 22 from this cohort, the rest were treated with minimally invasive and combined methods sticking to the principles of the "step-up approach"; 8 patients needed urgent reoperation. During treatment, septic shock developed in 75 patients accounting for 40% of all those with severe sepsis. Pulmonary failure occurred in 43%, followed by kidney failure in 17% of the patients with a significant predominance in septic shock cases, $p = 0.05$; $p < 0.001$. Mods developed in 57,3% of the patients with septic shock. The dynamics of CRP was not different for the groups with a maximum on day 3 after commencement of treatment, median of 235 mg/dl (IQR 296–163). The dynamics of PCT was significantly more pronounced in patients who developed septic shock with a maximum on day 2, Table 1. Median ICU stay and hospital stay were significantly longer for patients with septic shock: 5 days (IQR 7–3); 16 days (IQR 23–9), $p = 0.005$, $p = 0.033$. Treatment resulted in a mortality rate of 23% reaching 43% in patients with septic shock. The increase of PCT was significant during the first week of treatment with normalization in patients who recovered well, Table 1.

Table 1. Dynamics of PCT

	Day 1	Day 2	Day 3	Day 5	Day 7
With septic shock, ng/ml	17.41	20.53	12.38	7.72	2.59
Without septic shock, ng/ml	5.22	4.89	6.00	3.62	1.04
p	0.037	0.001	0.035	0.011	0.054

CONCLUSION. Procalcitonin test is a reliable criterion for assessment of treatment efficacy in surgical patients with severe sepsis.

702. Myroides spp. necrotizing fasciitis in an immunocompetent male: a case report and a review

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INTRODUCTION. Necrotising fasciitis is a soft tissue infection affecting the subcutaneous tissue with rapid spread through fascial planes. It is usually polymicrobal in origin and carries a mortality of 30–70%. Myroides spp. necrotising fasciitis is a rare occurrence with only a small number of cases reported but the multidrug resistance of the bacteria and the fulminant course pose tremendous diagnostic and therapeutic challenges.

MATERIALS AND METHODS. Analysis of a clinical case of necrotizing fasciitis with identified rare causative bacteria and a literature review.

RESULTS. A 51-year-old male was admitted with complaints of headache, fever and general malaise. While treated for suspected serous meningitis, the patient developed a small painful and cianotic skin area over the site of intramuscular injections in his left gluteus. Skin changes progressed rapidly for a few days with following hemodynamic instability and other signs of sepsis and septic shock. Diagnosis of necrotising fasciitis was made and the patient underwent emergency incision and debridement. Vacuum assisted closure (V.A.C.) therapy for the postoperative wound was started immediately after surgery and continuous venovenous hemodiafiltration for acute renal failure was initiated on the first postoperative day. Initially the patient received broad spectrum antibacterial therapy which was corrected after first wound cultures revealed Myroides spp. infection sensitive only to norfloxacin, pefloxacin and minocyclin. Repeated debridements were performed and V.A.C. therapy was continued until the wound was clean and covered with a granulation tissue. Wound cultures were negative for Myroides spp. fifteen days after surgery and after twelve days of specific antibacterial therapy. The patient was discharged on the forty-third postoperative day and was further referred to a specialist center for skin grafting.

CONCLUSION. Early recognition with aggressive surgical and supportive treatment and multidisciplinary approach is the key to successful management of not only Myroides spp. but also other types of necrotising fasciitis.

703. Incidence of severe sepsis and septic shock is not different in patients with localized and diffuse forms of peritonitis

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INTRODUCTION. The most severe clinical course of sepsis is usually associated with pathogens from the large bowel and diffuse forms of peritonitis. However, development of septic shock in localized forms of complicated intra-abdominal infection is not well explored. The aim of study was to determine the incidence of septic shock in patients with localized and diffuse forms of peritonitis.

MATERIALS AND METHODS. Retrospective assessment of clinical data including patients who were treated in ICU with complicated intra-abdominal infection and severe sepsis during the period from November 2010 till September 2014. The patients were divided into 2 groups: diffuse peritonitis (DP) and localized peritonitis (LP). The main variable for statistical analyses included demographic data, clinical course of sepsis, type of surgical intervention, magnitude of inflammatory response according to level of CRP and PCT, ICU and hospital stay and main outcomes.

RESULTS. A total of 214 patients (52% male *vs.* 48% female) with median age 72 years (IQR = 79–58) were admitted to the surgical ICU during the study period. The DP group consisted of 122 patients (51% male + 49% female), the LP group consisted of 90 patients (54% male + 46% female). Median CRP on admission was 164 mg/dl (IQR = 246–25) in the DP group *vs.* 231 mg/dl (IQR = 331–127) in the LP group. PCT level was higher on admission in the DP group 7.5 ng/ml (IQR = 31–3) *vs.* 3.8 (IQR = 20–1) in the LP group reaching a maximum on day 2.

Tabel 1. Types of surgical intervention

	Conservative	Operation	USS assisted drainage	USS drainage +Operation
DP group	0	118 (95.2%)	0	6 (4.8%)
LP group	21 (23.3%)	41 (45.6%)	21 (23.3%)	7 (7.8%)
Total	22 (9.8%)	159 (73.4%)	21 (9.8%)	13 (6.1%)

Severe sepsis developed in 69% of the patients from the LP group *vs.* 74% of the patients from the DP group, p = 0.394; septic shock developed in 37% *vs.* 35% of patients, respectively, p = 0.764. Median ICU stay was 6 days in the LP group vs. 5 days in the DP group, median hospital stay was 13 and 14 days, respectively. Treatment resulted in a mortality rate of 13.3% in the LP group vs. 22.6% in the DP group, p = 0.087.

CONCLUSIONS. The risk of development of severe sepsis and septic shock is similar in patients with localized and diffuse forms of peritonitis, indicating the importance of proper selection of indications for ICU treatment and type of surgical approach.

704. Negative pressure therapy (NPT) in the management of complicated intra-abdominal infection (CIAI) and abdominal compartment syndrome (ACS)

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INTRODUCTION. Application of abdominal NPT has proved to be lifesaving in the management of critically ill patients suffering from ACS and CIAI when control of the source cannot be achieved with a single operation.

MATERIAL AND METHODS. Patients treated with open abdomen using abdominal NPT were prospectively included from December 2010 to December 2014. Only KCI® ABThera™ NPT systems were used. APACHE II score on admission, SOFA score and Mannheim peritonitis index (MPI) were calculated for severity definition. The frequency of changes in the NPT system, daily amount of aspirated fluid effluent and the time of abdominal closure were assessed. Overall hospital stay and ICU stay, complication rate and outcomes were analysed.

RESULTS. In total 54 patients were included. NPT was applied in 45 (83.3%) patients with CIAI, in 7 (12.9%) patients with severe acute pancreatitis and in 2 (3.8%) polytrauma patients who developed ACS. The median age of the patients was 60.5 years (range from 26 to 89), median APACHE II score was 15.5 points (range, 7 to 40) and median MPI was 27.5 points (range, 15 to 40). Sepsis developed in all patients, in 39 it was severe and 11 suffered septic shock. A median of 2 NPT system changes were required and abdominal closure was feasible on a median of the tenth postoperative day without the need for repeat laparotomy. Median plasma C-reactive protein levels and SOFA points before application of NPT were 246 mg/l and 6.7 points, and dropped to 73 mg/l and 3 points after abdominal closure, respectively. Bleeding from the retroperitoneal space during NPT was observed in 4 patients, intestinal fistulas developed in 4, which were successfully managed conservatively. Wound infection after abdominal closure had a complicated clinical course in 7 patients. The overall ICU stay and hospital stay were 14 (range, 5 to 70) days and 23.5 (range, 9 to 101) days, respectively. Eleven patients died, contributing to the overall mortality of 20.3%. In 9 (81.8%) patients death was associated with the development of septic shock.

CONCLUSION. Abdominal NPT could be a highly promising method in the management of patients with increased IAP and CIAI associated with severe sepsis and septic shock.

705. Evaluation of transfusion practice in severely polytraumatised patients potentially requiring massive transfusion protocol implementation

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INTRODUCTION. Polytrauma is a significant cause of death due to severe haemorrhage in 30–40% of all civilian trauma associated deaths. Among bleeding trauma patients approximately 3–5% receive massive transfusion (MT), defined as ≥ 10 units of red blood cells (RBC) in 24 hours. Identification and definition of exact triggers for MT remain a controversial challenge.

Aim. To evaluate the need for MTP implementation at a tertiary trauma center and to determine the transfusion triggers associated with the highest probability to predict RBC transfusion (RBCT).

MATERIALS AND METHODS. A total of 101 polytraumatised patients (Injury Severity score [ISS] ≥ 16) treated at Riga East Clinical University Hospital were included in a retrospective study between January and December 2013. The mean age of the patients was 45.5 ± 14.7 years with a mean ISS of 25 ± 8.2. The potential triggers for activation of MT protocol were systolic blood pressure (SBP) < 90 mmHg, hemoglobin (Hgb) < 11g/dl, pulse > 120 beats per minute, International normalized ratio (INR) > 1.5, free fluid in Focused Assessment of Sonography for Trauma (FAST). Trauma Associated Severe Haemorrhage (TASH) score was calculated to indicate the historical need for MTP activation. Considering the need for RBCT, the patients were stratified into three groups: Group I, no RBCT; Group II, RBCT within 24 h; and Group III, RBCT after 24 h from admission. The RBCT volumes were evaluated and positive predictive values for each transfusion trigger were calculated. The overall ICU stay and hospital stay and outcomes were analysed comparing all groups.

RESULTS. In total, 54 patients were included in Group I, 34 in Group II and 13 in Group III. The median level of Hgb was lower in Group II compared to Group I, 12.1 (IQR = 10.4–12.9) *vs.* 14.3 (IQR = 13.1–15.0), p < 0.001. The median number of RBC units transfused in Group II was 5.0 (IQR=3.8–6.0) *vs.* 2.0 (IQR = 2.0–3.0) in Group III, p < 0.001. Four patients reaching a TASH score of ≥ 18 and mean ISS 50 ± 15.0 were retrospectively identified for MTP activation. All patients were urgently operated using damage control principles, however, MTP was not activated. A TASH score of ≥ 6.5 was identified to be 87% sensitive and 85% specific for identifying RBCT within 24 h.The SBP < 90 mm Hg (odds ratio [OR], 7.0; 95% confidence interval [CI], 1.3–36.7) and Hgb < 11 g/dl (OR, 5.9; 95% CI, 2.1–6.7) were identified as triggers that significantly predict RBCT within 24 h from admission. The overall ICU stay and hospital stay were longer in Group II compared to Group I, 9.5 (IQR = 4-22.5) *vs.* 1.5 (IQR = 0–4) and 26 (IQR = 22–47) *vs.* 12 (IQR = 7.8–20) days, p < 0.001. Overall mortality was 2.97% (n = 3). Only one patient (25%) potentially requiring MTP (TASH > 18) died due to severe bleeding.

CONCLUSIONS. Only a small subset of trauma patients will need MTP activation, however, a TASH score of > 18 is reliable predictor for MTP. The SBP and Hgb are sensitive predictors of the need for early RBC transfusions.

706. Severe Trauma in Estonia: 254 consecutive analysed cases

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INTRODUCTION. Injury-deaths constitute 6% of all deaths in the European Union (EU). However, in Estonia, injury-deaths account for 11% of all deaths. We set out to investigate the burden of traumatic injuries in Estonia in 2014.

MATERIALS AND METHODS. After IRB approval, all consecutive trauma admissions with severe injury, defined as Injury Severity Score (ISS) > 15, to the North Estonia Medical Center and to Tallinn Children`s Hospital versus Tartu University Hospital, between 1/1/2014 and 31/12/2014, were identified Data collection included demographics, admission data, injury severity variables, interventions, and in-hospital outcomes. Primary outcome was in-hospital mortality. Secondary outcomes were adverse events (AE) per Clavien-Dindo classification, and hospital length of stay (HLOS).

RESULTS. A total of 254 patients met the inclusion criteria. Overall, 94.1% of injuries were due to blunt trauma. The mean ISS for the cohort was 23.1 ± 9.2 and mean revised trauma score was 6.6 ± 1.7. A total of 9.8% were hypotensive, 33.5% had a GCS < 9 on admission and a total of 69.3% of patients required a surgical interventions. Overall rate of AE was 31.9%. The mean HLOS were 15.5 days. Overall mortality was 11.8% (n = 30).

CONCLUSION. The annual incidence of severe injuries admitted to major trauma facilities in Estonia was 254 cases, which constitutes 19.3 individuals per 100 000 inhabitants with an overall mortality of 11.8%.

707. Combination of anatomical/physiology based trauma scores and mechanism of injury better predicts trauma severity

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INTRODUCTION. Trauma is the leading cause of death in the young patient group. Assessment of injury severity is one of the main priorities at admission, which strongly determines the treatment strategy. The aim of the study was analysis of recent experience in trauma severity assessment.

MATERIAL AND METHODS. Retrospective data analysis and assessment of the results obtained with different trauma scoring systems (ISS, RTS, TRISS, AIS and GCS) at admission to Riga East University Hospital in 2014. Traumatised patients were assessed considering trauma score grades of severity and effectiveness of each score.

RESULTS. In total, 190 polytrauma patients (ISS > 16 points) were included. Of all 136 (71.6%) were male and 54 were (28.4%) female with a median age of 45.1 years (IQR = 30–58.5). Mean ISS for all patients was 26.18 (SD ± 28.9) points. The ISS less than 25 points weas found in 99 patients and defined as moderate injury, however, 91 patients with ISS more than 25 points were defined as the life threatening injury group with increased risk of mortality ($p < 0.001$). Statistically significant correlation was found between ISS and mortality ($r = 0.423$, $p < 0.001$), however, indicating that ISS is influenced by the character of anatomical injury. Higher GCS provides better prognosis and in our series mean GCS point was 12.26 (SD ± 4.45). Increasing mortality ($p < 0.001$) and lower probability of survival (Ps = 33.91%) occurred in 39 patients with GCS less than 8 points. The RTS is the best early predictor of patient's physiological condition immediately after injury. The RTS less than 10 points was strongly associated with increased mortality ($p < 0.001$), and significantly reduced chances for survival (Ps = 35.42%) ($p < 0.001$). As TRISS is a combined score and the result is highly dependent on the patient's age, it is not effective for for young patients with high-energy trauma and low RTS score.

CONCLUSIONS. A combination of physiologic and anatomic parameters with the mechanism of injury could provide better prognosis for severity of injury and for treating the patient as a whole.

708. Risk factors associated with increased mortality in patients suffering fall from height

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INTRODUCTION. Road traffic accidents, falls from height, armed conflict and domestic violence are the most common causes of polytrauma.

MATERIALS AND METHODS. Retrospective analysis of data from January 2010 to December 2014. A total of 148 patients who suffered fall from height and were treated at Riga East University Hospital were included. Of all patients 112 were male (75.7%) and 36 were female (24.3%) a with median age of 43 years (IQR = 54–31). First, third and ninth floors were the most common height and the patients were divided into three groups accordingly: group I (n = 17, height 1.5–2.5 m); group II (n = 76, 2.5–7.5 m); group III (n = 55, more than 7.5 m).

RESULTS. Mild monotrauma or combined trauma were the most frequent injuries in group I with a median ISS score of 10 points, serious injuries were observed in group II (median ISS 18 points) and group III (median ISS 29 points). In total, 5 patients of group II and 15 patients of group III died from injuries. A statistically significant correlation was found: ISS points correlated with height of fall $r = 0.448$, $p < 0.001$, with patients haemodynamic stability $r = 0.477$, $p < 0.001$ and with death $r = 0.607$, $p < 0.001$. Chest (35.1 %), abdomen (16.9%), cervical spine (11.5%) and pelvis (8.8%) were the most commonly injured regions, however, the most common cause of death was chest (50%) and abdominal (45%) injuries.

CONCLUSION. Higher ISS score indicates higher mortality. An ISS score of over 25 points, height over 7.5 m and age over 50 years have been identified as the thresholds of increased risk of mortality.

709. Alterations in glucose metabolism and higher admission levels of inflammatory markers are significant predictors of mortality

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INTRODUCTION. Sepsis is the most common cause of increased hospital stay and mortality among surgically treated patients. However, sepsis is clinically and prognostically a heterogeneous condition, ranging from infection with only mild systemic signs to severe sepsis with multi-organ failure and shock. The aim of the study was to evaluate markers of glucose metabolism and inflammatory response in patients with complicated intra-abdominal infection (CIAI) and sepsis in predicting the risk of mortality.

MATERIALS AND METHODS. A single hospital retrospective chart review (January 2012 – March 2014) was performed in patients with CIAI and sepsis. The patients were allocated according to severity of sepsis into the sepsis, the severe sepsis and the septic shock groups. Admission values of blood lactate, blood glucose, C-reactive protein (CRP) and procalcitonin (PCT) were documented in all groups; additionally, incidence of hypoglycaemia (blood glucose < 2.8 mmol/l) during hospital stay was documented. Statistical analysis was made using the SPSS 21 software.

RESULTS. A total of 169 patients were retrospectively included. Thirty-seven patients (22%) died during hospital stay. The distribution of the laboratory values at admission and the clinical outcomes are presented in Table 1. When comparing the survivors *vs.* non-survivors, significant differences were found in the analysis of the values of blood lactate: 2.49 (2.14–2.89) *vs.* 4.42 (2.95–5.89) mmol/l, p = 0.007 and PCT: 15.43 (8.57–22.34) *vs.* 44.6 (19.3–69.87) ng/ml, p = 0.002. Hypoglycaemia was observed more often in non-survivors, 18.9% *vs.* 7.6%, p = 0.043.

Table 1. Laboratory values and outcomes in comparison of different stages of sepsis

	Sepsis (n = 54)	Severe sepsis (n = 60)	Septic shock (n = 55)	p
Blood lactate, mmol/l	1.48 (1.19–1.78)[a]	2.21 (1.94–2.49)[b]	4.16 (3.20–5.12)[c]	< 0.001
Blood glucose, mmol/l	8.20 (7.24–9.15)[a]	10.95 (9.73–12.17)[b]	12.85 (11.07–14.64)[b]	< 0.001
CRP, mg/l	132.6 (112.58–178.90)[a]	213.46 (170.64–250.20)	234.88 (192.63–268.42)[b]	0.025
PCT, ng/ml	8.2 (0–17.65)[a]	11.64 (6.39–16.89)[b]	39.46 (22.96–56.5)[c]	0.015
Hypoglycaemia, No. of patients	0[a]	7 (10%)[b]	12 (22%)[c]	0.001
Hospital stay, days	14 (12–18)[a]	14 (12–18)[a]	15 (14–19)[b]	0.049
ICU stay, days	4 (1–6)[a]	8 (6–11)[b]	8 (6–11)[b]	< 0.001
Hospital mortality	3 (5%)[a]	7 (12%)[b]	27 (49%)[c]	< 0.001

a, b, c indicate p < 0.05 between groups

CONCLUSION. Higher admission levels of blood lactate and glucose, CRP and PCT are characteristic of severe forms of sepsis and, including hypoglycaemia, are significant prognostic markers of mortality.

8. PLASTIC AND RECONSTRUCTIVE SURGERY

801. Five-year follow-up of wrist rehabilitation after distal radius fractures

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INTRODUCTION. The incidence of distal radius fractures and associated soft tissue lesions treated at the Centre of Microsurgery of Latvia has increased in the last 5 years. Some of these cases were treated conservatively, others surgically, but adequate rehabilitation was needed in all cases. We would like to share the methodology and our results in this field.

METHODS. Active and passive ROM, pinch test, grip strength,VAS and DASH scores were measured as a rule at each visit. Individual exercises and / or thermoplast splints were used if necessary. We had a total of 63 patients. All patients were divided into 3 groups according to the AO classification of the distal radius fracture type (A-type 8 patients, B-type 15 patients, and 40 patients with C-type fracture). All patients were investigated by the author.

RESULTS. All patients improved clinically and subjectively. A and B type fracture patients achieved better results than patients with C type fractures. The C type group also included 11 patients with RSD or Sudeck's syndrome and their treatment was much longer than the treatment of the other patients. Overall 49 patients (77.8%) assessed the final result as good, 9 patients (14.28%), as satisfactory, and 5 patients (6.35%), as poor.

CONCLUSIONS. There is significant association between fracture type and long term results even after surgical treatment. Patients with Ctype fractures have more frequently Sudeck's syndrome than patients with other fracture types.

802. New challenges in treatment of brachial plexus injury and pathology

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Brachial plexus injuries are challenging surgical entities. Most affected are young, active individuals in working age. Not all BP injuries are operable and not all BP pathologies are emergencies. Some of them are chronic, such as neurogenic thoracic outlet syndrome (TOS). The TOS is one of the most controversial and hence neglected chronic BP neuropathy syndromes.

Either acute or chronic injuries, they have their specific challenges. In an acute trauma situation one has to decide if the patient has to undergo acute reconstruction, provided that there is evidence for the extent of injury. If no such evidence is obtained by means of radiological imaging methods, EMG or physical examination, reconstruction is postponed for months until such evidence is acquired. Nowadays the trend of surgical methods has shifted from conventional proximal neurolysis and grafting to proximal and distal motor and sensory nerve transfers with far better results compared with "conventional" methods.

An algorithm for the treatment of brachial plexus palsy is a valuable tool not only in the hands of the reconstructive surgeon but also for the personnel of the emergency department.

803. Scapho-lunate ligament reconstruction with FCR tendon graft: methodology and results

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INTRODUCTION. SL ligament tear is one of the most common satellite problems in comminuted distal radius fracture cases, but can be found also as a single pathology. SL ligament tears can be treated in different ways: SL arthrodesis, carpectomies or ligament repair procedures. We will rewiev our first impressions, methodology and results after SL ligament chronic tear and instability treatments.

METHODS. Surgery includes bilateral approach , harvesting of the fcr tendon graft and creation of the bone tunnels for the graft. Tendon graft is sutured back to itself when passing through the bone tunnels and the SL joint is fixed and secured by 2 wires. After-treatment includes 6–8 weeks of immobilization and following adequate rehabilitation. Eight weeks after surgery, the patient will receive a removable volar splint for additional 4 weeks, and a gentle active wrist range of motion is started

RESULTS. We have 7 patients with sl tear treated with fcr tendon graft. Mean follow up is 6 months after surgery.In all patients grip strength and ROM have increased and the values of VAS have decreased. Short term results were good for most patients.

CONCLUSIONS. By using this repair technique a pain-free wrist is attained, with acceptable grip strength and normal sl distance. Fixation is stable, but surgery is somewhat problematic and requires good surgical skills.

804. The role of arthroscopical debridement as a second stage procedure after articular distal radius fractures

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INTRODUCTION. Articular distal radius fractures, even when treated sucessfully with ORIF, sometimes result in significant stiffness or contracture of the radiocarpal joint.

METHODS. During the past 2 years, we have done more than 30 arthroscopic debridements in wrists after articular fractures. In 11 of the cases previous arthroscopically assisted distal radius fracture fixation surgery was performed at our clinic; the other cases were treated with different methods at other hospitals. All patients had undergone rehabilitation and within the period of 3 to 6 months after the primary surgery, arthroscopic debridement of the stiff joint was done. We would like to compare our findings and results with the results obtained with similar procedures described and published by other authors. In this presentation we share the results of this study.

RESULTS. Altogether 30 patients, 31 wrists arthroscopically debrided. ROM, VAS, DASH score, grip and pinch tests were carried out before and several times after surgery during the rehabilitation process. VAS findings decreased from 8–9 to 0–2 and other findings improved significantly in all patients.

COCLUSIONS. We consider arthroscopical debridement an important and helpful procedure to increase the quality of life for patients with wrist joint stiffness after articular distal radius fractures. Our results are similar with those described in the literature.

805. Extremity emergency salvage: spare parts surgery

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INTRODUCTION. Spare parts surgery is well described in the plastic surgery literature. In the setting of trauma, otherwise discarded parts can be utilized for reconstruction, resulting in a superior functional and aesthetic outcome for the patient.

MATERIAL AND METHODS. Knee joint salvage with the foot fillet flap (osteocutaneus) after train injuries for 4 patients, one crossarm transplantation for bilateral railway traffic injury and one lower leg replantation for use as the flap donor to cover defects after a railway traffic accident, were done at the Microsurgery Centre of Latvia during 2007–2014.

Parts of foot with calcaneus bone were replanted for salvage of knee joint for 4 patients. Foot filet flap and part of calcaneus bone were replanted to the tibia, anterior or posterior tibial artery was sutured to popliteal artery end-to side, tibial nerve was sutured and osteosintesis was done.

Cross arm replantation was done in a 26-year-old patient who had a railway traffic injury. The left hand was transplanted to the right forearm in a mirror shape.

Short-time lower leg replantation for use as the flap donor was done for a 34- year-old man with a railway traffic injury. The left leg was amputated in the groin region,the leg was damaged up to the middle of the lower leg, the patient had a heel defect in the opposite leg. Emergency short-time replantation was done, a part of the left lower leg was replanted to the right leg, the posterior tibial artery and both concomitant veins were sutured end to end. Thirty-five days later the replanted leg was divided in two flaps: an innervated calcaneus flap for covering the right heel defect based on posterior tibial artery and a fillet flap for covering the left groin region based on anterior tibial artery.

RESULTS. All flaps survived, all knee joints were saved and attained good articulation, and the patient could walk using a prosthesis. The cross hand replant had good sensation and good grasp and he used the hand more than his left prosthetic hand.

DISCUSSION. Railway traffic injuries are not common in Latvia but all injuries are very difficult to manage as patients usually have shock and sever damaged tissues. It is very important to evaluate the amputated segment; usually, the surgeon can find a replantable part. Replantation should be done promptly, as short-time replantation, to save segments for later reconstruction if the patient's condition is critical.

806. Outcome study of 87 patients with late stage oral cavity cancers: reconstruction, recurrence, survival rate and quality of life

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OBJECTIVES. The aim of this study is to present our first clinical experience of one-stage defect reconstruction with free flaps for late stage oral cavity cancers.

MATERIALS AND METHODS. From November 2008 to December 2012 87 patients were treated. Treatment outcome, survival and disease recurrence rate were evaluated. Quality of life was measured by the University of Washington Quality of Life (UW-QOL) questionnaire.

RESULT. Sixty nine (79.3%) patients were male and 18 (20.7%) were female with a mean age of 59.8 years. Squamous cell carcinoma was found in 84 cases (96.5%) and basaloid cell carcinoma, in 3 cases (3.5%). Following TNM, 37 (42.5%) patients had stage III disease, but 50 (57.5%) had stage IV disease. A radial forearm flap was used in 37 cases (53.6%), a lateral arm flap in 31 cases (44.9%), and an anterolateral thigh flap was used in 1 case (1.5%) for soft tissue reconstruction. An osteocutaneous fibula flap was used in 18 cases (100%) for soft tissue and bone reconstruction. Free flap survival rate was 98.8%. Overall disease free survival was 57.5%. Disease recurrence rate was 47%. Four-year survival of stage III and IV was 58% to 44%, respectively. The UW-QOL showed that imperfections of the domains like appearance, speech, taste and chewing had an impact on quality of life.

CONCLUSION. One-stage defect reconstruction with a free flap still remains the first choice treatment for late stage oral cavity cancers. This method provides better quality of life even though recurrence rate still remains high.

807. Reconstruction of esophagus for patients with esophageal defect or stenosis

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INTRODUCTION. Esophageal defect or stenosis are very devastating conditions, which markedly reduce life quality, and may cause even life threatening complications. Reconstructions of the esophagus with intact larynx are relatively simple and provide well predictable results. In cases where the larynx is damaged or involved in esophageal condition, reconstructions of the esophagus are very challenging for surgeons.The complex structure of the throat, esophagus and larynx interaction during the swallowing process makes it very difficult or even impossible to reconstruct this unique anatomical complex in cases when normal anatomy is absent.

METHODS. Currently preferred esophageal reconstruction methods are gastric pull-up and free jejunum. Free jejunum is a more demanding reconstruction, but provides better results.

The authors share the experience of four cases of esophageal reconstruction for patients with a damaged larynx. In the first case the patient had stenosis of the reconstructed esophagus after extirpation of the tumor of larynx with esophageal involvement. In two cases there was a defect of the cervical part of the esophagus. Reconstruction of the esophagus with free jejunum was performed in all cases. In one case the patient had a chemical burn of the upper airways and total athresia of the esophagus. The patient had absent epiglottis due to severe damage of the larynx, which required regular aspiration of saliva. The esophagus was reconstructed with a colon transversum.

RESULTS. After esophageal reconstruction with jejunum, the patients were able to eat per mouth with no restriction of diet one month later. One patient died due to recurrence of tumor in two years. After reconstruction with colon transversum the patient was able to eat solid food with rare or no aspiration one month later. Unfortunately, this patient still has peristalsis disorder two years later.

CONCLUSION. Reconstruction of the esophagus with jejunum is a safe procedure with a well predictable result. Reconstruction of the esophagus with damaged larynx is challenging for even highly skillful and experienced surgeons. The aim of reconstruction is not only to restore the anatomy of the esophagus but also to restore normal and safe swallowing function. The last goal is sometimes very difficult to achieve.

808. The role of free iliac crest flap in heel and ankle reconstruction

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BACKGROUND. Only a few published reports cover the long-term outcomes of patients with traumatic acute defects or sequelae in the heel or ankle treated with vascularized iliac crest transfer. This study assesses the reliability of the free iliac crest flap for these indications and reports the long-term outcomes of a case series.

MATERIALS AND METHODS. During a 26 year period, 13 patients underwent a composite (n = 12) or osseous (n = 1) vascularized iliac crest transfer to treat acute defects (n = 3) or sequela (n = 10) in the heel or ankle. Three outcome measures were applied: the Visual Analogue Scale Foot and Ankle (VAS FA), the Oswestry Disability Index (ODI), and the 15D health-related quality of life (HRQoL) instrument.

RESULTS. Average follow-up was 3.9 years. All bone flaps survived. Four skin islands developed partial necrosis. One patient needed a donor site hernia repair with a muscle flap. Five patients encountered impaired bone healing. One permanent non-union occured. The median time to full weight-bearing and bony union was 5 and 23 months, respectively. One patient underwent a secondary below-knee amputation. Seven (7/10) patients completed the questionnaires. The functional ability and overall HRQoL were good in most (5/7) patients.

CONCLUSIONS. The free iliac crest flap is a reliable method for treating large bone defects and sequela with vascular impairment such as non-union in the heel and ankle. It is especially valuable in patients with intra-articular involvement, composite defects and with a high risk of amputation. In most patients, the long-term functional ability and quality of life are good.

809. Treatment of compound tibia fracture with a microvascular latissimus dorsi flap and the Ilizarov technique: a cross-sectional study of long-term outcomes

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BACKGROUND. Management of extensive compound tibia fractures with bone loss, or secondary osteitis, pseudoarthrosis and limb-length discrepancy is challenging. This study assesses the reliability and the long-term outcomes of microvascular latissimus dorsi (LD) flap combined with the Ilizarov distraction osteogenesis for these indications.

MATERIALS AND METHODS. Patient charts were retrospectively reviewed. The Lower Extremity Functional Scale (LEFS), the Disabilities of the Arm, Hand and Shoulder (DASH), and the 15D health-related quality of life (HRQoL) instruments were applied.

RESULTS. between the years 1989 and 2014, 16 consecutive patients with mean age of 34 ± 12.3 years underwent early (n = 10) or late (n = 6) reconstruction with the microvascular muscule or musculocutaneous ld flap followed by distraction osteogenesis for traumatic tibial bone defects. Overall, 11/16 patients underwent bone transport while 5/16 patients received lengthening to correct secondary limb-length discrepancy. The mean clinical follow-up was 6.6 ± 6.5 years.

Due to a microvascular vessel problem, one arterial reanastomosis was performed. In an another patient flap necrosis was treated with a local flap. Two patients had secondary fistulation needing debridement. Additional bone grafting was used in 8/16 of cases to enhance union. The median time to bone union in the transport and lengthening groups was 16 and 29 months, respectively. As a mean, 3.8 ± 2.5 cm (range, 2.0–12.0 cm) of new bone was gained.

Overall, 11/16 patients participated in questionnaire follow-up a mean of 22.3 ± 2.4 years after the soft tissue reconstruction. Main findings revealed a relatively good function of the reconstructed limb and good shoulder function. The mean HRQoL was comparable to that of an age-standardized sample of the Finnish general population.

CONCLUSION. The combined method of microvascular ld flap and the Ilizarov distraction osteogenesis is reliable in treating compound tibial defects of both bone and soft tissue loss. Tibia transport and lengthening do not compromise the microvascular muscle flap. Long-term functional outcomes and HRQoL are reasonably good when these combined techniques are used.

810. Comparison of MRI findings and real soft tissue damages detected during wrist arthroscopy

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INTRODUCTION. Sometimes every surgeon faces a situation when during surgery he or she needs to change the carefully preplanned tactics due to findings that are totally different from those described in preoperative MRIs. We would like to present our cases and the incidence of similar problems described in medical literature.

METHODS. We have had 2 cases of significant discrepancy which resulted in a change of the surgical tactics during surgery. To clarify the incidence of this problem we analysed 20 articles on a similar topic in PubMed.

RESULTS. The MRI arthrogram has a sensitivity of 50% to 92.3% for different parts of the wrist. The 3T MRI has a sesitivity of 82% to 89% for different wrist structures. There are numerous side factors that can affect the evaluation and results of a MRI or MRI arthrogram while arthroscopy yields 98–100% of diagnoses.

CONCLUSIONS. Despite the difference between these two methods, they both play an important role in the treatment of the wrist pathology; still, arthroscopy is more widely used and has the capacity to detect cartilage, ligamentous and other soft tissue defects.

811. Clinical and pathomorphological results of 40 patients with head and neck reconstruction using microvascular flaps and bone grafts

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OBJECTIVE. Sufficient reconstruction ensures primary wound closure and healing after radical tumor surgery. Problems and limitations in head and neck reconstruction are irradiated tissue, functional sensibility, cosmetic deformation, patients` physiological status, donor side defect. The aim was to evaluate the local effects of postoperative radiation therapy on the microvascular flaps – histological appearance and degree of osteointegration and vascular supply using TGF-ā, CD34 immunohistochemistry.

METHODS. Forty patients with various histologically confirmed head and neck malignancies were included in this study. Immunohistochemistry was applied to bone graft biopsy specimens.

RESULTS. Advanced skin cancer required en-bloc resection of tumor and invaded structures, many patients required neck dissection. Indications for adjuvant post-operative radiotherapy: close or positive margins, perineural invasion, two or more positive nodes, extracapsular spread, nodes > 3 cm, parotid metastases, poorly differentiated tumor. In cases of clinically complete bone grafts, osteointegration TGF-ā expression was related to the osteoblastic cell lineage, CD34 in turn, was related to vascular beds. Free flap failure occurred in 1 case and 1 patient had osteonecrosis after radiotherapy.

CONCLUSION. The complications and success of mandibular reconstructions depend on the type of the malignancy, immediate reconstructions, radiotherapy, location of the defect, surgical approach and method of graft fixation, as well as on dental/functional rehabilitation. Bone graft osteointegration is completed within 6 months after surgery. The TGF-ā is involved in the early stages of bone development as well as in bone repair and remodelling after trauma. Vascular supply is essential for bone graft healing and clinical outcome. Adjuvant radiotherapy usually does not compromise flap healing and is important for tumor control.

812. Treatment options and functional outcome of severely damaged open tibial fractures

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INTRODUCTION. Open tibial fractures pose a serious problem because of increasing traumatism among patients and bacterial resistance against antibiotics. Also, there is no single concept for the the most effective method of treatment. Complications, long period of recovery and cost effectiveness necessitate search for better cure. The development of plastic surgery over the last 40 years has made it possible to reconstruct bone and soft tissue defects of the lower leg, to restore lost structures and to preserve function. At the same time, one should bear in mind that amputation still remains an essential choice for treatment of severe trauma.

MATERIALS AND METHODS. The study included 66 patients treated between January 2006 and December 2011 for bone and soft tissue defects of the open tibial fracture at the Microsurgery Centre of Latvia. Fifty-three patients corresponded as Gustilo IIIB type and 13 corresponded to IIIC type. Twrnty-nine patients were hospitalized to the Microsurgery Centre immediately, and 37 were hospitalized on average 14 days (1–60) after injury. Treatment options were analyzed. Functional results were evaluated using the Lower Extremity Functional Scale (LEFS).

RESULTS. Forty-eight patients (70%) underwent a successful open tibial fracture reconstruction, 18 patients (27%) underwent amputation. The tissue defect was closed with a free flap in 37 cases (76%), and with local muscular flap in 4 cases (9%); in 7 cases (15%) negative pressure therapy was used. Free flap survival rate was 94%. Late bone-related complications developed in 11 cases (22%): pseudoarthrosis in 7 cases and osteomyelitis in 4 cases. Patients who were transferred from other hospitals, generally spent an average of 18 days longer, had 1 more operation and complications developed more frequently in 21%. After assessment of LEFS, patients who underwent reconstruction had an average functional outcome of 78%, in the amputation group it was 65 of maximal function, which would be 100%.

CONCLUSION. Each open tibial fracture case is individual and the treatment option depends on the extent of tissue damage and on the patient`s condition. The study demonstrates that the majority of severe open tibial fractures are reconstructed. Functional outcome and satisfaction of these patients were higher compared with patients who underwent amputation. According to the study, free flap is the main option for reconstruction of tissue defects. It is necessary to ensure early patient transfer to the Microsurgery Centre, thereby reducing the cost of treatment and the risk of complications.

813. Structural fat grafting

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BACKGROUND. The medical profession has been experimenting with the transplantation of autologous adipose tissue (fat grafting) since 1893 (Neuber/Germany).

Over the past 20 years, there has been a dramatic increase in the use of autologous fat grafting to treat volume and contour defects in aesthetic and reconstructive surgery.

Since the early 1980s Dr. Sydney Coleman, a plastic surgeon from New York City, has been developing a procedure for gentle harvesting and transplantation of fat cells. His work has laid the foundation for a successful fat grafting procedure.

OBJECTIVE. Autologous fat grafting for different reasons was performed between 2013 and 2014, there were altogether 104 procedures for 72 patients. The reasons for fat grafting were breast reconstruction after oncological breast removal, congenital breast asymmetry, aesthetic breast augmentation, different soft tissue defects, scars and Dupuytren disease.

METHODS. The operation followed a standardized Berlin augmentation by the lipo-transfer protocol fora large amount of fat transfer. Fat was harvested by Body-Jet WAL system, separated in the "Lipo- collector" and re-infiltrated by special cannulas.In case of small defects the Collemas technique was used. Clinical examinations were conducted preoperatively, and on day 1, and after 1 week, 3 months and 6 months.

RESULTS. In all patients, a significant increase in subcutaneous tissue was achieved. There were noo major complications.

CONCLUSIONS. Use of structural fat grafting for treating different soft tissue defects is a safe, fast and reliable technique, with low complication rate.

814. Dorsal osteosynthesis approach for lower leg reconstruction

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INTRODUCTION. Lower leg posttraumatic complications such as osteomyelitis and soft tissue defect, cause significant disability and impact on quality of life. Tibial reconstruction with the fibula flap, using the classical anteromedial osteosynthesis approach, has some limitations and high risk of complications such as partial or total skin paddle necrosis, plate and bone exposure. Dorsal osteosynthesis approach through the dorsal and lateral muscle compartments could be used to avoid losing a plate for tibial defect reconstruction.

MATERIALS AND METHODS. Nine patients between 2010 to 2015 underwent the dorsal osteosynthesis approach for tibial defect reconstruction with free or pedicled fibula flaps at the Microsurgery Centre of Latvia. In all cases the etiology was soft tissue infection and osteomyelitis with bone defect after high energy trauma. Eight patients were male and one patient was female with a mean age of 41.3 (24–57). Four patients had free contralateral osteocutaneus fibula flaps, including 3 double-barrel fibula flaps. Three patients had ipsilateral pedicled osteocutaneus fibula flaps. Two patients had ipsilateral a pedicled osteomuscular fibula flap.

Seven patients responded for the study. Mean follow up for 5 patients was 2 years and 8 months for 5 patients and less than 1 year for 2 patients. The patient's functionality was assessed according to Lower Extremity Functional Scale score. X-rays, sensation, range of motion, leg length and MRC scale were evaluated.

RESULTS. All flaps survived. Five out of 7 soft tissue defects healed by the time of the secondary intervention. No one had recurrence of infection so far. X-ray showed acceptable fibula hypertrophy. Only 1 patient had broken plate without bone fracture. Mean LEFS score was 51.75 points (43–65) or 65.7% (53–82%) of maximal function. Six patients had normal (mean 20-0-50) but 1 had decreased ankle ROM (10-0-35). Six patients had normal (mean 7-0-125) but 1 had decreased ankle ROM (0-0-75). No one had abnormal sensation .The MRC scale showed M5 for all patients. Mean limb length difference was 1cm for 6 patients and 3cm for 1 patient.

CONCLUSION. The dorsal osteosynthesis approach is more preferable in cases of a large soft tissue defect, which increases the risk of skin paddle necrosis. The advantages of this method are incision throughout the healthy, uncompromised tissue, and free access for anastamosis. The contralateral fibula flap can either be harvested from dorsal side, the pedicled fibula flap can be harvested through the same incision, operative time does not increase and in cases of partial tissue necrosis it can be left for secondary healing. It is a safe and effective method for achieving good coverage of bone graft and plate in patients with lower leg soft tissue and tibial defect.

815. How reliable is Oberlin's procedure for elbow flexion restoration

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BACKGROUND. Brachial plexus injury is very commonly associated with road traffic accidents, especially motorcycle accidents; it affects frequently young adults, causing significant disability and impact on quality of life. Upper plexus injury can cause loss of elbow flexion, shoulder abduction and shoulder joint instability, resulting in the inability to perform activities of daily living.

The successful treatment of upper plexus injury has continued to evolve, with the Oberlin technique described in 1994 to restore elbow flexion with good functional results. We have performed Oberlin operations in Latvia since 2004.

MATERIAL AND METHODS. We retrieved the records of all patients with upper plexus injury who underwent an Oberlin transfer operation between March 2007 and July 2012. The summarised steps of the operation include the following: after standard infraclavicular exposure, the musculocutaneous nerve is traced back to its branch to the biceps. A part of the ulnar nerve is skeletonised to include the flexor carpi ulnaris muscle motor branch and a constituent motor fascicle is transferred onto the nerve to the biceps.

Outcomes were assessed using the Medical Research Council (MRC) power grading system for biceps muscle, Disabilities of the Arm, Shoulder and Hand score (DASH) for patient functional outcomes and the Visual Analogue Scale (0-satisfied;10-unsatisfied) for overall patient satisfaction. Follow-up was performed for at least 12 months postoperatively.

RESULTS. During the study period, 10 patient records were retrieved; all were male with impaired active elbow flexion and intact ulnar nerve. Age range was 22 to 59 years, with a mean age of 39 years. Five cases (50%) included motorcycle accidents and mean time between injury and operation was 11.7 months (range 4 to 38 months). The MRC biceps power grading was 0/5 for nine patients, and 1/5 for one patient.

The average follow up period was 43.6 months (range 17 to 78 months). Six cases gained effective elbow flexion, improving to MRC grade 5/5 and four cases improved to MRC grade 4/5 for biceps function. No permanent impairment of the ulnar nerve function was observed. The average DASH score was 27.25 (range from 7.5 to 67.5). VAS score of patient satisfaction was on average 3.2 (range 0 to 8). One patient had serious disability with no changes after Oberlin's transfer operation. Seven out of 10 patients had resumed daily work, with no discomfort and no functional impact on the activities of daily living.

CONCLUSION. We found that the Oberlin transfer is a useful salvage procedure. The most effective results are obtained for young patients with a short interval between injury and operation. It is a simple, safe and effective meyhod to achieve elbow flexion in patients with upper brachial plexus injury.

816. Free vascularized bone grafts in head and neck reconstruction: experience of the North Estonia Medical Centre

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ABSTRACT. The field of head and neck surgery has undergone numerous changes in the past two decades. Microvascular free flap reconstruction has largely replaced other techniques and has become the golden standard in head and neck reconstruction.

Reconstruction of composite maxillofacial defects after ablative tumour surgery or trauma is a difficult task. The role of the reconstructive surgical team is to have an available diverse armamentarium of reconstructive options allowing to perform aesthetic and functional reconstruction minimizing at the same time morbidity for the patient. This paper presents the preliminary results of 65 consecutive head and neck reconstructions with free tissue transfer using microvascular bone grafts performed at the North Estonia Medical Centre in 2006–2015.

817. Surgical management of gynecomastia at Tartu University Hospital

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BACKGROUND. The aim of the study was to evaluate the surgical treatment of gynecomastia focusing on indications, techniques and complications. This knowledge could be used for the formulation of national guidelines in the future.

METHODS. A retrospective analysis of 48 patients operated on for gynecomastia during a 12-year period at Tartu University Hospital. The grade of gynecomastia, side, etiology and complaints were registered as preoperative clinical data. Postoperative analyses concerned a relevant surgical discipline and surgical technique, as well as the occurence of reoperations and histologic findings.

RESULTS. All operations were perfomed under general anesthesia and the majority of the procedures were performed by plastic surgeons. The operative techniques included liposuction, surgical excision through a periareolar incision, liposuction with surgical excision, reduction plasty and mastectomy with free NAC transplantation. Complications occured in a total of 5 (10.4%) cases, 2 (4.2%) patients were reoperated. No recurrences have been recorded until present.

CONCLUSION. Surgical treatment of gynecomasty is a safe procedure. We showed that surgical subcutaneous excision combined with liposuction is continuously the golden standard for Simon Ia-IIb gynecomastia and ensures consistently good aesthetic outcome. Surgical treatment for grade III gynecomastia remains controversial.

9. MISCELLANEOUS

901. Adrenalectomy: 16-year experience at Pauls Stradins Clinical University Hospital

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INTRODUCTION. Adrenal masses are detected incidentally in up to 5 % of patients undergoing abdominal imaging studies. Approximately 1 out of 5 is hormonally active. Operative treatment is applied using the laparoscopic or open approach. Laparoscopic adrenalectomy has become the gold standard for surgical removal of adrenal masses.

MATERIALS AND METHODS. A retrospective review of laparoscopic and open adrenalectomies perfomed at Pauls Stradins Clinical University Hospital, 16-year experience (1999 to 2014).

The indications for surgery were the following: hormonally active adrenal tumour, functionally inactive tumour > 5 cm in diameter, rapidly growing tumour, metastasis in the adrenal gland.

Altogether 191 patients underwent adrenalectomy. Data were analysed in regards to operative methods, morphological diagnoses, operation time, complications and hospital stay.

RESULTS. At Pauls Stradins Clinical University Hospital 191, adrenalectomies were carried out between 1999 and 2014.

Thirty-three patients (17%) were operated by the open approach, 151 (79%) were operated laparoscopically and 7 cases (4%) laparoscopy was converted to the open approach because of haemorrhage (4), increased tumour size (2), specific anatomy (1). None of the conversions was performed in the last 2 years.

Fifty-one per cent (98) of all adrenalectomies were right-sided, 41% (89) were left-sided and 2.6% were bilateral.

Mean operative time was shorter in the laparoscopic adrenalectomy group compared with the open approach group (103 versus 110 min, $p = 0.046$). Operative time for laparoscopic adrenalectomy decreased from 146 min (1999.) to 75 min (2014). Hospital stay of 16 years decreased from 13 to 5 days.

CONCLUSION. Surgical technique and surgeon skills have improved in the last 16 years, which has reduced mean operative time and hospital stay and improved operative results and postoperative recovery.

902. Analysis of partial nephrectomies at Tartu University Hospital between 2010-2014

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INTRODUCTION AND OBJECTIVES. Partial nephrectomy is the current gold standard treatment for small localized renal tumors. We retrospectively reviewed our five-year experience of partial nephrectomies to evaluate the surgical technique, tumor size, histopathological findings and to assess perioperative complications relating them to the Clavien Dindo 2009 Classification.

MATERIALS AND METHODS. Between January 2010 and December 2014, 58 partial nephrectomies were performed for renal tumors. We reviewed the records of all patients. Of these 61 patients 28 were male and 30 were female. Mean patient age was 66 (range 40–85). Preoperative examinations included chest x-ray, abdomen CT and routine blood chemistry. Thirty-one tumors were located in the right kidney and 25 were located in the left kidney. One patient had 2 tumors in the same kidney. Twenty-two tumors were in the lower pole of the kidney, 14 were in the upper pole and 11 were in the lateral side.

RESULTS. We performed 43 open and 18 laparoscopic partial nephrectomies. The range of tumor size was 0.8–8 cm according to maximum diameter. In 21 procedures (18 open and 3 laparoscopic) the renal vessels were clamped during resection. The mean warm ischemia time was 13 minutes (9–64 minutes).

Histopathologically, 38 (65.5%) tumors were clear cell carcinomas (1 T2b, the others T1a or T1b) and 20 (34.5%) were benign renal masses, mainly oncocytomas. One positive surgical margin was registered.

We had 4 (7%) Clavien 2 complications. 2 (3%) patients needed blood transfusions. One patient had postoperative fever and 1 had strong pain syndrome which needed additional medication use. No Clavien 3-5 complications were recorded and no permanent serum creatinine rise was noted postoperatively.

CONCLUSION. There is a trend towards laparoscopic partial nephrectomies at our hospital. Our results demonstrate acceptable morbidity without major complications.

903. Minimally invasive breast abscess management

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Breast abscess is an emergency condition and the .on-call surgeon has to know the proper management of this disease.

If a patient presents with several symptoms of breast inflammation like pain, redness, swelling, lump, fever, ultrasound examination is diagnostic for breast abscess by visualizing pathological fluid collection. Always the possibility of inflammatory breast cancer should be ruled out.

The most frequent causes of breast abscesses are the following: 1) breast feeding, 2) chronic retroareolar purulent mastitis – no breast feeding, mostly smokers 3) inflamed cyst of the Montgomery gland – in adolescent girls 4) non- breast feeding abscess in diabetic persons 5) rare types of purulent mastitis (e.g. granulomatous, syphilis, sarcoidosis) 6) infected atheroma of the breast 7). Spontaneous abscesses of unknown etiology.

If the diagnosis of breast abscess is confirmed, antibiotic therapy should be initiated. Erythromycin and Cefalexin are compatible with breast feeding and should be administered for breast feeding women.

In all cases the possibility of simple aspiration of infected content and rinsing of the cavity with saline through a 14G needle should be evaluated first. If high likelihood of relapse is expected then drainage of abscess with a 12F pigtail catheter should be performed under ultrasound guidance in local anesthesia. Open surgery for breast abscesses is indicated exceptionally rarely and should be avoided in an emergency setting. Breast feeding women should be managed in an outpatient setting and immediate continuation of breast feeding should be encouraged. Indications for open surgery (incision) and general anesthesia should be decided only by an experienced breast surgeon. Referral to the breast surgeon should be arranged within 24–72 hours for further management. If for some reasons ultrasound guided aspiration/drainage of abscess is not possible in an emergency setting, it could be left to the discretion of a breast surgeon.

However, there are several disadvantages of open surgery for breast abscesse: open incision of abscesses will increase the proportion of inpatient management and the frequency of general anesthesia and will decrease the proportion of further breast feeding in lactating women. In case of breast feeding abscesses, formation of milk fistula after open incision will cause temporary considerable deterioration in quality of life and will increase the number of patient visits.

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Remarks

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