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## Abstracts

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## Contents

- Walter Brendel**  
94 Abstracts WB 01\_WB 06
- Young Investigator**  
97 Abstracts YI 01\_YI 06
- Best Clinical Research**  
99 Abstracts BC 01\_BC 06
- B.Braun**  
102 Abstracts YI 01\_YI 06
- Oral Presentations**  
105 Abstracts OP 01\_OP 215
- Poster Presentations**  
193 Abstracts PP 01\_PP 150

## Walter Brendel

### WB 01

#### Demonstration of the Effects of Portal Vein Ligation on Glucose Metabolism Using in Vivo Multi-modal Pet/Mri Measurements in Healthy Rat Liver

András Fülöp<sup>1</sup>, András Budai<sup>1</sup>, Viktor Hegedűs<sup>1</sup>, Diana Korsós<sup>1</sup>, László Harsányi<sup>1</sup>, Ildikó Horváth<sup>2</sup>, Krisztián Szigeti<sup>2</sup>, Domokos Máthé<sup>3</sup>, Attila Szijártó<sup>1</sup>

<sup>1</sup> 1st Department of Surgery, Semmelweis University, Budapest, Hungary

<sup>2</sup> Department of Biophysics and Radiation Biology, Semmelweis University, Budapest, Hungary

<sup>3</sup> CROmed Translational Research Centers, Budapest, Hungary

**Background:** Portal vein ligation (PVL) results in ipsilateral atrophy and hypertrophy of contralateral liver segments. It is unknown how PVL affects metabolic patterns of hepatic tissues. The aim of this study is to evaluate the effect of PVL on glucose metabolism, using multi-modal PET/MRI imaging in healthy rat liver.

**Material and Methods:** Male Wistar rats (n=30) underwent PVL. 2-deoxy-2-(18F)fluoro-D-glucose (FDG) PET/MRI imaging and morphological/histological examination were performed before; 1-, 2-, 3-, 7-days after PVL. Dynamic PET data were collected and the standardized uptake values (SUV) for ligated and non-ligated liver lobes were calculated in relation to cardiac left ventricle (SUVVOI/SUVCLV) and mean liver SUV (SUVVOI/SUVLiver).

**Result:** PVL induced atrophy of ligated lobes, while non-ligated liver tissue showed compensatory hypertrophy. Dynamic PET scan revealed altered FDG kinetics in both ligated and non-ligated liver lobes. SUVVOI/SUVCLV significantly increased in both groups of lobes, with a maximal value at 2nd postoperative day and returned near to the baseline 7 days after the ligation. After PVL, ligated liver lobes showed significantly higher tracer uptake compared to the non-ligated lobes (significantly higher SUVVOI/SUVLiver values were observed at postoperative day 1, 2 and 3). The homogenous tracer biodistribution observed before PVL reappeared by 7th postoperative day.

**Conclusion:** Our study demonstrated an altered glucose metabolism in both ligated and non-ligated liver lobes. The observed alterations in FDG uptake dynamics should be taken into account during the assessment of PET data until the PVL induced atrophic and regenerative processes are completed.

### WB 02

#### The Effect of Nitric Oxide Synthase Inhibitor(L-NAME) on Ischemia-reperfusion Injury Following Pringle Maneuver of Cirrhotic Liver Induced by Bile Duct Ligation

Junji Iwasaki<sup>1</sup>, Mamdouh Afify<sup>1</sup>, Shinji Uemoto<sup>2</sup>, Rene H. Tolba<sup>1</sup>

<sup>1</sup> Institute for Laboratory Animal Science and Experimental Surgery, RWTH-Aachen University, Aachen, Germany

<sup>2</sup> Division of Hepatobiliary Pancreatic and Transplant Surgery, Department of Surgery, Graduate School of Medicine, Kyoto University, Kyoto, Japan

**Background:** Pringle maneuver(PM) has been used widely to control blood loss during liver resection. However, hepatic inflow occlusion can also result in hepatic ischemia-reperfusion injury (IRI), especially in patients with a cirrhotic liver. Nitric oxide(NO) is generated from NO synthase(NOS), and has not only cytoprotective but also cytotoxic effect. The aim of this study was to investigate the effect of the NOS inhibitor(L-NAME) on IRI after PM of cirrhotic livers induced by bile duct ligation(BDL).

**Material and Methods:** Male Wistar rats were divided into three groups: sham group(non-BDL/no treatment), L-NAME group(BDL with L-NAME treatment) and BDL group(BDL/no treatment). Cirrhosis was induced by BDL. Two weeks after BDL, 50 % partial hepatectomy with PM was performed. The rats of L-NAME group were injected with L-NAME(1.5 mg/kg) 15 minutes before PM. We evaluated the hepatocellular damage, portal venous flow and microcirculation of the liver after reperfusion.

**Result:** Although there was no significant difference in portal venous flow between L-NAME and BDL group, microcirculation of the liver in L-NAME group tended to be higher than that of BDL group(Table). Histopathologically, the semi-quantitative score for liver damage and apoptotic index were significantly lower in L-NAME group than in BDL group 168 hrs after reperfusion. Ki-67 labeling index of L-NAME group was significantly higher than that of BDL group 24 hrs after reperfusion.

**Conclusion:** L-NAME attenuated IRI induced by Pringle maneuver, and improved microcirculation of cirrhotic livers.

Microcirculation flow of the liver (AU) (Mean ± S.E.M.)		
Time after reperfusion (hr)	L-NAME group	BDL group
1	226.8 ± 62.2	114.5 ± 7.63
3	202.0 ± 73.4	109.5 ± 18.2
24	166.2 ± 30.5	125.0 ± 2.65
168	161.3 ± 13.7	94.3 ± 15.2

## WB 03

**Bacterial Endotoxin Enhances Metastatic Colonisation and Liver Metastasis in Colon Cancer Cells via Nox Derived H<sub>2</sub>O<sub>2</sub>***Dp O'leary<sup>1</sup>, Jh Wang<sup>1</sup>, Tg Cotter<sup>2</sup>, Hp Redmond<sup>1</sup>*<sup>1</sup> Cork University Hospital, Cork, Ireland<sup>2</sup> University College Cork, Cork, Ireland

**Background:** Nox-derived reactive oxygen species (ROS) phosphorylate redox sensitive pathways facilitating metastasis. Mediators of surgery-induced inflammation including lipopolysaccharide (LPS) activate Nox enzymes. Surgery-induced inflammation is associated with accelerated tumour growth. Thus we aimed to characterise the potential role for Nox-derived ROS in enhancing metastatic colonisation and liver metastasis in response to LPS.

**Material and Methods:** Balb/C mice underwent an intra-splenic injection of 2x10<sup>5</sup> pre-treated murine colon cancer CT-26 cells. There were four groups of pre-treated cells – untreated, LPS, LPS + DPI (Nox inhibitor), LPS + DMSO (n=8/group). Metastatic burden in the liver was assessed by counting surface liver nodules and liver/body weight ratio at day 7 post injection. Mitotic index was assessed using hematoxylin and eosin histology. Metastatic colonisation was assessed in vitro using SW480 cells in migration and invasion assays. ROS characterisation was examined using intracellular probes.

**Result:** LPS treated cells had enhanced liver metastatic burden compared to untreated cells (p=0.036). DPI successfully attenuated metastatic tumour growth compared to untreated and LPS treated groups (p<0.001). Nox inhibition successfully reduced proliferation in vivo (p=0.002) and, migration (p=0.027), invasion (p=0.041) and epithelial-mesenchymal transition in vitro. Using multiphoton microscopy, endoplasmic reticulum was the intracellular organelle responsible for Nox-generated ROS in response to LPS. Characterisation of the Nox-generated ROS identified H<sub>2</sub>O<sub>2</sub> as the species responsible for facilitating spontaneous and accelerated tumour growth.

**Conclusion:** Targeting Nox generated H<sub>2</sub>O<sub>2</sub> significantly attenuates spontaneous and accelerated metastatic tumour growth.

## WB 04

**Chemokine Involvement in Lung Injury Secondary to Ischaemia/Reperfusion***Sergio D. Paredes<sup>1</sup>, Lisa Rancan<sup>2</sup>, Luis Huerta<sup>3</sup>, David Rincón<sup>3</sup>, Cruz García<sup>2</sup>, Ignacio Garutti<sup>4</sup>, Carlos Simón<sup>3</sup>, Elena Vara<sup>2</sup>*<sup>1</sup> Department of Physiology - School of Medicine - Complutense University of Madrid, Madrid, Spain<sup>2</sup> Department of Biochemistry and Molecular Biology III - School of Medicine - Complutense University of Madrid, Madrid, Spain<sup>3</sup> Service of Thoracic Surgery - Gregorio Marañón University General Hospital, Madrid, Spain<sup>4</sup> Service of Anaesthesiology and Rehabilitation - Gregorio Marañón University General Hospital, Madrid, Spain

**Background:** Ischaemia and reperfusion (I/R) elicit an acute inflammatory response characterized by the recruitment of inflammatory cells, oxidative stress and endothelial barrier failure that can lead to interstitial oedema and impairment of organ function. Neutrophils are known to mediate the organ injury, but the precise mechanisms leading to lung neutrophil recruitment are undefined. Monocyte chemoattractant protein 1 (MCP1) and macrophage inflammatory protein 2 (MIP2) are chemotactic for neutrophils in vitro and have been reported to be involved in neutrophil-dependent inflammatory tissue injury. The aim of the present study was to determine the roles of MCP1 and MIP2 in the local tissue injury induced by lung I/R.

**Material and Methods:** Ten large-white pigs were submitted to a left lung auto-transplant. All animals received the same anaesthetic procedure. In order to measure MCP1 and MIP2 tissue levels, lung tissue samples were taken in 4 different moments: 5 min before pneumonectomy; 5 min before reperfusion; 30 min and 60 min after reperfusion. Additionally, myeloperoxidase (MPO) content and lung oedema were also measured.

**Result:** Lung I/R caused substantial pulmonary damage determined as lung oedema. This oedema was accompanied by increased neutrophil accumulation (as measured by tissue MPO content, p<0.05). After 30 min of reperfusion, both MCP1 and MIP2 levels were significantly increased compared to prepneumonectomy levels (p<0.05) and a further increase was observed after 60 min reperfusion (p<0.05).

**Conclusion:** These results suggest that the local expression of MCP1 and MIP2 may be involved in neutrophil-dependent lung injury induced by I/R.

## WB 05

**Intestinal Cold Storage in PACAP-38 Containing Preservation Solution**

Nedvig Klára<sup>1</sup>, Jancsó Gábor<sup>2</sup>, Szabó Györgyi<sup>3</sup>, Csukás Domokos<sup>4</sup>, Sándor József<sup>3</sup>, Wéber György<sup>3</sup>, Reglódi Dóra<sup>2</sup>, Ferencz Andrea<sup>3</sup>

<sup>1</sup> Zala County Hospital, Zalaegerszeg, Hungary

<sup>2</sup> University of Pecs, Pecs, Hungary

<sup>3</sup> Semmelweis University, Budapest, Hungary

<sup>4</sup> Semmelweis Egyetem, Budapest, Hungary

**Background:** Small-bowel is one of the most sensitive organ to ischemia-reperfusion injury, which is a significant problem during transplantation. Pituitary adenylate cyclase-activating polypeptide (PACAP) has cytoprotective effect in ischemic injuries of various tissues. The aim of our study was to measure oxidative stress markers, histological damages and changes of PACAP-38 immunoreactivities and cytokine levels in intestinal grafts stored PACAP-38 containing preservation solution.

**Material and Methods:** Intestinal autotransplantation was performed on male Wistar rats (n=35). Grafts were stored in University of Wisconsin (UW) solution at 4°C for 1 hour (GI), for 3 hours (GII), and for 6 hours (GIII); and in PACAP-38 containing UW solution for 1 hour (GIV), for 3 hours (GV), and for 6 hours (GVI). After preservation reperfusion lasted 3 hours in each group. Tissue oxidative stress parameters (malondialdehyde, reduced glutathione, superoxide dismutase), intestinal PACAP-38 immunoreactivities, and cytokine array were measured.

**Result:** Tissue oxidative injury and histological destruction were significantly lower in GIV-GIV compared to GI-GIII. Levels of PACAP-38 immunoreactivity decreased in GI-GII. This decrease was significant following 6 hours cold storage (p<0.05). Values remained significantly higher in grafts stored in PACAP-38 containing UW. Cytokine array revealed that expression of sICAM-1, L-selectin, and the tissue inhibitor of metalloproteinase-1 were increased in GIII, and strong reduction of their activation were observed in GVI.

**Conclusion:** Present study showed that PACAP-38 adding to the conventional UW preservation solution decreased intestinal oxidative injury and structural damages, and mitigated tissue cytokine expression.

## WB 06

**Impact of ADAMTS13, Von Willebrand Factor-Cleaving Protease, on Hepatic Ischemia/Reperfusion**

Hirofumi Hirao, Koichiro Hata, Hirokazu Tanaka, Shoichi Kageyama, Yusuke Okamura, Toyonari Kubota, Osamu Inamoto, Shinji Uemoto

Department of Hepatobiliary, Pancreas and Transplant Surgery of Kyoto University, Kyoto City, Japan

**Background:** Multimeric von-Willebrand factor is a well-known central player not only in physiological hemostasis but in pathological intravascular coagulation. Recently, much attention has been paid to its counteracting partner, ADAMTS13, as a Savior in various coagulation disorders, including thrombotic microangiopathy. Here we report the impact of ADAMTS13 on hepatic ischemia/reperfusion injury (IRI).

**Material and Methods:** Male wild type (WT) mice and ADAMTS13 knockout (KO) mice (8-10 weeks-old, 129/+Ter/SvJcl-TgH NCVc) were used. First, they were exposed to 70% partial hepatic ischemia for 60 minutes followed by either vehicle (Group-A: WT + vehicle and Group-B: KO + vehicle) or recombinant ADAMTS13 administration into KO mice intravenously (Group-C: KO + rADAMTS13). Hepatic microcirculation, measured by laser Doppler flowmetry, platelet count, serum transaminase release, liver histology and inflammatory cytokines were also examined.

**Result:** At 24 hours after reperfusion, hepatic microcirculation in Group-B fell down to 33.1% of the pre-ischemic value, which was lower than in Group-A (69.8%, p<0.01). In Group-C, however, it was improved up to 67.4% (p<0.01). Immunohistochemistry with CD42b antibody revealed platelet aggregation in sinusoid in Group-B, which was improved by rADAMTS13 supplementation. In line, platelet counts (45.2 vs. 7.7 vs. 37.8 x10<sup>5</sup>; p<0.05), ALT (5500 vs. 13964 vs. 8417; p<0.05) were all deteriorated in KO, but ameliorated by rADAMTS13 administration.

**Conclusion:** ADAMTS13 plays a considerable role in maintaining hepatic microcirculation, and its recombinant agent might be a novel therapeutic approach against hepatic IRI.

## Young Investigator

## YI 01

**Direct Inhibition of C5a Improves Oxygen Dynamics in Experimental Sepsis**

Dániel Érces<sup>1</sup>, Mariam Geshlagi<sup>2</sup>, Miklós Nógrády<sup>1</sup>, Péter Nemes<sup>3</sup>, Márton Németh<sup>2</sup>, Domonkos Trásy<sup>2</sup>, Noriko Okada<sup>3</sup>, Hidechika Okada<sup>3</sup>, József Kaszaki<sup>3</sup>, Mihály Boros<sup>1</sup>

<sup>1</sup> Institute of Surgical Research, University of Szeged, Szeged, Hungary

<sup>2</sup> Department of Anaesthesiology and Intensive Therapy, University of Szeged, Szeged, Hungary

<sup>3</sup> Department of Immunology, Nagoya City University Graduate School of Medical Sciences, Nagoya, Japan

**Background:** Acute peritonitis is a serious complication of abdominal surgeries. Left untreated, the inflammatory process is accompanied by disturbances in oxygen dynamics and may lead to septic reactions. We hypothesized that complement system activation and C5a generation is involved in the development of sepsis-induced cellular hypoxia. Therefore, we investigated the effects of C5a antagonist (C5aA) treatment on the alterations of peripheral microcirculation, oxygen consumption (VO<sub>2</sub>) and delivery (DO<sub>2</sub>) in a large animal model of intraabdominal sepsis.

**Material and Methods:** Anesthetized minipigs were subjected to fecal peritonitis (0.7 g/kg autofaeces i.p.) without (n=7) or with C5aA treatment (4 mg/kg AcPepA, Nagoya, Japan, n=6) 19 hr after the insult. Invasive hemodynamic monitoring and blood gas analyses were started, VO<sub>2</sub>-DO<sub>2</sub> values were calculated, and sublingual microcirculation parameters (the rate of perfused capillaries, by intravital orthogonal polarization spectral imaging technique) were recorded between the 16-24 hr of sepsis.

**Result:** In septic animals the DO<sub>2</sub> (3680±310 ml/min/m<sup>2</sup>) and VO<sub>2</sub> (510±85 ml/min/m<sup>2</sup>) values were elevated, while the oxygen extraction ratio (VO<sub>2</sub>-DO<sub>2</sub> ratio <13%) was deteriorated significantly. These changes were accompanied by sublingual microcirculatory deficit, as compared with baseline. The C5aA treatment increased significantly the DO<sub>2</sub> and VO<sub>2</sub> values, the VO<sub>2</sub>-DO<sub>2</sub> ratio (to 22%) and the perfusion rate of sublingual microcirculation.

**Conclusion:** These data demonstrate that inhibition of complement cascade components has beneficial effects on the oxygen extraction in experimental sepsis and suggest that the C5aA treatment could be a novel therapeutic opportunity to ameliorate the hypoxic consequences of septic inflammation. Grant support: OTKA K104656, TAMOP-4.2.2A-11/1/KONV-2012-0035, TAMOP-4.2.2A-11/1/KONV-2012-0073, TAMOP 4.2.4.A/2-11-1-2012-0001

## YI 02

**Predicting Acute Appendicitis? A Prospective Comparison of the Alvarado Score, the Appendicitis Inflammatory Response Score and Clinical Assessment**

Daniel Kollar<sup>1</sup>, Damian Mccartan<sup>2</sup>, Mike Bourke<sup>1</sup>, Simon K. Cross<sup>1</sup>, Joseph Dowdall<sup>1</sup>

<sup>1</sup> Waterford Regional Hospital, Waterford, Ireland

<sup>2</sup> Waterfod Regional Hospital, Waterford, Ireland

**Background:** Patients presenting with suspected appendicitis pose a diagnostic challenge. The Appendicitis Inflammatory Response (AIR) score has out-performed the Alvarado score in two retrospective studies. The aim of this study was to prospectively evaluate the AIR Score and compare its performance in predicting risk of appendicitis to both the Alvarado score and the clinical impression of a senior surgeon.

**Material and Methods:** All parameters included in the AIR and Alvarado scores as well as the initial clinical impression of a senior surgeon were prospectively recorded on patients referred to the surgical on call team with acute right iliac fossa pain over a 6-month period. Predictions were correlated with the final diagnosis of appendicitis.

**Result:** Appendicitis was the final diagnosis in 67 of 182 patients (37%). The three methods of assessment stratified similar proportions (~40%) of patients to a low probability of appendicitis (p=0.233) with a false negative rate of <8% that did not differ between the AIR score, Alvarado score or clinical assessment. The Alvarado score assigned the highest proportion of patients to the high probability of appendicitis group (45%, p<0.001). A high AIR score was associated with high specificity (97%) and positive predictive values (88%) but a specificity (33%) that was lower than the Alvarado score (80%) or surgical assessment (63%).

**Conclusion:** The AIR score is accurate at excluding appendicitis in those deemed low risk and in predicting it in those deemed high risk. Its use as the basis for selective CT imaging in those deemed medium risk should be considered.

YI 03

**Effect of Perifistular Application of Adipose-Derived Mesenchymal Stem Cells – Experimental Study**

Ondrej Ryska<sup>1</sup>, Zuzana Serclova<sup>1</sup>, Ondrej Mestak<sup>2</sup>,  
Eva Matouskova<sup>3</sup>, Pavel Veselý<sup>2</sup>, Ondrej Luksan<sup>4</sup>,  
Iveta Mrázová<sup>4</sup>

<sup>1</sup> Department of Surgery, 2. Faculty of Medicine, Charles University and Central Military Hospital, Prague, Czech Republic

<sup>2</sup> Department of Plastic Surgery, Hospital Bulovka, Prague, Czech Republic

<sup>3</sup> Department of Burns Medicine, 3rd Medical Faculty Charles University, Prague, Czech Republic

<sup>4</sup> Institute for Clinical and Experimental Medicine, Centrum of Experimental Medicine, Prague, Czech Republic

**Background:** Local application of adipose-derived mesenchymal stem cells (ADSCs) is a promising method for the treatment of perianal fistula in patients with Crohn's disease. More clinical and experimental studies are needed including the technique of in vivo monitoring.

The aim of the study was to evaluate the fistula healing after application of ADSCs in perifistular tissue.

**Material and Methods:** Coecostomy was used as a fistula model in 11 Lewis rats. The adipose tissue was harvested from transgenic donor expressing firefly luciferase (LEW-Tg(Rosa-luc)11jmsk; Jichi Medical School). The ADSCs were isolated using collagenase and injected (1-2\*10<sup>6</sup> cells/ml) in perifistular tissue. After application of D-luciferin (25mg/kg), rats were imaged in IVIS Lumina camera on days 0, 2, 7, 14 and 30. Fistula drainage assessment (FDA) was used to evaluate fistula healing.

**Result:** The fistula was identified as healed in 4/11 animals. Bioluminescence was strongest 2 days after application (4,46\*10<sup>5</sup> (5,1\*10<sup>4</sup>-2,7\*10<sup>6</sup>). The radiance decreased as follows 1,15\*10<sup>5</sup> (4,05\*10<sup>4</sup> - 6,4\*10<sup>5</sup>) on day 7; 7,29\*10<sup>4</sup> (9,36\*10<sup>3</sup>-2,88\*10<sup>5</sup>) on day 14 and 2,94\*10<sup>4</sup> (4,93\*10<sup>3</sup>-1,70\*10<sup>5</sup>) on day 30 (values are medians in p/s/cm<sup>2</sup>/sr). There was a trend to higher luminescence in animals with healed fistula (30 days after injection - 8,23\*10<sup>4</sup> (1,18\*10<sup>4</sup>-1,70\*10<sup>5</sup>) vs. 2,75\*10<sup>4</sup> (4,93\*10<sup>3</sup>-6,88\*10<sup>4</sup>); p=0,18).

**Conclusion:** Local application of ADSCs can lead to fistula healing. The effect of ADSCs was confirmed by higher luminescence in healed rats 30 days after implantation. Supported by NT13708

YI 04

**Functional and Morphological Changes During Triggered Liver Regeneration**

András Budai<sup>1</sup>, András Fülöp<sup>1</sup>, Attila Szijártó<sup>1</sup>,  
Diána Korsós<sup>1</sup>, László Harsányi<sup>1</sup>, Gábor Lotz<sup>2</sup>

<sup>1</sup> 1st Department of Surgery, Semmelweis University, Budapest, Hungary

<sup>2</sup> 2nd Department of Pathology, Semmelweis University, Budapest, Hungary

**Background:** Selective portal vein ligation (sPVL) results in ipsilateral atrophy and hypertrophy of contralateral liver segments. The aim of the present study was to examine the morphological and functional changes during this process.

The aim of the study was to evaluate the fistula healing after application of ADSCs in perifistular tissue.

**Material and Methods:** Male Wistar rats (n=84) underwent sPVL. The portal venous supply of the 80% of whole parenchyma was ligated. The regeneration rate, the lobular area and the portal pressure was measured. To quantify the mitotic and apoptotic activity Ki-67 and Caspase-3 immunostaining was performed. To measure the functional state of the liver indocyanine-green (ICG) clearance test was performed and the retention (R15) and the plasma disappearance rate (PDR) of the ICG was calculated. The animals were sacrificed 0, 12 hours, 1, 2, 3, 5, 7 days after sPVL.

**Result:** Liver regeneration rate was 266,2% at 7th postoperative days in lobes I-II and 18,8% in lobes III-VII. The mitotic activity reached its maximum 48h after sPVL (20.61±3.56 vs. 142.33±18.86). As a result of the upregulated cell division the lobular area significantly increased by the 7th postoperative day (300502,3789±15402,38um<sup>2</sup> vs. 714514,2965±30490,89um<sup>2</sup>). According to the R15 and PDR scores the liver function temporarily impaired after the sPVL, and it increased parallel with the regeneration of the non-ligated lobes reaching the physiological level by 7th postoperative day.

**Conclusion:** According to our data it can be suggested that sPVL induced liver regeneration caused not only weight increase, but functional recovery as well.

YI 05

**Truncus Arteriosus Repair: Cohort Analysis of 24 Patients for Mortality and Reoperations**

Imene Achek, Kamran Ahmadov, Mustafa Cikirikcioglu,  
Jalal Jolou, Patrick Myers, Afksendiyos Kalangos

University of Geneva, Geneva, Switzerland

**Background:** Truncus arteriosus (TA) represents 1% to 3% of congenital heart malformations and carries high mortality if untreated. Surgical correction requires

the construction of the right ventricular outflow tract, reconstruction of the aorta, closure of the ventricular septal defect and repair of the truncal valve (TV) if needed. The aim of this cohort is to analyse the results of our TA patients who underwent surgical correction during 10 years.

**Material and Methods:** Between 2001-2010, 24 patients with the diagnosis of TA were operated. The average age was 19,25 months (range 1month-9.3years). 13patients (54%) presented associated anomalies. For the reconstruction of the RVOT, different conduits have been used: 19xenografts and 4aortic cryopreserved homografts. 1patient had direct connection. Regarding to TV, 7patients presented severe insufficiency: six had a valvuloplasty, one had an aortic homograft during initial correction.

**Result:** Mortality rate was estimated at 4%(1patient). The cause of the death was pulmonary hypertensive crisis after 1day of the complete correction. The freedom from reoperation was 95%, 78%, 78% and 62% at 2, 5, 7 and 10 years respectively. The freedom from reoperation according to reconstruction of RVOT was 95%, 90%, 90% and 70% at 2, 5, 7, 10 years respectively; with xenograft was 90% and with homograft was 75% at 5 years. Four patients underwent reoperation on the TV.

**Conclusion:** Surgical treatment of TA before the development of irreversible pulmonary hypertension presents good life expectancy in long term. The associated malformation of TV and use of valved conduits constitutes the major causes for reoperation.

## YI 06

### Adapting Tumor Interstitial Fluid Pressure for Intraperitoneal Chemotherapy

Félix Gremopez, Andrei Izmer, Frank Vanhaecke, Christian Vanhove, Piet Pattyn, Wim Ceelen

Ghent University Hospital, Ghent, Belgium

**Background:** The raised interstitial fluid pressure (IFP) in tumors hinders the penetration and uptake of cytotoxic drugs. Reduction of the IFP by anti-VEGF and/or anti-PDGFR therapy enhances delivery of systemic chemotherapy. It is unknown, whether these effects could also enhance intraperitoneal chemotherapy (IPC).

**Material and Methods:** Bilateral subperitoneal injections of  $1.5 \times 10^6$  HT-29 cells in 40  $\mu$ l Matrigel were administered to Foxn1nu nude athymic mice (Harlan). On day 10 to 15, mice were administered either placebo, Imatinib (50 mg/kg daily), Pazopanib (100 mg/kg daily), or Bevacizumab (5 mg/kg 2x). At day 15, each mouse underwent an open IPC procedure with 150 mg/m<sup>2</sup> Oxaliplatin for 60' at 37°C. Intraoperative measurements of tumor IFP (Samba Preclin®) and pO<sub>2</sub> (Oxylite®) were performed. Tumor, blood, and perfusate samples were taken postoperatively. A second experiment made use of DCE-MRI on day 14, 19 and 26 to assess tumor growth and microvascular permeability.

**Result:** Tumor IFP was significantly lower in the

Bevacizumab and Pazopanib groups. Interestingly, the hypoxic fraction (pO<sub>2</sub><5 mmHg) was also significantly increased in the Bevacizumab group. Tumor size and blood Pt concentration did not differ. Tumor growth was delayed mainly in the Bevacizumab and Pazopanib groups.

**Conclusion:** Treatment with Bevacizumab and Pazopanib leads to a markedly reduced IFP in colorectal xenograft tumors. This effect may allow for deeper penetration and higher concentration of Oxaliplatin in peritoneal tumors. The increased tumor growth delay confirms the potential of possible combination therapy. IHC, Pt (LA-ICP-MS) and DCE-MRI (Mistar) analysis are currently ongoing.

## Best Clinical Research

### BC 01

### Comparison of Alvarado-Score and Clinical Judgement in the Diagnosis of Acute Appendicitis – Prospective, Randomized Trial

Mán E., Varga Á., Lázár Gy.

University of Szeged, Department of Surgery, Szeged, Hungary

**Background:** The Alvarado-score is a clinical scoring system used in the diagnosis of suspected appendicitis. It contains 8 clinical signs and two laboratory values with a total 10 points.

**Material and Methods:** In our prospective, randomized trial we involved patients attending at our outpatient department with suspected appendicitis. They were divided into two groups. (A and B). The management of patients was based on the Alvarado-score in group A and on decision of the chief surgeon in group B. We compared the correlation of diagnosis and pathological finding in each group, and we tried to refine the score with regression analysis by weighting each criteria. We used SPSS 20 program for statistical analysis.

**Result:** A number of 233 patients was included in our study (group A n=95, group B n=138). The number of negative appendectomies was 8 in group A and 5 in group B (p=0.084). The specificity of the score was 88,91% vs. 94,8% of the clinical judgement. The score-pathological finding rank correlation was 0.523, the ROC analysis value was 0.837. We also specified the score with regression analysis, with the calculated new score system the ROC analysis result was better AUC=0.849. When further refining the score by opting in the result of US investigation the AUC became 0.893.

**Conclusion:** The Alvarado-score is a reliable tool in the diagnosis of acute appendicitis in the emergency room, but still traditional clinical judgement is better. We found the new score made by logistic regression more reliable

## BC 02

**Impact of Sarcopenia on Outcomes Following Resection for Perihilar Cholangiocarcinoma***Rjs Coelen, Jk Wiggers, Cy Nio, Mg Besselink, Orc Busch, Tm Van Gulik*

Academic Medical Center, Amsterdam, Netherlands

**Background:** Loss of skeletal muscle mass, sarcopenia, reflects the frailty status of patients and has recently been associated with worse outcomes following surgery for malignancies of gastrointestinal origin. The aim of this study was to investigate the impact of sarcopenia on morbidity and survival following resection for perihilar cholangiocarcinoma (pHCCA).

**Material and Methods:** Data were retrospectively collected from a prospectively maintained database containing all patients in our institute undergoing resection for suspected pHCCA between 1992 and 2013. Sarcopenia was assessed by measuring total skeletal muscle mass at the level of the third lumbar vertebra on preoperative computed tomography images. Internationally accepted cut-off values (52.4 cm<sup>2</sup>/m<sup>2</sup> for men, 38.5 cm<sup>2</sup>/m<sup>2</sup> for women) were used to assign patients to either a sarcopenic or non-sarcopenic group. Clinicopathological data, postoperative morbidity (Clavien-Dindo grade 3 or higher) and long-term survival were analysed.

**Result:** Sarcopenia was present in 56 (65%) of 86 patients and was significantly associated with male sex and lower body mass index. Overall postoperative complication rate (Clavien-Dindo  $\geq$  3) was similar in both groups (55% vs 53%,  $p=0.86$ ) and no significant difference was seen in in-hospital mortality. On univariate analysis sarcopenia was associated with overall survival ( $p=0.04$ , log rank test). When corrected for resection margin- and lymph node status, the prognostic effect of sarcopenia on overall survival did not reach significance ( $p=0.07$ ).

**Conclusion:** The prevalence of sarcopenia in pHCCA is high. A trend in prognostic effect of sarcopenia on overall survival following resection was noted.

## BC 03

**CXCR4/CXCL12 and CCL2 Is a Promising Predictive Marker for Survival after Hepatic Resection for Colorectal Liver Metastases***Hiroyuki Yoshidome<sup>1</sup>, Nozomu Sakai<sup>2</sup>, Hirohiko Kohno<sup>2</sup>, Hiroaki Shimizu<sup>2</sup>, Masayuki Ohtsuka<sup>2</sup>, Hideyuki Yoshitomi<sup>2</sup>, Masaru Miyazaki<sup>2</sup>*<sup>1</sup> Saitama red Cross Hospital, Saitama, Japan<sup>2</sup> Chiba University, Chiba, Japan

**Background:** Liver metastases often occur in patients with colorectal cancer. The chemokine network such as

interaction between CXCR4 and CXCL12 and CCL2 plays a role in the induction of organ-specific metastases. The present study examined CXCR4/CXCL12 axis and CCL2 in colorectal liver metastases (CRLM).

**Material and Methods:** We identified 92 CRLM patients whose tumors were evaluated by CXCR4, CXCL12 and CCL2 immunohistochemistry. Immunoreactivity for CXCR4 was semi-quantified by assessing staining intensity. CXCL12/CCL2 immunoreactivity was semi-quantified by assessing the staining intensity and ratios (%) of positively stained cells. Clinicopathological data of these patients were examined. Overall survival rates were evaluated by the Kaplan-Meier method. The expression profile in the colorectal cancer cell line was determined by fluorescence microscopy.

**Result:** The cytoplasmic CXCR4 expression was greater in 36 patients than that indicated by CXCR4 staining intensity of hepatocytes. The CXCL12 was also expressed in hepatocytes surrounding the tumors at high and low levels in 68 (74%) and 24 (26%). High levels of nuclear CXCR4 expression were seen in 23 patients, correlated with CXCL12 expression in hepatocytes. The nuclear CXCR4 expression in the cancer cell line increased after exposure to CXCL12. CCL2 expression was correlated with microvessel density. Higher levels of nuclear CXCR4, the increased CXCL12 expression in hepatocytes, and lower CCL2 expression were significantly better prognostic factors for overall and hepatic disease-free survival.

**Conclusion:** The CXCR4 expression in CRLM together with the upregulation of CXCL12 in hepatocytes may help to predict the clinical outcomes of patients with CRLM after hepatic resection.

## BC 04

**Retinoic Acid Receptor-Related Receptor Alpha (RORalpha) Is a Prognostic Marker for Hepatocellular Carcinoma***Minqiang Lu, Rongdang Fu*

Hepatic Surgery, the Third Affiliated Hospital of Sun Yat-sen University, Transplantation Research Institute of Sun Yat-sen University, Guangzhou 510630, China

**Background:** RORalpha is a tumor suppressor in some solid cancers. However, the role of RORalpha in HCC carcinogenesis has not been fully elucidated. This study investigated the expression of RORalpha in HCC and evaluated its relationship with clinical parameters and prognosis in HCC patients.

**Material and Methods:** qRT-PCR and Western blots were performed to detect RORalpha expression levels in 20 paired HCC and corresponding adjacent non-cancerous tissues. Immunohistochemistry was performed on 100 archived paraffin-embedded HCC samples. Statistical analyses evaluated the correlations between RORalpha expression and clinicopathological features.

**Result:** qRT-PCR and Western blots showed that



RORalpha mRNA and protein expression were down-regulated in tumors compared to the adjacent non-cancerous tissues. Immunohistochemistry revealed that decreased RORalpha expression was present in 65% of HCC patients. Correlation analyses showed that RORalpha expression was correlated with AFP ( $p=0.005$ ), pathology grade ( $p<0.001$ ), tumor recurrence ( $p=0.008$ ), and vascular invasion ( $p<0.001$ ). Kaplan-Meier analysis revealed that patients with low RORalpha expression levels had shorter overall and disease-free survival than patients with high expression ( $p<0.001$  and  $p=0.002$ , respectively). Multivariate regression analysis indicated that RORalpha was an independent predictor for overall survival (HR 0.362; 95%CI 0.168-0.780;  $p=0.001$ ) and disease-free survival (HR 0.391; 95%CI 0.207-0.735;  $p=0.004$ ).

**Conclusion:** RORalpha mRNA and protein expression were significantly down-regulated in HCC tissues. Down-regulated RORalpha expression was associated with poorer prognosis in HCC patients. RORalpha may be a new potential prognostic marker for HCC patients.

#### BC 05

### A Matched Cohort Analysis of 136 Pancreatic Anaplastic Carcinomas and 695 Pancreatic Adenocarcinomas: A 13-Year North American Experience Using the National Cancer Database

Alessandro Panizza<sup>1</sup>, Patrick W. Hosokawa<sup>1</sup>, Richard D. Schulick<sup>2</sup>, Justin S. Merkow<sup>1</sup>, Csaba Gajdos<sup>1</sup>

<sup>1</sup> University of Colorado Denver, Denver, United States

<sup>2</sup> University of Colorado, Anschutz Medical Campus, Denver, United States

**Background:** Anaplastic pancreatic carcinoma (APC) is a rare and poorly characterized disease. We sought to compare the clinical characteristics and outcome of APC to pancreatic adenocarcinoma (PAC).

**Material and Methods:** The American National Cancer Database (NCDB) was queried for patients diagnosed with resected APC and PAC using diagnostic and surgical codes. APC cases were matched 1:5 with PAC's based on age, gender, race, pathologic tumor stage, margin status, use of adjuvant therapy and Charlson co-morbidity score.

**Result:** One-hundred and sixty-four and 48420 patients were diagnosed with APC and PAC between 1998-2011. Following 1:5 matching, 139 APC and 695 PAC were analyzed. Mean age at diagnosis was 65 years for both groups. The median tumor size was 50 mm (35-70) vs. 34 mm (25-65;  $p<0.001$ ), the median number of nodes examined was 10 (5-17) vs. 11 (7-18;  $p<0.001$ ), and the median number of positive nodes was 0 (0-3) vs. 1 (0-3;  $p=0.015$ ) for APC and PAC. The median length of hospital stay was 8 days (6-12) vs. 10 days (7-14;  $p=0.008$ ). Adjuvant chemotherapy and radiotherapy were administered in 40% and 27% of the cases in both

groups. The median overall survival from diagnosis was 9.56 (3.22-26.71) vs. 13.14 (6.41-25.46) months ( $p=0.076$ ).

**Conclusion:** While APC is thought to have a more aggressive biology, in our matched analysis, patients with resected APC have larger tumors, less frequent nodal involvement, and similar overall survival compared to PAC.

#### BC 06

### Outpatient Breast Surgery Is Safe: Recent Experience with 10836 Patients at M. D. Anderson Cancer Center

Farzin Goravanchi, Darryl Rigby, Elizabeth Rebello, Georgia Lange, Alicia Kowalski, Spencer Kee, Anthony Lucci, Abigail Caudle, Donald Baumann, Katy French, Henry Kuerer

MD Anderson Cancer Center, Houston, United States

**Background:** Many centers in America have moved toward performing breast and reconstructive surgery as an outpatient (OP) or overnight. This practice is based on patient preference to recover at home, better anesthetic techniques, and increasingly less morbid breast surgery. We present our experience at MD Anderson Cancer Center.

**Material and Methods:** We retrospectively analyzed data for all breast surgeries from our Automated Anesthesia Information Systems from 5/2006 to 12/2013. Patients were either discharged home on the day of surgery (OP), or on the following morning after spending the night at the observation unit (OBU). Discharge criteria was based on assessment of vital signs, pain, nausea, ability to eat, ambulate, urine output, and surgical dressing. Patients who did not meet discharge criteria the morning after surgery were transferred to the hospital ward (SDA). Anesthetic and surgical complications during the first 3 days post operatively were collected. Patients either received general anesthesia, paravertebral block (PVB) as a regional anesthesia technique along with general anesthesia, or PVB along with sedation.

**Result:** The total number of the surgeries is 10836

Surgery Type	OP	OBU	TOATAL
Total Mastectomy	267 (2.46%)	1642 (15.15%)	1909 (9.82%)
Total Mastectomy with reconstruction	204 (1.88%)	860 (7.66%)	1064 (9.82%)
Axillary or sentinel node dissection	698 (6.44%)	410 (3.78%)	1108 (10.23%)
Segmental with or without axillary	3044 (28.09%)	678 (6.26%)	3722 (34.35%)
Segmental with axillary surgery and reconstruction	334 (3.08%)	169 (1.56%)	503 (4.64%)

Implant placement or exchange	1292 (11.92%)	302 (2.79%)	1594 (14.71%)
Mastopexy	725 (6.69%)	211 (1.95%)	936 (8.64%)

PVB anesthesia was used on 2,560 patients. 33 patients were admitted to the main hospital for further care or social reasons, 33 patients required hematoma evacuations, and 30 patients required blood transfusions.

**Conclusion:** While APC is thought to have a more aggressive biology, in our matched analysis, patients with resected APC have larger tumors, less frequent nodal involvement, and similar overall survival compared to PAC.

## B. Braun

### BB 01

#### Effect Of Methane on Gastrointestinal Motility in Ischemia-Reperfusion

Marietta Zita Poles<sup>1</sup>, András Mészáros<sup>2</sup>, Nikolett Bódi<sup>3</sup>, Mária Bagyánszki<sup>3</sup>, Gabriella Varga<sup>2</sup>, Éva Fekete<sup>3</sup>, József Kaszaki<sup>2</sup>, Mihály Boros<sup>2</sup>

<sup>1</sup> Institute of Surgical Research, School of Medicine, and Department of Physiology, Anatomy and Neuroscience, Faculty of Sciences and Informatics; University of Szeged, Szeged, Hungary

<sup>2</sup> Institute of Surgical Research, School of Medicine; University of Szeged, Szeged, Hungary

<sup>3</sup> Department of Physiology, Anatomy and Neuroscience, Faculty of Sciences and Informatics; University of Szeged, Szeged, Hungary

**Background:** Intraabdominal surgery is commonly accompanied by gastrointestinal motility changes. Although the mechanism is multifactorial, inflammation of the intestinal muscularis is key event. Our aim was to investigate the functional consequences of inhaled methane on intestinal motility changes in a rat model of antigen-independent inflammation.

**Material and Methods:** The effects of a 50-min intestinal ischemia followed by 120-min reperfusion were monitored in anesthetized rats. Control, IR and IR+methane inhalation groups (normoxic artificial air with 2.2% methane, in the last 5 min of ischemia and 10 min during reperfusion) were used (n=8 each). Intestinal myoelectrical activity was monitored and the integral of intestine-specific dominant frequency ranges was analysed. At the end of reperfusion, quantitative histochemical (nNOS and eNOS immunohistochemistry) and biochemical (xanthine oxidoreductase (XOR), nitrite/nitrate and nitrotyrosine) analyses were performed.

**Result:** After IR the intestinal myoelectrical activity decreased, while the levels of nitrite/nitrate, nitrotyrosine, and XOR were increased significantly. The number of total myenteric neurons did not change but the density of nitrergic

myenteric neurons was significantly elevated. Normoxic methane inhalation increased the post-ischemic intestinal motility significantly, neutralized the IR-induced effects on nitrergic neuronal density changes, and reduced the XOR activity and the signs of reactive nitrogen species generation.

**Conclusion:** Normoxic methane inhalation prevents motility dysfunction through resetting of nitrergic myenteric function and inhibition of IR-induced oxido-nitrosative stress.

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### BB 02

#### Experimental Model of Gallstone Cholecystitis Available for Mininvasive Surgical Procedures

Ondrej Ryska<sup>1</sup>, Zuzana Serclova<sup>1</sup>, Jan Martinek<sup>2</sup>, Miroslav Ryska<sup>1</sup>, Radek Dolezel<sup>1</sup>, Jaroslav Kalvach<sup>1</sup>, Bohus Bunganic<sup>3</sup>, Stefan Juhas<sup>4</sup>

<sup>1</sup> Department of Surgery, 2. Faculty of Medicine, Charles University and Central Military Hospital, Prague, Czech Republic

<sup>2</sup> Hepatogastroenterology Department, Institute for Clinical and Experimental Medicine, Prague, Czech Republic

<sup>3</sup> Department of Internal Medicine of the 1st Medical Faculty and Central Military Hospital, Prague, Czech Republic

<sup>4</sup> Institute of Animal Physiology and Genetics, Academy of Sciences, Prague, Czech Republic

**Background:** Natural orifice transluminal endoscopic surgery (NOTES) and other miniinvasive techniques are under the experimental investigation. Cholecystectomy is usually the subject of evaluation but studies using healthy animals are lacking for the clinical relevance.

The aim of the experimental study was to create and evaluate surgical model of gallstone cholecystitis in large animal.

**Material and Methods:** Laparoscopy was performed in 11 pigs weighing 40,3 ± 10,0 kg. Bile from the bladder was aspirated and 4 gallstones obtained by human cholecystectomy were inserted via cholecystotomy. Laparoscopic (3-ports) cholecystectomy was performed after 1 month. This group was compared to 11 cholecystectomized pigs without lithiasis.

**Result:** Model procedure time was 42 (35-75) minutes. White blood cells (WBC) count, CRP and IL-6 increased during 3 days after surgery and decreased to normal after 7 days. Gallstone cholecystitis was confirmed by ultrasound and histology 4 weeks after intervention. Laparoscopic cholecystectomy in gallstone model took longer- 63 (42-91) minutes vs. 46 (31-62) minutes (p=0,018). The perioperative gallstone perforation was less frequent in healthy pigs 1/10 vs. 8/11 (RR: 7,27; CI95%: 1,09-48,3; p=0,04) as well as

postoperative complications rate 0/10 vs. 2/11 (RR: 4,58; CI95%: 0,25-85,3; p=0,31).

**Conclusion:** Simple and reproducible surgical model of gallstone cholecystitis was created as a reliable tool for more accurate evaluation of NOTES. No elevation of inflammatory markers was observed 4 weeks after intervention. The laparoscopic cholecystectomy was technically more difficult in cholecystitis model than in healthy animals. Supported by NT12250

### BB 03

#### Unique Porcine Model of Fatal Side Effects of Nanodrugs/Nanocarriers

*Domokos Csukás<sup>1</sup>, Rudolf Urbanics<sup>2</sup>, János Szebeni<sup>3</sup>, Andrea Ferencz<sup>1</sup>, Györgyi Szabó<sup>1</sup>, József Sándor<sup>1</sup>, Leila Seres<sup>1</sup>, Daniella Fehér<sup>1</sup>, György Weber<sup>1</sup>*

<sup>1</sup> Department of Surgical Research and Techniques, Faculty of Medicine, Semmelweis University, Budapest, Hungary

<sup>2</sup> Seroscience Ltd., Budapest, Hungary

<sup>3</sup> Nanomedicine Research and Education Center, Semmelweis University, Budapest, Hungary

**Background:** Many of commonly used, state-of-art drugs are built up of complex molecular structures of nano-range. Their specific hypersensitive reaction is called complement activation-related pseudoallergy (CARPA). Symptoms appear abruptly, and may lead to lethal consequences in some patients.

Beside the complement activation it is highly probable that in the background of this reaction the vasoactive substance releasing pulmonary intravascular macrophages (PIM cells) play significant role.

Our aim is to describe the porcine CARPA reaction model.

**Material and Methods:** Experiments were performed on anesthetized domestic pigs (n=15). In the testing procedure Doxil (liposomal doxorubicin), some other nanocarriers, and Zymosan (direct complement system activator) were used. A Swan-Ganz catheter was introduced into the pulmonary artery for pressure measurement (PAP). The ECG, heart rate, and systemic arterial pressure were also continuously monitored. Blood cell count analyses and tromboxane-B2 (TxB2) tests were performed.

**Result:** According to our results PAP raised immediately to a multiple level after i.v. application of certain nanocarriers. Tachycardia and decrease of peripheral blood pressure were observed too. Moreover, hyperaemic skin changes (flush) or transitional apnoe appeared. Blood tests revealed both leuko-, and thrombocytopenia, and increased level of TxB2.

**Conclusion:** Our porcine model showed high sensitivity and specificity about the CARPA reactions. The typical appearance of the acute symptoms is similar to the human medical observations.

Further experiments are necessary to expose the cellular background, especially the function of PIM cells.

This research was supported by the CosmoPHOS-Nano EU Project: 310337.

### BB 04

#### Pulsed Water Jet Dissection and Tissue Selectivity in Swine Model

*Toru Nakano<sup>1</sup>, Masato Yamada<sup>1</sup>, Chiaki Sato<sup>1</sup>, Chikashi Nakanishi<sup>2</sup>, Naoki Kawagishi<sup>2</sup>, Atsuhiko Nakagawa<sup>2</sup>, Teiji Tominaga<sup>2</sup>, Noriaki Ohuchi<sup>2</sup>*

<sup>1</sup> Division of Advanced Surgical Science and Technology, Tohoku University Graduate School of Medicine, Sendai, Japan

<sup>2</sup> Department of Neurosurgery, Tohoku University Graduate School of Medicine, Sendai, Japan

**Background:** Pulsed water jet dissection is an emerging surgical method for dissection with preservation of vessels and ducts. The purpose of present study is to elucidate the dissection profile of the novel piezo actuator-driven pulsed water jet and to clarify the mechanism of dissection with tissue selectivity.

**Material and Methods:** This system comprised a pump chamber driven by a piezo actuator, stainless steel tube, and nozzle. The peak pressure of pulsed water jet was measured through a sensing hole using a pressure sensor. The physical properties of swine liver were measured using table-top universal testing instruments. Pulsed water jet was irradiated in swine liver on the moving table and dissection depth was measured by light microscopy and evaluated histologically.

**Result:** The peak pressure of the pulsed water jet was positively correlated with the input voltage (R2=0.9982, P<0.0001) and also reflected in the dissection depth. The dissection depth was negatively correlated with the breaking strength (R2=0.6694, P<0.0001). Histological staining revealed that the liver parenchyma was dissected while preserving the hepatic veins and Glisson's sheaths in contrast to the electrocautery or ultrasonic instrument.

**Conclusion:** Dissection depth is dependent on input voltage, moving velocity, and physical property of organ to be dissected. The breaking strength of the liver parenchyma was significantly lower than that of Glisson's sheaths and the hepatic veins. The device has possibility of assuring liver resection with tissue selectivity, preservation of hepatic veins, and Glisson's sheaths because of their different physical properties.

## BB 05

**Clinical Value of 4D Speckle Tracking Ultrasound to Determine Biomechanical Properties of the Infrarenal Aorta and Rupture Risk of the Infrarenal Aortic Aneurysm**

Wojciech Derwich<sup>1</sup>, Andreas Wittek<sup>2</sup>, Luara Schoenewolf<sup>2</sup>, Christopher Blase<sup>2</sup>, Karen Nelson<sup>1</sup>, Karin Pfister<sup>3</sup>, Jürgen Bereiter-Hahn<sup>2</sup>, Thomas Schmitz-Rixen<sup>1</sup>

<sup>1</sup> Johann Wolfgang Goethe University, Department of Vascular and Endovascular Surgery, Theodor-Stern-Kai 7, 60590 Frankfurt am Main, Germany, Frankfurt/Main, Germany

<sup>2</sup> Johann Wolfgang Goethe University, Institute for Cell Biology and Neuroscience, Max-von-Laue-Straße 13, 60438 Frankfurt am Main, Germany, Frankfurt/Main, Germany

<sup>3</sup> Department of General, Visceral, Vascular and Endovascular Surgery, University Hospital Regensburg, Franz Josef Strauß Allee 11, 93053 Regensburg, Regensburg, Germany

**Background:** Defining the biomechanical properties of the infrarenal aorta plays a crucial role in stratifying of aortic aneurysm rupture risk. The aim of this study was to evaluate the bedside applicability of 4D speckle tracking ultrasound in analysing biomechanical properties of the aorta, in view of stratifying infrarenal aortic aneurysm rupture risk.

**Material and Methods:** 65 persons were examined with a commercial 4D speckle tracking ultrasound system and analysed in three groups: patients with infrarenal aortic aneurysm (Group I, n=19), with normal aortic diameter younger than 60 years (Group II, n = 21) and with normal aortic diameter older than 60 years (Group III, n = 25). Based on the 4D speckle tracking derived finite element model heterogeneity and dyssynchrony of infrarenal aorta was evaluated.

**Result:** The analysis of biomechanical properties displayed increasing heterogeneity and dyssynchrony of circumferential strain with increasing patient age ( $p < 0.05$ ). The local peak strain was higher in Group II ( $0.26 \pm 0.17$ ) compared to Groups I ( $0.16 \pm 0.1$ ) and III ( $0.16 \pm 0.07$ ) ( $p < 0.05$ ), with no significant difference between Groups I and III. Spatial dyssynchrony described by the systolic dyssynchrony index significantly differed between the young (Group II,  $0.13 \pm 0.1$ ) and old, regardless of aortic diameter.

**Conclusion:** 4D ultrasound speckle tracking enables description of global biomechanical properties of the infrarenal aorta and advances the possibility to evaluate individual aortic aneurysm rupture risk by analysis of global (circumferential) strain amplitude, the spatial heterogeneity index and the ratio of local peak and global mean strain.

## BB 06

**HyperEye Medical System for Detecting Indocyanine Green Fluorescence Positive Sentinel Nodes in the Gastric Cancer Surgery**

Masashi Yoshida<sup>1</sup>, Akihiro Okada<sup>1</sup>, Junko Kuroda<sup>1</sup>, Tetsuya Nakamura<sup>2</sup>, Junichi Saito<sup>2</sup>, Takayuki Sato<sup>3</sup>, Yuko Kitagawa<sup>4</sup>, Masaki Kitajima<sup>1</sup>

<sup>1</sup> Department of Surgery, Center for Digestive Diseases, International University of Health and Welfare Mita Hospital, Tokyo, Japan

<sup>2</sup> Division of Surgery, Inagi Municipal Hospital, Tokyo, Japan

<sup>3</sup> Department of Physiology, Faculty of Medicine, Kochi University, Kochi, Japan

<sup>4</sup> Department of Surgery, Keio University School of Medicine, Tokyo, Japan

**Background:** The indocyanine green (ICG) fluorescence-guided method is reported to be sensitive. However, the ordinal fluorescence cameras have gray scale imaging and require a dark room. We have contributed to development of HyperEye Medical System (HEMS) which can simultaneously detect color and near-infrared rays and can be used under room light.

**Material and Methods:** The patients underwent gastrectomy for clinical T1a (mucosa)-T2 (muscularis propria) and clinical N0 were enrolled in the present study. As a preliminary trial, one case each of the ICG 25 and 100 micro g/mL, injected on the day before operation and intraoperative injection, was examined. Then, 34 cases injected 50 micro g/mL ICG on the day before operation were examined.

**Result:** The ICG fluorescence of the patient injected 100 micro g/mL was too intense and that of the patient injected 25 micro g/mL was too faint. Sentinel lymph nodes were detected in all of 34 cases injected 50 micro g/mL, the day before operation and number of sentinel lymph nodes per patient was  $4.67 \pm 2.40$ . Metastasis was observed in 3 cases, and all of them had the metastasis positive sentinel lymph nodes.

**Conclusion:** The present study shows that HEMS-guided abdominal surgery is feasible under room light. It is suggested that submucosal injection of 0.5 mL x 4 of 50 micro g/mL ICG on the day before operation is the adequate administration for detecting sentinel nodes using HEMS in the gastric cancer surgery. It is necessary to accumulate more cases to prove it.

## Oral Presentations

### OP 01

#### Inhibition of ALK 4/5 Inhibits Cancer Cachexia Associated Muscle Wasting

S. Levolger, M.G. Van Vledder, S.A. Huisman, R.W.F. De Bruin, J.N.M. Ijzermans

Erasmus MC, Department of Surgery, Rotterdam, Netherlands

**Background:** Cancer cachexia is characterized by progressive muscle wasting and associated with poor survival, increased toxicity of chemo- and radiotherapy and impaired quality of life. Myostatin plays an important role in the development of cachexia as activin receptor IIB/activin-like kinase 4/5 (ALK4/5) heterodimer activation by myostatin results in catabolic muscle degradation. SB431542 is a potent inhibitor of ALK4/5. We assessed its potential for treatment of cancer cachexia.

**Material and Methods:** 24 CD2F1 mice were inoculated subcutaneously with  $0.5 \times 10^6$  colon26 murine adenocarcinoma cells to induce cachexia, and allocated randomly into four groups: healthy controls, tumor-bearing controls, tumor-bearing vehicle (DMSO) treated, and tumor-bearing SB431542 treated. Weight was recorded daily. Grip strength was determined weekly. Starting from day 5, allocated mice received 10 mg/kg SB431542, or vehicle, intraperitoneally until sacrifice on day 20.

**Result:** All tumor-bearing mice had a reduction in body weight compared to controls ( $21.1 \pm 2.1$ g versus  $30.0 \pm 1.3$ g;  $p < 0.0001$ ). No differences in body weight were found between tumor-bearing groups. Despite weight loss, SB431542 treated animals had no reduction in grip strength. DMSO only treated animals showed a reduction in grip strength. Mean weight of the tibialis anterior muscle was preserved in SB431542 treated animals versus tumor-bearing vehicle treated animals (53.8mg vs. 40.5mg;  $p = 0.0171$ ) and tumor-bearing untreated animals (53.8mg vs. 34.7mg;  $p = 0.0002$ ).

**Conclusion:** Inhibition of ALK4/5 by SB431542 inhibits cancer cachexia associated muscle wasting and loss of muscle force in experimental cancer cachexia.

### OP 02

#### Proteomics Identified Biomarkers of Breast Chemotherapy Resistance

Tasadooq Hussain<sup>1</sup>, Lucy Scaife<sup>1</sup>, Victoria Hodgkinson<sup>1</sup>, Vijay Agarwal<sup>1</sup>, Peter J Kneeshaw<sup>2</sup>, Penelope Mcmanus<sup>2</sup>, Tapan Mahapatra<sup>2</sup>, Professor Michael Lind<sup>2</sup>, Phil Drew<sup>1</sup>, Lynn Cawkwell<sup>1</sup>

<sup>1</sup> University of Hull-Hull York Medical School, Hull, United Kingdom

<sup>2</sup> Castle Hill Hospital Hull and East Yorkshire Hospitals NHS Trust, Hull, United Kingdom

**Background:** Neoadjuvant chemotherapy is a standard treatment for locally advanced breast cancer however chemoresistance can be a major obstacle in ER+ cancers. Using comparative proteomic approaches (antibody microarray/AbMA and 2D-PAGE with MALDI-TOF/TOF MS) we aim to investigate a pilot series of breast cancer samples.

**Material and Methods:** Samples from chemoresistant and chemosensitive breast cancers were selected following anthracycline-taxane chemotherapy and 4 experiments were performed using ductal ER+ tumours. Differential protein expression was compared between chemoresistant and chemosensitive samples using the Panorama XPRESS Profiler725 AbMA kit. The combined data from 9 AbMA assays and 3 2D-PAGE/MS experiments was then analysed using Ingenuity Pathway Analysis (IPA; Ingenuity Systems). A pilot series of archival samples was used for clinical validation of putative predictive biomarkers.

**Result:** In the combined dataset (12 experiments from 2 proteomic platforms), 8 DEPs were seen in at least 3 experiments. These were 14-3-3 theta, 14-3-3 epsilon, 14-3-3 gamma, Bcl-xl, Bid, Phosphokinase B, Vimentin and FAK. 121 DEPs from the combined data were analysed using IPA; 12 DEPs were mapped onto the PI3K/AKT pathway. Five proteins were confirmed on Western blotting and four proteins (AKT1, FAK, 14-3-3 theta/tau and tBID) were validated using a pilot series of breast core biopsy samples on Immuno-histochemical studies.

**Conclusion:** We propose a potential role for Akt-1, FAKY397, 14-3-3 theta/tau and tBID as predictive biomarkers of neoadjuvant chemotherapy resistance in breast cancer. Further validation in a larger sample series is now required.

## OP 03

**Circulating and Disseminated Tumor Cells in Non-Metastatic Breast Cancer**

Anthony Lucci, Carolyn Hall, Henry Kuerer, Amber Anderson, Mandar Karhade, Barbara Laubacher, Savitri Krishnamurthy

University of Texas MD Anderson Cancer Center, Houston, United States

**Background:** We tested the hypothesis that presence of microscopic disease in both blood and bone marrow predicts outcome in non-metastatic breast cancer (BC).

**Material and Methods:** We prospectively collected data on circulating (blood, CTC) and disseminated (bone marrow, DTC) tumor cells at the time of surgery in 353 stage I-III BC patients. We evaluated patient outcomes and correlated findings of microscopic disease with standard prognostic indicators. We also assessed HER2 status using FISH between primary tumor and CTC and /or DTC in a select number of patients using a microfluidic method.

**Result:** At least one CTC was identified in 25% of patients, 32% had DTCs, and 7% had both CTCs and DTCs. Median follow-up time was 50 months. Univariate analysis showed that any CTC predicted worse progression-free (PFS) ( $p=0.05$ ) and overall survival (OS) ( $p=0.04$ ). The presence of DTCs independently predicted OS ( $p=0.022$ ), but not PFS ( $p=0.494$ ). Patients with one or more CTCs as well as DTCs had only a 76% chance of PFS at two years, and an 86% chance of OS at two years compared to 95% of lymph node positive patients. The overall rate of discordance in HER2 status was 15% between primary tumor and CTCs, and 28% between primary tumor and DTCs.

**Conclusion:** Microscopic disease in the blood and bone marrow predicted early recurrence and decreased OS in non-metastatic BC patients. Also, HER2 discordance between the primary tumor and CTCs or DTCs occurred in a significant number of non-metastatic BC patients.

## OP 04

**The Thrombin Clotting Pathway Is Upregulated in Breast Cancer Stroma**

Hudhaifah Shaker<sup>1</sup>, Nigel J Bundred<sup>1</sup>, Sarah L Nicholson<sup>2</sup>, Harith Albadry<sup>2</sup>, Susan Pritchard<sup>2</sup>, Goran Landberg<sup>3</sup>, Cliona C Kirwan<sup>1</sup>

<sup>1</sup> The University of Manchester, Manchester Academic Health Science Centre, Department of Academic Surgery, University Hospital of South Manchester, Manchester, United Kingdom

<sup>2</sup> Department of Histopathology, University Hospital of South Manchester, Manchester, United Kingdom

<sup>3</sup> Breakthrough Breast Cancer Unit, Paterson Institute for Cancer Research, Manchester, United Kingdom

**Background:** Stromal fibroblasts contribute to breast cancer (BC) progression. The thrombin (extrinsic) clotting pathway is upregulated in cancer and associated with metastasis. Our aim was to determine if stromal expression of thrombin pathway components thrombin and Tissue Factor (TF) and their receptors PAR1 and PAR2 are upregulated in invasive BC and associated with aggressive subtypes.

**Material and Methods:** Stromal expression was determined by immunohistochemistry in two cohorts and correlated with clinicopathological variables. PROSPECTIVE STUDY: Early BC (n=182), ductal carcinoma in-situ (DCIS, n=35) and normal breast tissue (n=93). ARCHIVED TISSUE: BCs (n=84) from 2001/02 study with 69 months median follow up.

**Result:** PROSPECTIVE: TF was increased in DCIS vs normal and further increased in BC vs DCIS ( $p<0.01$ ). Thrombin, PAR1 and PAR2 were increased in cancer and DCIS vs normal ( $p<0.01$ ). In BC, TF and thrombin were increased in HER2 receptor positive (HER2+ve,  $p<0.01$ ) and correlated with increasing proliferation (Ki67 expression,  $p<0.001$ ). TF was increased in oestrogen receptor negative (ER-ve,  $p=0.02$ ) and high grade BC ( $p<0.001$ ). PAR1 and PAR2 correlated with Ki67 and were increased in high grade BC ( $p<0.01$ , all). PAR1 was increased in ER-ve ( $p<0.01$ ) and PAR2 in HER2+ve ( $p<0.01$ ). ARCHIVED: As with prospective study, PAR1 was increased in ER-ve ( $p<0.01$ ) and PAR2 in HER2+ve ( $p<0.01$ ). PAR1 expression correlated with reduced overall ( $p=0.02$ ) and recurrence free ( $p=0.07$ ) survival.

**Conclusion:** Stromal thrombin pathway upregulation is associated with aggressive BC subtypes and reduced survival and provides a novel therapeutic target.

## OP 05

**Successful Treatment of an Inoperable Retroauricular Planocellular Cancer**

Andrea Furka, Eva Pintye, Imre Szabo, Erika Hevesi, Zsolt Adamecz, Zsolt Horvath

University of Debrecen, Institute of Oncology, Department of Radiotherapy, Debrecen, Hungary

**Background:** SSurgery has been considered the first choice of treatment in planocellular carcinoma. However, adjuvant radiotherapy is often required in R1 resection or in lymph node positivity. In order to reduce symptoms inoperable cases are also treated with ionizing radiation, although with palliative purposes.

**Material and Methods:** A 87 year old diabetic, obese female patient was admitted to our department with a T4N1M0 stage planocellular carcinoma in the right retroauricular region for palliative irradiation to reduce ulceration. The tumor was 70x40 mm in diameter with purulent exulceration and inflammatory margins. Conventional 3D conformal radiotherapy was planned to deliver. Daily wound care and necrectomy were also performed with antibiotic prophylaxis for 10 days.

**Result:** The patient had no fever or septic condition. Diabetes was controlled and was stable during treatment period. At 20 Gy dose a significant decrease in symptoms was observed with further graduate improvement during radiotherapy. External beam radiation was terminated at 54 Gy because of painful radiodermatitis in the ipsilateral neck region. At 3 month control a 0.5 cm lesion was still present, which completely healed by 6 month control with some residual scar tissue. Due to patient age and severe comorbidities surgery remained henceforward contraindicated.

**Conclusion:** Palliative irradiation with daily surgical wound care has been considered one of the choices of treatment modalities in advanced cutaneous cancers. Our case demonstrates that palliative irradiation even in purulent condition is safe and may improve the quality of life of patients providing tolerable comfort for elderly patients and their family.

#### OP 06

### Bevacizumab Exacerbates Sinusoidal Obstruction Syndrome (SOS) Development

Azin Jafari, Jörg C. Kalff, Steffen Manekeller

University Hospital Bonn, Bonn, Germany

**Background:** Multimodal treatment approaches has led to an increase of the median survival time of patients with colorectal liver metastases, particularly due to perioperative chemotherapy regimens and biologicals like Bevacizumab (Anti-VEGF). 20-60% of patients treated with Oxaliplatin develop an SOS implying a higher peri- and postoperative morbidity and mortality. Some clinical trials report about a less frequent occurrence of SOS in patients treated with Bevacizumab assuming, that this drug has a preventive effect. So far, there are no experimental data available to support this assumption

**Material and Methods:** Male Sprague-Dawley rats were gavaged with 90mg/kg/KG Monocrotaline, after 12h fasting, to induce SOS. Gr.A received immediately, Gr.B after 24h 0,2µg/kg/BW Anti-rat-VEGF into the tail vein. Gr. C and D received analogous NaCl. After 96h blood and liver tissue samples were taken.

**Result:** After MCT administration 67% of the animals developed an SOS, with additional application of Anti-rat-VEGF 100% developed an SOS. To reveal the pathomechanism, the MMP-9 concentration was measured by ELISA. The production of MMP9 has been described as the first steps in SOS development and is made responsible for the characteristic damage of liver parenchyma. The MMP9 concentration in liver tissue in animals with an SOS was significantly higher than in the control. Additional treatment with Anti-rat-VEGF increased the MMP9 concentration significantly.

**Conclusion:** We conclude, that Anti-VEGF exacerbates SOS by MMP9 induction. The application of Oxaliplatin and Bevacizumab should be therefore carefully considered, especially if liver parenchyma damage is apparent.

#### OP 07

### The Value of Procalcitonin as an Inflammatory Marker in Colorectal Cancer

N. S. Salemis<sup>1</sup>, D. Keramidaris<sup>1</sup>, N. Koronakis<sup>1</sup>, G. Karavitis<sup>1</sup>, G. Zografos<sup>2</sup>, A. Manouras<sup>2</sup>, K. Toutouzias<sup>2</sup>, E. Lagoudianakis<sup>1</sup>

<sup>1</sup> 2nd Department of Surgery, Army General Hospital, Athens, Greece

<sup>2</sup> 1st Department of Propaedeutic Surgery, Hippocrateion Hospital, Athens Medical School, University of Athens, Athens, Greece

**Background:** Procalcitonin (PCT) is a sensitive inflammatory marker and is most valuable in the differentiation of bacterial infection in severely ill patients. The aim of this study is to evaluate the value of PCT in documenting the inflammatory status of colorectal cancer patients in relation to established markers.

**Material and Methods:** 32 men and 22 women with mean age 71±11.02 years old were prospectively enrolled in this study. The preoperative value of PCT in the serum was determined by immunofluorescence assay which measures the procalcitonin within 18 min. The normal price was set at 0.046 ng / ml and clinically significant values were >0.5 ng / ml. CRP, ESR and white blood cells count were also measured in the same blood sample.

**Result:** Statistical analysis showed a significant positive correlation between the PCT and inflammatory markers (WBC, CRP, ESR), and the tumor marker CEA (p <0.05). Moreover, patients with distant metastases had significantly higher levels of PCT compared to patients without metastases (0.074 vs 0.043 mg / L, p <0.05). The Kaplan-Meier survival curve showed a trend toward shorter overall survival in patients with elevated levels of serum PCT.

**Conclusion:** PCT is a potent marker for the evaluation of inflammatory consequences of colorectal cancer. Whether this proinflammatory effect of advance colorectal cancer is due to bacterial translocation or due to the chronic inflammation of colorectal mucosa that precedes carcinogenesis remains to be elucidated.

#### OP 08

### Molecular Determinants of Radiotherapy Response in Rectal Cancer

Sajid Mehmood

North Cumbria University Hospitals NHS Trust, Carlisle, United Kingdom

**Background:** The treatment of rectal cancer has undergone a paradigm shift owing to improved oncological outcomes with use of neoadjuvant radiotherapy (RT). Admittedly, up to 11% of patients develop local or distant

recurrence. Inability to predict RT response has provoked a wealth of research to study predictive biomarkers. This review aims to summarise the current evidence to identify promising biomarkers associated with response to RT.

**Material and Methods:** A comprehensive pubmed / medline literature search was undertaken using the following search terms: "rectal" "radiotherapy" "chemoradiotherapy" "chemoradiation" "biomarker". The articles were reviewed for relevance to study of biomarkers with radiotherapy response. Studies with end points of tumour regression, pathological response, differential expression, apoptosis, and oncological outcomes were included to determine response to RT.

**Result:** The literature search revealed 1291 articles and a total of 103 were included in the final review. An exhaustive list of putative biomarkers associated with response to RT was recorded. A panel of biomarkers was identified as most comprehensively studied molecules (in more than 10 studies) including (n=studies): p53 (n= 33), Bcl-2 (n= 17), Ki-67 (n= 17), p21WAF1 (n= 15), VEGF (n= 14), Thymidylate Synthase (n= 13), EGFR (n= 12), Survivin (n= 11), and CEA (n= 11). Expression levels of p53, EGFR, VEGF, survivin and CEA demonstrated some association with RT response. Anti- EGFR and anti-VEGF treatments are currently under investigations.

**Conclusion:** The available evidence suggests lack of significant predictive potential of studied biomarkers. Usefulness of most biomarkers appears to be limited by inconsistent expression levels with radiotherapy response.

#### OP 09

### Fertility Preserving Strategies in Patients with Gynecological Tumours

Mandy Mangler, Dorothee Speiser, Anne Bartens, Janina Stiefel, Malgorzata Lanowska

Charité, Berlin, Germany

**Background:** Organ preservation in patients suffering from gynecological tumours has become more relevant as well as minimal invasive therapy. The removal of the uterus and ovaries lead to endocrinological alterations and psychological problems. Even in patients with bigger benign or malign tumours laparoscopic fertility preservation can be possible.

**Material and Methods:** We present case series of patients with benign and malign tumours treated by laparoscopic fertility and organ preserving techniques.

**Result:** Preservation of organs by minimal invasive therapy can be safe regarding short and long term outcome.

**Conclusion:** Operative strategies should be changed focussing on the implementation of minimal invasive organ preservation.

#### OP 10

### RTX Recipients' BMI and Outcome after Transplantation: a Meta-Analysis

Jeff A. Lafranca, Jan Nm Ijzermans, Michiel Gh Betjes, Frank Jmf Dor

Erasmus MC, University Medical Center Rotterdam, Rotterdam, Netherlands

**Background:** Whether overweight or obese end stage renal disease (ESRD) patients are eligible for renal transplantation is often debated. No (systematic) reviews have yet been carried out regarding this subject. The aim of this review and meta-analysis is to systematically investigate outcome of low- versus high Body Mass Index (BMI) recipients after renal transplantation.

**Material and Methods:** Comprehensive searches were conducted in several databases. Meta-analysis was performed with Review Manager 5.2. The methodology was in accordance with the Cochrane Handbook for Interventional Systematic Reviews, and written based on the PRISMA-statement.

**Result:** Forty-two studies were selected and reviewed. Thirty-seven outcome measures were reviewed and twenty-six could be meta-analysed. Of these, the following demonstrated significant differences of risk ratios in favour of low BMI (<30) recipients: death, delayed graft function, wound infection, NODAT, length of stay, hypertension, graft survival at 1 and 3 years and patient survival at 1 and 3 years, all  $p < 0.01$ . Furthermore, acute rejection ( $p = 0.03$ ) and incisional hernia ( $p = 0.04$ ).

**Conclusion:** This study is the first that combines a large number of articles and outcome measures in overweight and obese renal transplant recipients. Several of these show significant benefit for low BMI (<30) recipients. Therefore, we conclude that ESRD patients with a BMI >30 preferably should lose weight prior to RT. If this cannot be achieved with common measures, in morbidly obese (BMI  $\geq 40$ ) RT candidates, bariatric surgery could be considered.

#### OP 11

### Perirenal and Intra-Abdominal Fat Mass in Predicting Outcome of LDN

Jeff A. Lafranca, Lisette M Prens, Adriaan Moelker, Marcel Koe, Wiro J Niessen, Jan Nm Ijzermans, Frank Jmf Dor

Erasmus MC, University Medical Center Rotterdam, Rotterdam, Netherlands

**Background:** The exact influence of the Body Mass Index (BMI) on outcome of laparoscopic donor nephrectomy (LDN) is still under debate. We hypothesized that other parameters, such as fat mass, may have a stronger correlation with perioperative complications and short-term results of LDN.



**Material and Methods:** A pre-operative imaging review was conducted in a cohort of 620 live kidney donors who underwent LDN between 2004 and 2013. A volumetric measurement of the perirenal fat mass in mm<sup>3</sup> was carried out based on CT-scans. Several linear measurements of abdominal visceral fat (IAF-measurements) were performed on both CT and MRI-scans. These data were correlated with several outcome measures of LDN in both univariable and multivariable regression models.

**Result:** BMI correlates with some outcome measures of LDN. However, the volume of perirenal fat demonstrates a stronger correlation in even more outcome measures in univariable and multivariable regression: operation duration ( $p < 0.001$ ), estimated blood loss ( $p < 0.001$ ), and difference in serum creatinine ( $p < 0.001$ ) and estimated GFR ( $p = 0.002$ ) at 1 year postdonation. Furthermore, the IAF measurements show the same significant correlation.

**Conclusion:** In this large cohort of live kidney donors, we have confirmed that BMI alone is not the best predictor for outcome of LDN. Importantly, since the IAF is a linear measurement, no complex software is required. Therefore, we conclude that the measurement of intra-abdominal fat is a useful additional parameter in predicting peri- and postoperative outcome of LDN.

## OP 12

### NGAL, But Not KIM-, Correlates with Duration of Delayed Graft Function

*Ek Van Den Akker, Da Hesselink, Oc Manintveld, Jnm Ijzermans, Rwf De Bruin, Fjmf Dor*

Erasmus MC, University Medical Center Rotterdam, Rotterdam, Netherlands

**Background:** In kidney transplantation (KT), no specific biomarker is available for kidney damage. NGAL and KIM-1 have shown to increase after kidney injury. We evaluated their role as biomarker for delayed graft function (DGF).

**Material and Methods:** Twenty recipients of a DCD KT were included. Recipient serum creatinine, eGFR, C-reactive protein and incidence and duration of DGF were monitored. Perfusate was collected before transplantation. Serum samples were collected at five time points. NGAL and KIM-1 were measured by ELISA.

**Result:** Seventeen patients experienced DGF (85%). pNGAL correlated with donor age ( $p=0.01$ ) and serum creatinine ( $p=0.05$ ), both risk factors for DGF. pNGAL was higher in kidneys from donors with a cardiac cause of death ( $p=0.03$ ). sNGAL at day one post-transplantation was significantly higher in patients with DGF compared to immediate graft function (IGF) (730ng/ml [490-1655] vs. 417ng/ml [232-481]  $p=0.01$ ). sNGAL correlated with duration of DGF at 1, 4 and 7 days post-transplantation. KIM-1 was not detectable in perfusate and serum until day 4 after transplantation in most cases (80%)

**Conclusion:** NGAL in perfusate correlates with risk factors for DGF. Serum NGAL levels at day one can

discriminate between DGF and IGF. Serum levels at day 1, 4 and 7 correlate with duration of DGF. Serum NGAL appears to be a valuable biomarker for (the duration of) DGF. NGAL levels in perfusate may reflect graft quality. More studies are needed to determine the clinical potential. No role for serum KIM-1 levels were found.

## OP 13

### Vascular Management During Live Donor Nephrectomy – A Survey Among Surgeons

*S. Janki<sup>1</sup>, D. Verver<sup>1</sup>, K.W.J. Klop<sup>1</sup>, A.L. Friedman<sup>2</sup>, T.G. Peters<sup>3</sup>, L.E. Ratner<sup>4</sup>, J. N. M. Ijzermans<sup>1</sup>, F. J. M. F. Dor<sup>1</sup>*

<sup>1</sup> Erasmus MC, University Medical Center, Rotterdam, Netherlands

<sup>2</sup> New York Organ Donor Network, New York, United States

<sup>3</sup> University of Florida Health Sciences Center, Jacksonville, United States

<sup>4</sup> Columbia University, New York, United States

**Background:** In 2006, a survey was conducted among US surgeons; showing significant hemorrhagic complications of vascular management (VM) during live donor nephrectomies (LDN). Clips were associated with the greatest risk and has led to the contraindication of the use of hemostatic clips in the US. In the current study, we assessed which VM methods are used and considered most safe, and the incidence of complications.

**Material and Methods:** The US survey was sent to 598 European Society for Organ Transplantation members, who profiled their profession as “surgeon” and selected “kidney” as organ type.

**Result:** Of 598 surveys, 41% were returned; 156 surgeons perform LDN and constitute the study group. In venous and arterial VM, the GIA and TA stapler are most used; in terms of safety, 66% considered the GIA stapler safest for venous control, and 63% the TA stapler for arterial control. However, other closing techniques are used. Of 121 mishaps, 55.5% involved venous control and 45.5% arterial. Failure of clips occurred in at least 58 cases, while stapler malfunction occurred at least 40 times. One death from hemorrhage was reported, related to clip dysfunction.

**Conclusion:** A variety of LDN and VM techniques are extant within Europe where approximately 6500 LDN procedures are performed annually. Strikingly, many surgeons do not use the VM method that they consider most safe, and persist in applying clips to the renal artery, which are known to cause donor death from sudden massive hemorrhage. Control of major vessels in LDN must employ transfixion-techniques for optimal donor safety.

## OP 14

**Resuscitation of Warm Ischemia-Damaged Porcine Kidneys VSOP and Ecosol**

*Bm Doorschodt<sup>1</sup>, J Kalenski<sup>2</sup>, E Mancina<sup>1</sup>, P Paschenda<sup>1</sup>, C Beckers<sup>2</sup>, C Bleilevens<sup>2</sup>, P Boor<sup>3</sup>, R Tolba<sup>1</sup>*

<sup>1</sup> Institute for Laboratory Animal Science & Experimental Surgery, RWTH-Aachen University, Aachen, Germany

<sup>2</sup> Department of Anesthesiology, RWTH-Aachen University, Aachen, Germany

<sup>3</sup> Institute of Pathology & Department of Nephrology, RWTH-Aachen University, Aachen, Germany

**Background:** The shortage of donor organs has necessitated expansion of the organ pool through increased employment of less than ideal donors. Venous Systemic Oxygen Persufflation (VSOP) has previously demonstrated promising results in preservation of warm ischemia (WI) damaged kidney grafts. In this study, the efficacy of VSOP using the recently developed Ecosol preservation solution was assessed compared to cold storage (CS) using Ecosol or Histidine-Tryptophan-Ketoglutarate solution (HTK) for 24h preservation of WI-damaged kidney grafts using the Isolated Perfused Porcine Kidney model. Kidneys cold stored for 24h in HTK without WI served as controls.

**Material and Methods:** Before retrieval, the renal pedicle was clamped for 45' in the VSOP-Ecosol, CS-Ecosol and CS-HTK groups. Consequently, kidneys (n=5/group) were preserved for 24h and reperfused for 1h at 37°C with whole blood/Krebs-Henseleit Buffer medium for renal function assessment.

**Result:** At 1h reperfusion, VSOP-Ecosol and CS-Ecosol showed significantly lower intravascular resistance and urine protein concentration compared to CS-HTK, not different from controls, mean±SEM: 0.6±0.0 vs 0.5±0.1 vs 2.8±0.9 vs 0.5±0.1 mmHg/(ml/min)/100g and 42±11 vs 106±35 vs 516±108 vs 72±18 mg/dl respectively. Urine production and fractional sodium excretion were improved in VSOP-Ecosol compared to CS-HTK, not different from controls (304±43 vs 79±42 vs 461±65 ml and 68±2 vs 90±3 vs 56±7% resp.).

**Conclusion:** VSOP and CS using Ecosol resulted in improved preservation quality compared to CS using HTK. Moreover, VSOP using Ecosol enabled resuscitation of extensively WI damaged kidneys grafts.

## OP 15

**Machine Perfusion Preservation Using Ecosol Attenuates Warm Ischemic Damage in Porcine Kidney Grafts**

*J Kalenski<sup>1</sup>, Bm Doorschodt<sup>1</sup>, E Mancina<sup>1</sup>, P Paschenda<sup>1</sup>, C Beckers<sup>2</sup>, C Bleilevens<sup>2</sup>, P Boor<sup>3</sup>, R Tolba<sup>1</sup>*

<sup>1</sup> Institute for Laboratory Animal Science & Experimental Surgery, RWTH-Aachen University, Aachen, Germany

<sup>2</sup> Department of Anesthesiology, RWTH-Aachen University, Aachen, Germany

<sup>3</sup> Institute of Pathology & Department of Nephrology, RWTH-Aachen University, Aachen, Germany

**Background:** The organ shortage has led to increased employment of warm ischemically (WI) damaged organs to expand the donor pool. Hypothermic machine perfusion (MP) has proven to be highly beneficial in preservation of WI damaged organs. In this study, the efficacy of MP using the colloid-based Ecosol preservation solution was assessed compared to cold storage (CS) using Ecosol or Histidine-Tryptophan-Ketoglutarate solution (HTK) for 24h preservation of WI-damaged kidney grafts using the Isolated Perfused Porcine Kidney model. Kidneys retrieved without WI, cold stored for 24h in HTK were used as controls.

**Material and Methods:** The renal pedicle was clamped before retrieval for 45' in the MP-Ecosol, CS-Ecosol and CS-HTK groups. After washout, kidneys (n=5/group) were preserved for 24h by MP or CS using their respective solutions and reperfused for 60' at 37°C with whole blood/Krebs-Henseleit Buffer medium (20/80%) for renal function assessment.

**Result:** At 60' reperfusion, MP-Ecosol showed significantly higher urine output compared to CS-HTK and not different from CS-Ecosol and controls, mean±SEM: 332±54 vs 86±41 vs 197±27 vs 443±58 ml. Urine protein concentration and intravascular resistance were lower in MP-Ecosol and CS-Ecosol compared to CS-HTK and not different from controls (98±22 vs 94±34 vs 439±119 vs 70±19 mg/dl and 1.4±0.3 vs 0.5±0.1 vs 3.0±0.8 vs 0.6±0.1 mmHg/(ml/min)/100g resp.).

**Conclusion:** MP using Ecosol solution attenuated extensive WI damage in porcine kidney grafts and demonstrated improved preservation quality compared to CS using HTK.

## OP 16

**The Role of Adrenomedullin in Bronchiolitis Obliterans Syndrome**

Balázs Gieszer<sup>1</sup>, Mónika Gyugos<sup>1</sup>, József Tóvári<sup>2</sup>,  
János Fillinger<sup>3</sup>, Klára Török<sup>4</sup>, Attila Farkas<sup>1</sup>, György Lang<sup>5</sup>,  
Balázs Döme<sup>6</sup>, Ferenc Rényi-Vámos<sup>1</sup>

<sup>1</sup> National Institute of Oncology, Department of Thoracic Surgery; Semmelweis University, Department of Thoracic Surgery, Budapest, Hungary

<sup>2</sup> National Institute of Oncology, Department of Experimental Pharmacology, Budapest, Hungary

<sup>3</sup> National Korányi Institute of Pulmonology, Department of Tumorbiology; National Institute of Oncology, Department of Pathology, Budapest, Hungary

<sup>4</sup> National Institute of Oncology Department of Thoracic Surgery; Semmelweis University, Department of Thoracic Surgery, Budapest, Hungary

<sup>5</sup> Medical University of Vienna, Department of Thoracic Surgery; National Institute of Oncology, Department of Thoracic Surgery; Semmelweis University, Department of Thoracic Surgery, Budapest, Hungary

<sup>6</sup> Medical University of Vienna, Dep. of Thoracic Surgery; National Korányi Institute of Pulmonology, Dep. of Tumorbiology; National Institute of Oncology, Dep. of Thoracic Surgery; Semmelweis University, Dep. of Thoracic Surgery, Budapest, Hungary

**Background:** The long-term success of lung transplantation (LTx) is mainly limited by bronchiolitis obliterans syndrome (BOS), the manifestation of chronic rejection. Injury of allograft epithelium is the main complication of chronic rejection. Release of cytokines from the injured epithelial cells and chemokines makes T-cells, neutrophil granulocytes and macrophages infiltrate the graft tissue. Human adrenomedullin (AM) peptide (consisting of 52 amino acids) has an important role in (lymph)angiogenesis, tumor progression, immune- and endocrine processes and, moreover, via the protection of epithelium and endothelium, in the alveolar development of lung as well as. Our aim is to study the effect of AM in the development of BOS and to investigate the epithel-protecting role of AM in vivo.

**Material and Methods:** The efficacy of AM and AM inhibitors were studied in a BOS-mouse model. Heterotopic tracheal transplantation was performed between MHC-fully allogeneic mismatched mice and treated with AM and AM inhibitors.

**Result:** We expect that AM will exert protective effects on the epithelium and endothelium, due to its potential to decrease endothelial permeability. AM might also reduce the extravasation of immune cells. These effects may decrease the number of inflammatory cells migrating to the tissue graft and AM might reduce the fibrosis and obliteration of the graft. This study might serve as valuable tool for therapeutic approaches in patients after LTx.

**Conclusion:** Acknowledgements: This study

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## OP 17

**Perfluorohexyloctane for Long-Term Storage in Rat Pancreas Transplant Model**

Tomas Marada, KlaraZacharovova, IrenaBrabcova,  
Eva Vodrazkova

Transplant surgery department, Institute for Clinical and Experimental Medicine, Prague, Czech Republic

**Background:** Perfluorohexyloctane is a promising storage solution, it has been successfully used for pancreas preservation for islet isolation. This hyperoxygen carrier has been designed to prevent the pancreas graft ischemia cold-storage injury. In our study we aimed to evaluate its impact on whole organ storage in rat pancreas transplantation model.

**Material and Methods:** Brown-Norway rats were used for syngeneic heterotopic pancreas transplantation. Procured organs were cold-stored for 18 hours in preoxygenated perfluorohexyloctane (PFH) (n=8), in University of Wisconsin solution (UW) (n=8), or transplanted immediately in control group (n=8). Two hours after reperfusion we took blood and pancreas tissue samples for biochemistry and gene analysis (real-time PCR).

**Result:** Significant difference between UW and PFH group was observed in TNF-beta and endothelin 1 gene, which was twofold over-expressed in UW group. Blood samples in UW group compared to PFH group showed higher levels of lipase and amylase (5,5±2,8 vs 3±0,7 ukat/l resp. 94,2±25,2 vs 67,7±13,4 ukat/l, p<0,05).

**Conclusion:** We found significantly lower expression of endothelin 1 and TNF-beta gene and lower concentrations of amylase and lipase in PFH group. All these findings demonstrate lower rate of ischemia-reperfusion injury in PFH group. These findings may cause better post-transplant outcomes after long-term cold-storage in perfluorohexyloctane compared to UW solution. Further research on this field is required.

## OP 18

**Longitudinal Study of Cardiovascular and Metabolic Condition of Kidney Transplanted Patients in The Perioperative Term**

Dávid Kovács<sup>1</sup>, Lajos Lócsey <sup>†1</sup>, Renáta Laczik<sup>2</sup>,  
Roland Fedor<sup>1</sup>, Balász Nemes<sup>1</sup>, László Asztalos<sup>1</sup>,  
Pál Soltész<sup>3</sup>

<sup>1</sup> University of Debrecen Medical and Health Science Center Institute for Surgery, Debrecen, Hungary

<sup>2</sup> University of Debrecen Medical and Health Science Center Department of Immunology, Debrecen, Hungary

<sup>3</sup> University of Debrecen Medical and Health Science Center Center of Internal Medicine, Department of Angiology, Debrecen, Hungary

**Background:** Development of atherosclerosis is accelerated in kidney transplant patients. Impaired metabolic pathways have complex effect on the arterial wall which can be measured by non-invasive techniques. We analysed the stiffness parameters of kidney transplant recipients during the perioperative period.

**Material and Methods:** Seventeen successful primary kidney transplant patients with uneventful postoperative period (7 female, 10 male; 46.16 years±12.19 years) were involved in our short-term prospective longitudinal study. We analysed the correlation between non-invasively assessed stiffness parameters (pulse wave velocity (PWV), augmentation index (Aix), pulse pressure (PP)), Systolic and Diastolic Area Index (SAI, DAI), Diastolic Reflection Area (DRA) ankle-brachial index (ABI) and laboratory parameters (creatinine, glomerular filtration rate, urea, haemoglobin, C-reactive protein). Stiffness parameters were measured with a Tensiomed™ Arteriograph. These parameters were assessed before the transplantation, 24 hours, 1 and 2 weeks after surgery under standard conditions.

**Result:** We found that creatinine (P= .0008), C-reactive protein (CRP) (P= .006) serum levels decreased, and glomerular filtration rate (GFR) increased significantly (P= .0005). We revealed that PWV (P= .0075) and Aix (P= .013) improved significantly. There was no significant change concerning SAI and DAI. DRA had significant correlation with SAI and DAI. There was no significant change in case of ABI, PP and the other monitored parameters.

**Conclusion:** Along with the available data in the literature, our findings suggest that kidney transplantation has a positive effect on the arterial function. Improvement can be detected non invasively with Arteriograph in the early postoperative period.

## OP 19

**Re-Excision after Breast Conserving Surgery for Breast Cancer - An Audit Of Practice**

E. Kershaw, J. Ahmed, A. Aertssen, V. Brown

Department of Breast Surgery, Salisbury NHS Foundation Trust, Salisbury, United Kingdom

**Background:** Excision of early or non-palpable breast cancers can be challenging. A fine balance between oncological and cosmetic outcomes are important considerations whilst performing breast conserving surgery (BCS). Various studies have reported up to 40% patients undergoing re-excision after initial BCS due to positive resection margins. Inadequate resection margins may have adverse oncological impacts due to local recurrence, whilst re-excision can cause increased mental distress and poor cosmetic outcomes. Aim of this study was to evaluate practice of BCS for breast cancer in our department.

**Material and Methods:** A retrospective review of database of patients undergoing BCS for breast cancer from November 2010 till October 2013 was performed. Resection margin <1mm was considered as inadequate for invasive cancer and required re-excision. Various modalities such as, clinical assessment, ultra-sonographic (US) guided skin marking or wire insertion, were used pre-operatively to locate the lesion.

**Result:** In total 251 patients underwent BCS during this period. 44(17.5%) patients had re-excision due to inadequate or positive resection margins. Out of 44 patients, 9(20%) had a clinically palpable lump, 14(32%) had US-guided skin marking, whilst 21(48%) had US-guided wire insertion. One patient had double re-excision. 2(4%) patients had mastectomy as a re-excision procedure.

**Conclusion:** Our rate of re-excision after BCS for breast cancer seem to be at appropriate level. A very low or high re-excision rate can raise concerns about excessive resection of healthy tissue or inadequate resection margins during initial procedure.

OP 20

**Autologous Fat Grafting for Reconstruction after Surgery for Breast Cancer**

Riaz A Agha<sup>1</sup>, Alexander J. Fowler<sup>2</sup>, Christian Herlin<sup>3</sup>, Tim Goodacre<sup>4</sup>, Dennis P. Orgill<sup>5</sup>

<sup>1</sup> Department of plastic surgery, Stoke Mandeville Hospital, Aylesbury, Bucks, United Kingdom

<sup>2</sup> Barts and the London School of Medicine and Dentistry, London, United Kingdom

<sup>3</sup> CC-AH en chirurgie plastique, reconstructrice et esthétique, , Montpellier, France

<sup>4</sup> Department of Plastic Surgery, John Radcliffe Hospital, Oxford, United Kingdom

<sup>5</sup> Division of Plastic Surgery, Brigham and Women's Hospital, Boston, United States

**Background:** There is growing interest in the potential of autologous fat grafting (AFG) for breast reconstruction. However, concerns remains regarding it's effectiveness, safety and intereference with mammography. The possibility of local growth factors and adipose derived stem cells causing cancer recurrence is also a key concern.

**Material and Methods:** A protocol was published a priori. All studies investigating AFG for women undergoing reconstruction post mastectomy or breast conserving surgery for treatment of breast cancer were considered. We assessed six domains; Oncological, clinical, aesthetic/functional, patient reported, process and radiological. Electronic databases were searched to June 2013; additional grey literature searches were also performed. Two independent reviewers assessed eligibility of articles for inclusion and performed data extraction.

**Result:** 31 studies were included (3,521 patients). Current studies have a median follow up of 14.8 months, and a high degree of patient and surgeon satisfaction. Fat necrosis is the commonest complication in 4.4%. Other harms include further radiological investigation (11.5%) and the need for biopsy (2.5%) to exclude malignancy. Restricting to moderate quality studies focusing on in-situ disease, the recurrence rate was 9.4%, compared with 1.6% in matched controls (p=0.03).

**Conclusion:** AFG is a potentially useful tool within the armamentarium of those performing breast reconstruction. The need for long-term follow up is underscored by this review. High quality research is required to demonstrate long-term oncological ramifications and to determine the potential for AFG as a total breast reconstruction method.

OP 21

**Venous Thromboembolism Risk Assessment Compliance in Plastic Surgery: A Multi-Cycle Audit**

Riaz Agha, Paul Stephens, Michael Tyler

Stoke Mandeville Hospital, Aylesbury, United Kingdom

**Background:** Venous Thromboembolism (VTE) is an international patient safety issue. Lifetime incidence is 1 in 20, approximately half associated with prior hospitalisation and two-thirds potentially preventable. VTE prevention is now recognised as a clinical priority for the NHS by the National Quality Board and the NHS Leadership Team.

**Objective:** To determine the compliance of the Burns Unit with VTE risk assessments (in line with NICE Clinical Guideline CG92 and Trust Policy on VTE). If deficient, changes would be implemented and performance re-audited. If successful, this pilot would be extended to other wards.

**Material and Methods:** A baseline audit was completed over three weeks in September-October 2013. 11 patients were admitted, three not having a risk assessment completed. Staff education sessions on VTE were held. The inpatient board on the Burns Unit was modified to facilitate inter-professional communication and VTE status visibility.

**Result:** Six audit cycles over six weeks were completed, with 100% compliance (20 patients). The system was exported to wards 16a, 16b and the Surgical Assessment Unit where a baseline audit showed a median of 50% compliance and initial results showed a sustained increase to 100% compliance two days post-implementation (six audit cycles).

**Conclusion:** The package of interventions utilised is a viable way of increasing VTE risk assessment compliance in Plastic Surgery.

OP 22

**Total Rib-Sparing Technique for Free Flap Breast Reconstruction**

Zita M Jessop<sup>1</sup>, Anaïs Rosich-Medina<sup>2</sup>, Serafeim Bouloumpasis<sup>2</sup>, Anna Khoo<sup>2</sup>, Michelle Di Candia<sup>2</sup>, Mike Moses<sup>2</sup>, Charles M Malata<sup>2</sup>

<sup>1</sup> Guy's and St Thomas' Hospital, London, United Kingdom

<sup>2</sup> Addenbrooke's University Hospital, London, United Kingdom

**Background:** Free tissue transfers are the gold standard for post-mastectomy autologous breast reconstruction. Such flaps are generally anastomosed to the internal mammary vessels (IMVs) which are traditionally exposed by sacrificing the 3rd costal cartilage. This can be associated with complications such as pain, chest wall deformity and late local tenderness. Total rib preservation aims to reduce morbidity

at the recipient site. This technique was adopted by a single surgeon in June 2008, and has since been used exclusively in all microvascular free flap breast reconstructions.

**Material and Methods:** Prospectively collected free flap data were analysed to determine the indications, surgical details and outcomes for this technique in breast reconstruction.

**Result:** 204 breast free flaps (172 unilateral:27 bilateral; 159 immediate:45 delayed) were performed by a single surgeon over 5½ years. Patient ages ranged from 28 to 71. There were 178 DIEP flaps, 16 SIEA flaps, 7 muscle-sparing free TRAM, 2 IGAPs and one free LD flap. (Of the abdominal free flaps 21 were bipediced). The mean inter-costal space distance was 21.1 mm (range 13-29). The mean IMV preparation time was 56 minutes (range 17-192). The mean ischemia time was 95 minutes (range 38-190). Free flap survival was 100%, although 5 flaps (1.7%) required a return to theatre for exploration (haematomas and venous congestion). They were all successfully salvaged. There have been no complaints of localised chest wall pain and no contour deformity has been observed.

**Conclusion:** Total rib sparing technique for IMV exposure is safe, reliable and versatile.

## OP 23

### Application of Oncoplastic Techniques for Breast Surgery

Örkény Pap-Tuka, Dávid Árpád Baranyai

1st Department of Surgery, Semmelweis University, Budapest, Hungary

**Background:** The new trend in breast surgery is the oncoplastic breast surgery. The oncoplastic techniques improve the cosmetic results compared with breast-conserving techniques without compromising the oncological safety. Such a process of direct volume restoration with autologous tissue, breast reshaping with therapy of breast plastic or with local, regional flaps. Described in detail reformulation techniques in breast, which are used in cases of tissue-absence up to 20 percent because even such deficit breast shape and volume can be restored without significant distortion of the remaining parenchyma with the mobilization and modeling. As well compared the section types, advantages, disadvantages and practical application of those based on the tumor localization.

**Material and Methods:** Presented oncoplastic surgical repairs of 80 patients. Patients had a mean age of 53.3 years, the youngest was 34, the oldest was 67. The tumor size of 1-5 cm, histological types: 68 cases of carcinoma ductale invasivum, 3 cases of Paget, 7 lobular, 2 cases of mucinous neoplasia were. In terms of localization: outer of 56 cases, central of 10 cases, internal of 7 cases, lower quadrant boundary of 7 cases localized. In case of preoperative lymph node involvement total axillary blockdissection was made, in case of negative axilla status sentinel localization and intraoperative freezing

histological examination were performed.

**Result:** The circumvertical (Léjour) and the inverted T incision type was the predominant surgical solution, although based on localization more types of section would have been appropriate.

**Conclusion:** These two methods are excellent to explore well any region of the breast.

## OP 24

### Tracheal Reconstruction with Osteocutan Supraclavicular Island Flap

Bernadett Lévy, László Agócs, András Boér

National Institute of Oncology, Budapest, Hungary

**Background:** The injury of the cricoid cartilage is a very dangerous complication of the preparation of tracheostomy. Mostly this is an urgent procedure, so the complications occur later. In these cases the tracheal wall becomes unstable, which can be fatal.

**Material and Methods:** Authors present a case of a 52-year-old female patient, who underwent an urgent tracheostomy because of life threatening heavy breathing. Later total thyroidectomy was carried out. The atypical tracheostomy required to be closed, also in case of a tracheal instability the missing anterior wall had to be reconstructed with rigid tissue. The authors decided to prepare a supraclavicular artery osteocutaneous flap. We harvested from the shoulder, an island flap, a thin bone chip was taken from the clavicle, and after founding the vessel, the flap was placed in the defect. The bone chip was sutured to the trachea wall. The donor site was closed primarily.

**Result:** After reviewing the literature we propose to use this flap in a wide range of cases.

**Conclusion:** Not only the satisfactory functional and cosmetic result, but also the fact that the donor site does not need skin grafting may take this flap more popular.

## OP 25

### Vaginal Elongation with Descending Colon in Patients with Gender Identity Disorder

Elodie Melsens, Wouter Willaert, Yves Van Nieuwenhove, Stan Monstrey, Piet Pattyn

Ghent University Hospital, Ghent, Belgium

**Background:** The penile-scrotal skin flap technique is the method of choice for vaginoplasty in male-to-female transsexuals. A limited amount of available flap or postoperative complications may result in a lack of vaginal cavity depth and width, interfering with sexual intercourse. Vaginal elongation can be performed with different bowel segments, which have their merits and limitations. Elongation

with descending colon has never been reported. We describe our experience using this bowel segment.

**Material and Methods:** We searched our hospital database for patients who underwent a vaginal elongation with descending colon after failed vaginoplasty. We analysed the postoperative course after vaginoplasty; the indications to perform an elongation; and technical details of this procedure. Patients' further recovery was also noted.

**Result:** From April 2010 till January 2014, 11 patients underwent vaginal elongation after failed vaginoplasty. The time interval between both operations ranged from 5 months to 30 years. Every patient had insufficient vaginal length, which was often combined with stenosis of its introitus. Reconstruction was done with descending colon and lasted 185 to 395 minutes. The last three procedures were performed laparoscopically. During the early postoperative period, one patient developed a hematoma at the colovaginal anastomosis, which was conservatively treated. Hospital stay ranged from 6 to 20 days.

**Conclusion:** Descending colon is suitable for failed vaginoplasty. No major events during surgery or technical failures in the early postoperative phase were encountered, emphasizing that both experience and team work are of paramount importance in this challenging operation which can even be executed laparoscopically.

## OP 26

### Liposculpture And Regeneration

Zsolt Révész, Judith Sebestyén, Alice Perlik, Lilla Révész, Thibault Trevidic

ESZSZK Burn and Plastic Surgery Department, Revesz Plastica - Private Practice, Budapest, Hungary

**Background:** We consider liposculpture to be a better expression summarizing liposuction and „structural lipofilling” procedures.

**Material and Methods:** Our aim is to present even to compare different techniques of achieving, harvesting, transferring fat tissue as we do it in our department. This is a survey presenting the importance of fat tissue transfer through liposuction or/and lipofilling regarding aesthetic and reconstructive surgery.

**Result:** With no scar or no donor site morbidity even with good aesthetic benefits, we are able to transfer huge amounts of fat tissue and build up face regions, breast or many other parts of the body.

**Conclusion:** Unthinkable as it was before, liposculpture gives us a new and exciting perspective in plastic surgery. We are able only to estimate the role of stem cell content of the fat tissue regarding tissue regeneration.

## OP 27

### New Targeted Surgery to Selectively Remove Breast Cancer Nodal Metastases

Abigail Caudle, Wei Yang, Savitri Krishnamurthy, Brian Hobbs, Elizabeth Mittendorf, Daliah Black, Rosa Hwang, Kelly Hunt, Henry Kuerer

University of Texas MD Anderson Cancer Center, Houston, United States

**Background:** Nodal ultrasound with needle biopsy of abnormal lymph nodes (LNs) helps to define the extent of disease prior to neoadjuvant chemotherapy (NAC) with clip placement to designate LNs with documented metastases. Node positive patients routinely undergo axillary lymphadenectomy. The use of sentinel lymph node dissection (SLND) to identify patients with eradication of nodal disease after NAC has been limited by its high false negative rate. Targeted Axillary Dissection (TAD), or removal of the LNs known to contain metastases (clipped LN) as well as SLNs, may provide more accurate assessment of pathologic response after NAC.

**Material and Methods:** Patients were identified from IRB-approved prospective trials who had biopsy-confirmed axillary LN metastases with a clip placed in the sampled LN. The clipped LN was targeted preoperatively under US guidance by wire-localization or I125 radioactive seed placement. Surgeons removed the localized LN before completion axillary node dissection (ALND) and x-rayed the LN to confirm removal of clip/seed.

**Result:** Seventeen patients were included: 2 had wire localization, and 15 had I125 seed placement. All had successful removal of the clipped LN. Nine patients underwent SLND in addition to removal of the clipped LN. Fourteen patients completed NAC before surgery. Five(36%) patients had residual LN disease: all had disease identified in the clipped LN.

**Conclusion:** Axillary LNs containing clips can be localized and selectively removed to accomplish Targeted Axillary Dissection. This is technically possible after NAC, is easily performed with other axillary surgery such as SLN dissection, and has a low false negative rate.

## OP 28

### Performance of Experts in Less Surgery Intracorporeal Suturing

Ana Maria Matos-Azevedo, Blanca Fernández Tomé, Idoia Díaz-Güemes Martín-Portugués, Francisco Julián Pérez-Duarte, Francisco Miguel Sánchez Margallo

Minimally Invasive Surgery Centre Jesús Usón, Cáceres, Spain

**Background:** With this study we aimed at analyzing the performance of surgeons with experience in LESS procedures

during the completion of intracorporeal suturing maneuvers on simulator.

**Material and Methods:** Four surgeons with experience in LESS surgery were included on this study, and asked to complete two sutures of increasing difficulty level (lineal closure with 6 sutures and circular anastomosis with 8 sutures) on simulator and on ex vivo porcine stomach and uretrovesical junctions. The elected access device was SILSTM Port (Covidien, Mansfield, MA, USA) during the 7 practice sessions, over a period of 14 weeks. Performance was objectively assessed by registering total completion time and OSATS score. Each task was limited to 15 minutes.

**Result:** From first (T1) to last (T7) session surgeons significantly improved their performance score on both linear (T1  $0.83 \pm 0.008$  vs. T7  $0.89 \pm 0.06$ ,  $p < 0.05$ ) and circular (T1  $0.80 \pm 0.08$  vs. T7  $0.93 \pm 0.06$ ,  $p = 0.032$ ) anastomoses. Concerning completion time per suture, statistically significant differences were also observed in the same time period for both sutures: linear T1  $2.74 \pm 1.01$  min vs. T7  $2.14 \pm 1.06$  min,  $p < 0.05$ ; circular T1  $3.75 \pm 1.62$  min vs. T7  $2.04 \pm 0.82$  min,  $p = 0.006$ .

**Conclusion:** Apart from successfully performing difficult maneuvers using LESS approach in a reasonable amount of time, we observed that with regulated practice it is possible to learn and further improve skills in this type of surgery, hopefully further improving quality and safety of surgical treatment.

## OP 29

### Laparoscopic Suturing Skills Comparison Novice vs Expert Digestive Surgeons

Matos-Azevedo Am, Fernández Tomé B,  
Sánchez-Hurtado Ma, Pérez-Duarte Fj, Carrero Gutiérrez A,  
Díaz-Güemes Martín-Portugués I, Sánchez-Margallo Fm

"Jesús Usón" Minimally Invasive Surgery Centre, Cáceres,  
Spain

**Background:** Compare the development of skills in intracorporeal laparoscopic suturing of novice and expert attendants to 21 hour hands-on courses in digestive surgery.

**Material and Methods:** 38 attendants were classified according their laparoscopic experience. Group I = 18 novices (N) with no previous experience (basic course). Group II = 20 expert surgeons (E) (advanced course). On the first day's hands-on session, surgeons completed a simple intracorporeal suture on simulator. This task was repeated during the last day in porcine model. Total completion time and performance errors were registered and both measures were taken before (i) and after (f) the course.

**Result:** Group I significantly reduced suture completion time on the last day of the course (Ni  $5.03 \pm 1.47$  minutes vs. Nf  $2.81 \pm 1.19$  minutes,  $p < 0.001$ ). Similarly, Group II significantly improved suturing times (Ei  $3.87 \pm 1.53$  minutes vs. Ef  $2.21 \pm 0.86$  minutes,  $p < 0.05$ ). Also Group II completed the task significantly faster on the first day than Group I (Ni  $5.03 \pm 1.47$  minutes vs. Ei  $3.87 \pm 1.53$  minutes,  $p = 0.001$ ), differences that were no longer found at the end of the training activity (Nf  $2.81 \pm 1.19$  minutes vs.

Ef  $2.21 \pm 0.86$  minutes). Performance errors was significantly reduced for Group I (Ni = 44.4% vs. Nf = 22.2%,  $p < 0.05$ ), and for Group II, without statistical differences (Ei = 15% vs. Ef = 5%).

**Conclusion:** Both novice and expert surgeons improved their dexterity in intracorporeal suturing after completing a regulated course on laparoscopic general surgery. At the end of the course, novice surgeons are almost as fast as experts, although maintaining significant manoeuvre quality differences.

## OP 30

### Laparoscopic Suturing Skills Acquisition During a Basic Laparoscopic Course

Matos-Azevedo Am<sup>1</sup>, Fernández-Tomé B<sup>1</sup>,  
Asencio Pascual Jm<sup>2</sup>, Pérez-Duarte Fj<sup>1</sup>, Enciso Sanz S<sup>1</sup>,  
Hernández Hurtado L<sup>1</sup>, Bilbao Vidal E<sup>3</sup>,  
Díaz-Güemes Martín-Portugués I<sup>1</sup>, Sánchez-Margallo Fm<sup>1</sup>

<sup>1</sup> "Jesús Usón" Minimally Invasive Surgery Centre, Cáceres,  
Spain

<sup>2</sup> Gregorio Marañón Hospital, Madrid, Spain

<sup>3</sup> Galdakao-Usansolo Hospital, Vizcaya, Spain

**Background:** Assess the degree of skills acquisition in laparoscopic intracorporeal suture in a group of novice surgeons after the attendance to a 21 hours hands-on course.

**Material and Methods:** 18 participants with no previous laparoscopic experience attended basic laparoscopic course for digestive surgeons. The training model is constituted by theory (3 hours), followed by practice on physical simulator (7 hours) and on animal model (11 hours). Attendants performed one simple suture on inorganic tissue. At the end of the course, each surgeon carried out one simple suture in the gastric wall on porcine model. Total completion time was registered (limited to a maximum of 7 minutes). To determine performance quality, precision errors, number of tears on inorganic tissue and end knot quality were listed.

**Result:** Average suture completion time significantly decreased at the end of the training activity ( $5.03 \pm 1.47$  minutes vs.  $2.81 \pm 1.19$  minutes,  $p < 0.001$ ). Eight of the eighteen attendants were not able to complete the first suture in the established time limit. On the first day 44.4% error were observed, with a majority of precision errors (27.8%). At the end of the course, total errors were significantly reduced to 22.2%, the most predominant being end knot quality (11.1%).

**Conclusion:** Results show a significant improvement in intracorporeal suturing skills in novice surgeons, reflected by a significant decrease in performance times and an increase in simple suture quality. Attendance to regulated hands-on laparoscopy courses at the beginning of the surgeons' learning curve possibly accelerates the acquisition of skills in laparoscopy.



## OP 31

**Laparoscopic Suture Skills Development in an Advanced Laparoscopic Course**

Sánchez-Hurtado Ma<sup>1</sup>, Fernandez-Tomé B<sup>1</sup>,  
Matos-Azevedo Am<sup>1</sup>, Moreno Naranjo B<sup>1</sup>,  
Correa Martín L<sup>1</sup>, Díaz-Güemes Martín-Portugués I<sup>1</sup>,  
Fatás Cabeza Ja<sup>2</sup>, Sánchez-Margallo Fm<sup>1</sup>

<sup>1</sup> "Jesús Usón" Minimally Invasive Surgery Centre, Cáceres, Spain

<sup>2</sup> Royo Villanova Hospital, Zaragoza, Spain

**Background:** Verify the claimed skills in intracorporeal suturing in expert laparoscopic surgeons, and the development of these abilities during a 21 hours advanced laparoscopic course.

**Material and Methods:** 20 attendants with previous laparoscopic experience were included. On the first day, surgeons performed two intracorporeal simple sutures: P1 at the beginning and P2 at the end of the 4hour hands-on simulator session. Similarly, and on porcine model, a third simple laparoscopic suture was completed (P3). Total completion time was registered. Percentage errors were also listed.

**Result:** Average time for P1 was 3.87±1.53minutes. Only one attendant was incapable of completing the simple suture. Average time for P2 for all the attendants was 3.32±1.09minutes (no significant differences when compared to P1). Average time for P3 was 2.22±0.86 minutes, with significant differences compared with P1 3.87±1.53minutesvsP3 2.22±0.86 minutes, p<0.01 and P2 3.32±1.09minutesvsP3 2.22±0.86minutes, p<0.05. On the first day there was a very low percentage of errors (25%). At the end of the course, there was only one registered case (5%).

**Conclusion:** Although attendants presented laparoscopic suturing experience, there was a significant improvement in their skills average time at the end of the training course. This is evident in the significant increase in performance quality of intracorporeal sutures on live tissue compared to the same task carried out on simulator. We conclude that, although many surgeons have considerable laparoscopic suturing expertise, there is still room for improvement to complete the intracorporeal suturing learning curve.

## OP 32

**Assessment of a Porcine Model for the Laparoscopic Ileocecal Resection**

Sánchez-Hurtado Ma<sup>1</sup>, Fernandez-Tomé B<sup>1</sup>,  
Correa Martín L<sup>1</sup>, Enciso-Sanz S<sup>1</sup>, Matos-Azevedo Am<sup>1</sup>,  
Pérez-Duarte Fj<sup>1</sup>, Díaz-Güemes Martín-Portugués I<sup>1</sup>,  
Fatás-Cabeza Ja<sup>2</sup>, Sánchez-Margallo Fm<sup>1</sup>

<sup>1</sup> "Jesús Usón" Minimally Invasive Surgery Centre, Cáceres, Spain

<sup>2</sup> Royo Villanova Hospital, Zaragoza, Spain

**Background:** References on laparoscopic training techniques of the ileocecal region of porcine model are almost inexistent. We aimed to contribute with a standardized description of surgical steps for laparoscopic ileocecal resection (LIR) on porcine model in order to apply it to advanced laparoscopic colorectal training. Afterwards, we assessed the proposed model during the last three editions of the Colorectal Laparoscopic Surgery Course at our centre.

**Material and Methods:** The animal must be placed in dorsal recumbency with slight left tilt. 4 trocars are introduced, 3 in the left paramedian region and the fourth for the assistant. From here on we proceed with the identification of anatomical landmarks (terminal ileum, cecum, ileocecal fold and ascending colon), followed by cecal resection and ileocolic anastomosis. 53 digestive surgeons attended the course and subjectively assessed different topics about the porcine model on a 1-10 scale at the end of the 2.5 days course.

**Result:** The porcine animal model for LIR obtained an average score of 9.26±0.21 points. 78,7% of the participants considered to be prepared to apply this surgical technique on their daily clinical practice on human patients and 75,3% believed to have made considerable skills progress.

**Conclusion:** Our training program and proposed porcine animal model were amply accepted and considered useful. Although this animal species presents several anatomical differences regarding humans, it represents a reproducible model and it is also constitutes an economic alternative to other experimental models (canine model).

## OP 33

**Residents' Night Shift Leads to a Significant Decrease in Surgical "Fitness to Perform"**

K.E.A. Van Der Bogt<sup>1</sup>, C.R.H. Huizinga<sup>2</sup>, A.F. Cohen<sup>2</sup>,  
J.M.A. Van Gerven<sup>2</sup>, J.F. Hamming<sup>3</sup>, H.B.A.C. Stockmann<sup>4</sup>,  
S.A.G. Meylaerts<sup>1</sup>

<sup>1</sup> Medical Centre Haaglanden, The Hague, Netherlands

<sup>2</sup> Centre for Human Drug Research, Leiden, Netherlands

<sup>3</sup> LUMC, Leiden, Netherlands

<sup>4</sup> Kennemer Gasthuis, Haarlem, Netherlands

**Background:** Fatigue affects central nervous system function and could influence specialist performance, patient

care and safety. In contrast to other industries there are no "Fit to Perform" standards in medicine. The objective of this pilot study was to gain insight in the current physiological and subjective fitness of selected medical specialists and to correlate these findings to the impairment induced by alcohol.

**Material and Methods:** The extensively validated 'Neurocart' was used to test 15 surgical residents on measures of performance before, during, and after a 12-hour night shift. The Neurocart targets specific parameters, providing information on alertness, memory, visuomotor coordination, motor coordination and general CNS-activity. Moreover, the self-ability to predict 'fitness-to-perform' was assessed. Outcomes were compared with historical data on the effects of alcohol.

**Result:** A significant decrease in adaptive tracking ( $p=0.009$ ) and critical flicker fusion ( $p=0.04$ ) was observed representing alertness, visuomotor coordination, concentration, vigilance, and reaction time. Furthermore there was a significant decrease in saccadic peak velocity, measuring sedation ( $p<0.0001$ ). Moreover, the VAS scores of alertness were significantly decreased ( $p<0.0001$ ), the self-ability to assess 'fitness-to-perform' did not always correlate to the objective measurements. These results compared equally to previously acquired effects of 0.6 g•L BAC.

**Conclusion:** The results indicate that a night shift leads to a significant negative effect on performance, equivalent to the effects of 0.6g•L BAC. This study has identified parameters to assess performance in a clinical setting, offering a clear backbone for a "Fit-to-Perform" test.

#### OP 34

### Video-Based Self Control. A New Teaching Concept for Surgical Skills

Dahmen, Uta<sup>1</sup>, Saenger, Christine<sup>1</sup>, Settmacher, Utz<sup>2</sup>, Dirsch, Olaf<sup>3</sup>

<sup>1</sup> Experimental Transplantation Surgery, Department of General, Visceral und Transplantation Surgery, University Hospital Jena, Jena, Germany

<sup>2</sup> Department of General, Visceral und Transplantation Surgery, University Hospital Jena, Jena, Germany

<sup>3</sup> Institute of Pathology, University Jena, Jena, Germany

**Background:** Teaching clinical skills is nowadays frequently taking place in skills labs using surrogate models. We further developed this approach by integrating approved training principles such as learning by doing, learning by copying, learning by repetition, learning by experiencing success, learning by understanding and learning by self-correcting own errors into a new concept. The key feature of this concept is the video and image documentation of each exercise as a basis for a self-analysis of process and result quality following the principles of the PDCA-cycle.

**Material and Methods:** Every training round of exercises was videotaped and the result foto-documented. The students were instructed to perform a detailed criteria-based analysis

of his process and result quality and to set defined personal goal for the next repetition of the exercise.

**Result:** The new learning concept was applied in 9 teaching groups with up to 18 students each. Implementation of the concept, especially the result and process documentation as well as the selfanalysis based on the PDCA-cycle was applied successfully. Most students reached a high performance quality even upon the first try. Interestingly the result quality did not correlate with the time needed for the exercise. The training success had a lasting effect as demonstrated upon a facultative test 3 months later

**Conclusion:** The new concept was time consuming, but well accepted by the students and resulted in a high and long-lasting process and result quality. In the long run resources for patient care should be saved when training students according to this concept prior to performing tasks in the operating theater. These resources should be allocated for further refining innovative teaching concepts.

#### OP 35

### Trans Atlantic Peer to Peer Learning – An Initial Feasibility Analysis

Np Lynch<sup>1</sup>, T Cil<sup>2</sup>, E Lehane<sup>3</sup>, M Reardon<sup>4</sup>, M Corrigan<sup>1</sup>

<sup>1</sup> Department of Surgery Cork University Hospital, Cork, Ireland

<sup>2</sup> Department of Surgery, University of Toronto, Ontario, Canada and Wilson Centre, UHN, Canada, Toronto, Canada

<sup>3</sup> Catherine McAuley School of Nursing and Midwifery, Brookfield, University College Cork, Ireland, Cork, Ireland

<sup>4</sup> School of Medicine, Brookfield, University College Cork, Ireland, Cork, Ireland

**Background:** Peer to peer learning is a well established learning modality which has been shown to improve learning outcomes. We have previously demonstrated the effectiveness of such an approach within a university setting. The purpose of this pilot study was to explore the feasibility of linking students from North America and Europe with a peer to peer learning approach.

**Material and Methods:** Face and content validity studies were completed on the previously designed and validated online repository www.pilgrimshospital.com. Four medical students from the University of Toronto Canada were paired with four students from University College Cork, Ireland. Each student was invited to upload 2 pieces of information learned from a senior colleague that day. Each student was asked to review the information uploaded by their partner, editing with references if needed. Quantitative and qualitative evaluations of the e-peer system were conducted.

**Result:** During the study the system recorded a total of 10,079 individual page views. Questionnaires completed by participants demonstrated that 6/8 found the system either 'very easy' or 'easy' to use, while all found the system promoted evidenced based, reflective and self-directed learning.

Structured interviews revealed three main themes; 'The Peer Connection', 'Trust in Data Veracity' and 'Aid to Clinical Learning'

**Conclusion:** This study shows it is feasible to link students from separate continents in a community of peer to peer learning. This is viewed positively by students and enhances evidenced based learning. Such an approach encourages peer cooperation and has the potential to disseminate key clinical learning experiences widely.

#### OP 36

### Biomechanical Modelling of the Pelvic System of Pregnant Women. Numerical Simulation of Childbirth and Impact on the Pelvic Floor

Lepage<sup>1</sup>, Jayyosi<sup>2</sup>, Lecomte<sup>2</sup>, Brieu<sup>2</sup>, Duriez<sup>3</sup>, Cosson<sup>1</sup>, Rubod<sup>1</sup>

<sup>1</sup> Hopital Jeanne de Flandre - CHRU Lille, Lille, France

<sup>2</sup> Laboratoire de mécanique de Lille - Ecole Centrale de Lille, Lille, France

<sup>3</sup> INRIA Lille 1 University, Lille, France

**Background:** To provide a pelvic modelling of a pregnant woman to numerically simulate childbirth. It aims to assist in the understanding of the pathophysiology of urogenital prolapse by analysing weaknesses areas and constraints on each pelvic structures during delivery.

**Material and Methods:** We have constructed a numerical modelling of the pelvic system of a pregnant woman with the finite elements method from MRI segmentations. The mechanical properties of pelvic tissues previously defined by the team have been used and adapted to the context of pregnancy.

**Result:** This modelling of pregnant woman constructed is valid and simulates delivery. During the passage of a fetal head in the 50th percentile for 41 weeks of amenorrhea, uterosacral ligaments undergo a 30% deformation. Uterosacral ligaments are the major support structures in the pelvis, its damage is potentially involved in the occurrence of urogenital prolapse. We were able to simulate a delivery depending on the gestational age. The impact on uterosacral ligaments is increased with the raise of the fetal head size.

**Conclusion:** This is the most complete modelling of pregnant woman. It currently allows us to evaluate the impact of childbirth on uterosacral ligaments and to deduce their accountability in the pathophysiology of urogenital prolapse. The first results are promising, but the modelling optimization and future simulations will allow us to further analyze the impact of delivery on the pelvic floor. Similarly the analysis of different birth scenarios are planned and would be useful on the one hand for perineal injuries and on the other for teaching obstetrical mechanics.

#### OP 37

### A Review of the Use Of High-Fidelity Patient Simulation in Undergraduate Medical Training and Assessment

Hunain Hanif Shiwani<sup>1</sup>, Muhammad Hanif Shiwani<sup>2</sup>

<sup>1</sup> University of Nottingham, Nottingham, United Kingdom

<sup>2</sup> Barnsley District General Hospital NHS Foundation Trust, Barnsley, United Kingdom

**Background:** The use of high-fidelity patient simulation (HFPS), computerized mannequins, is well-established in postgraduate medical education but its use as an undergraduate education tool in the literature is scarce. This review aims to search for evidence of the use of HFPS in undergraduate medical education.

**Material and Methods:** A literature search was conducted on MEDLINE and Embase. The search terms used were: "patient simulat\*" AND "medical education" and only English articles were included. From a pool of 730 papers, only articles that discussed the use of HFPS as an educational intervention or assessment tool and discussed undergraduate medical students were included.

**Result:** Of the 46 articles analysed, 28 were from the USA, 6 from Canada, 3 from the UK, 3 from Germany, 2 from Singapore and 1 from each of Switzerland, Poland, Hong Kong and France. 12 involved comparative research, comparing HFPS with another educational tool. 11 focused on the use of HFPS as assessment tools. 37 described the use of HFPS as an educational intervention, 22 of which measured quantitative learner outcomes. At the undergraduate level, HFPS is used for; patient safety training, particular in combination with intraprofessional learning, teaching resuscitation skills, as assessment tools and in teaching basic sciences.

**Conclusion:** HFPS may offer superior transfer of clinical skills compared to low-fidelity simulators, can closely mimic live-actor patients and is well-received by medical students. As the infrastructure for simulation centers is already established, the lack of data to support HFPS is impeding its integration into the undergraduate curriculum.

#### OP 38

### Education of Single-Port Surgery with Curved and Straight Instruments

Péter Lukovich<sup>1</sup>, Ben V. Sionov<sup>2</sup>, Tímea Kakucs<sup>1</sup>,  
Noémi Dobó<sup>2</sup>, Péter Benkő<sup>1</sup>

<sup>1</sup> 1st Department of Surgery, Semmelweis University, Budapest, Hungary

<sup>2</sup> Semmelweis University, Budapest, Hungary

**Background:** At the moment the necessity for a laparoscopic training curriculum is evident, but there is little data in the literature about the education of single port

surgery.

**Material and Methods:** Twenty medical students were prospectively randomized into two groups: group-S used conventional straight and group-C used curved laparoscopic instruments. Each group performed two tasks on Mentor box trainer in single-port setting. Learning curves were obtained by daily measurements recorded in seven-day sessions, on the last day both groups switched instruments between each other.

**Result:** Although Group-S performed all tasks significantly faster than Group-C on the first day, the difference proved to be non-significant on the last day. All participants achieved significantly shorter task completion time on the last day than on the first day, regardless of the instrument they used. Group-S showed progression of 63.55%, Group-C 69.05% by the end of the session. After swapping the instruments, Group-S reached significantly higher task completion time with curved instruments while Group-C showed further progression of 8.95% with straight instruments.

**Conclusion:** The number of surgical interventions performed in single-port access is growing; however, the number of articles on the efficient teaching of this techniques is still insignificant. This study shows that training with curved instruments allows for a better acquisition of skills in a shorter period of time. For this reason, there is a need for proficiency-based conventional, but also for a single-port laparoscopic training curriculum in general surgery residency education.

#### OP 39

### 18F-FDG-PET/CT For Early Detection of Vascular Grafts Infection

*Karaca Saziye, Kalangos Afksendiyos*

Service of Cardiovascular Surgery, University Hospital Geneva, CH-1211 Geneva, Switzerland, Geneva, Switzerland

**Background:** Objective: We sought to evaluate the potential role of positron emission tomography-computed tomography (PET-CT) for the detection and diagnosis of potential infections of vascular grafts using combining metabolic (i.e., radioactive fluorine-fluoro-D-deoxyglucose (18F-FDG)) PET with morphological (CT) information and investigate long-term capability.

**Material and Methods:** Methods: Seventeen patients with suspected vascular-graft infection underwent thoracic-abdominal-pelvic FDG PET combined with contrast-enhanced CT using a hybrid PET-CT scanner providing co-registered PET and CT images.

**Result:** Results: In this retrospect study, we suspected graft infection in 14 of 17 patients detected using PET-CT and increased the maximal uptake of 18F-FDG around the grafts. Other vascular localisations were not observed. All patients with positive PET-CT results underwent redo-surgery, and the infection was ultimately confirmed using microbiological

testing in 12 of 14 patients. We performed stable clinical follow-up with a median of 58 months (range 36-73 months) for all 17 patients. In these patients, there was no further evidence of graft infection found on clinical and imaging follow-up and no infection-associated hospitalization.

**Conclusion:** Conclusion: This is first investigation presenting long-term follow-up, which confirmed that 18F-FDG-PET/CT is an excellent diagnostic modality for suspected vascular graft infection. 18F-FDG PET-CT exhibited a sensitivity of 100% and specificity of 71.4% for the detection of vascular-graft infection. An early diagnosis of prosthetic infection with 18F-FDG-PET/CT and rapid treatment ensures good long term results.

#### OP 40

### Differential Effect Of Disturbed vs Uniform Pulsatile Flow

*Gautham Chitragari, Bauer E Sumpio*

Yale University School of Medicine, New Haven, United States

**Background:** Yes Associated Protein (YAP) has been found to differentially regulate cell growth and proliferation based on cell shape and matrix stiffness by altering the level of its phosphorylation. We hypothesized that different types of flow have different effects on the phosphorylation of YAP. OBJECTIVE: The aim of this study was to assess the level of phosphorylation of YAP when subjected to pulsatile forward flow (PFF), analogous to uniform flow, or pulsatile To Fro Flow (TFF), analogous to disturbed flow.

**Material and Methods:** Confluent human umbilical vein endothelial cells (HUVECs) seeded on fibronectin coated glass slides were exposed to TFF and PFF in a parallel plate flow chamber controlled by a computerized pump for up to 4 hours at 37° C in a humidified CO2 environment. HUVECs incubated in culture medium under static conditions served as control. At the end of experimentation, cell lysates were prepared and immunoblotted with antibodies to phospho-YAP and total YAP.

**Result:** HUVECs exposed to both TFF and PFF showed a decrease in the phosphorylation of YAP when compared to static controls. The degree of decrease in phosphorylation was more with PFF when compared with TFF.

**Conclusion:** Different types of flow have different effects on phosphorylation of YAP. These results suggest that YAP could be a mechano-transducer for endothelial cells. Since differences in flow types have been postulated to be play a role in atherogenesis, these results also suggest the possibility of involvement of YAP in atherosclerosis.

## OP 41

**Myocardial Protection Assessment in Heart Surgery with Infra-Red Bolometer**

A Seghrouchni<sup>1</sup>, C Engrand<sup>2</sup>, Jc Sinquet<sup>1</sup>, H Taillade<sup>3</sup>, D Lau<sup>2</sup>, E Le Clézio<sup>2</sup>, R Demaria<sup>4</sup>

<sup>1</sup> Department of thoracic and cardiovascular surgery, A de Villeneuve hospital 371 Av Giraud, Montpellier, France

<sup>2</sup> Université Montpellier 2, Institut d'Electronique du Sud, UMR CNRS 5214, Montpellier, France

<sup>3</sup> Montpellier University 1, Montpellier, France

<sup>4</sup> Montpellier University 1, Department of thoracic and cardiovascular surgery, A de Villeneuve hospital 371 Av Giraud, Montpellier, France

**Background:** Per operative assessment of myocardial protection during heart surgery is of crucial interest. Among different parameters, myocardial temperature remains of paramount importance. The aim of this study is to evaluate myocardial temperature in real time during all surgery time and in numerous points.

**Material and Methods:** Sternotomies were performed on Swines and cardiopulmonary bypass instituted. Aorta was then clamped and blood cardioplegia instituted. The myocardium thermal evolution was studied thanks to an infra-red bolometer. A FLIR© SC-645 camera was positioned fifty centimeters away from the heart before the introduction of the hypothermic cardioplegic solutions. Images of the surface of the heart were recorded every second during nearly one hour by a Labview© program. The experimental protocol was an injection of a crystalloid solution and a twenty minute period during which the heart underwent a natural warming. A new cardioplegia was then instituted.

**Result:** It was possible to obtain with a 1°C resolution a cartography of the whole anterior part of the heart. A post-treatment allowed the visualization of the diffusion of the hypothermic cardioplegia through the coronary arteries into the myocardium. Local and global thermal analyses were also performed in a way to observe both cooling and warming dynamics of the muscle. Visualization of the temperature was then performed in 10 points to quantify the time evolution.

**Conclusion:** Accurate per operative measurements of myocardial temperature in real time and simultaneously on different points are possible with very attractive cartographies. This should be useful to guide new cardioplegia instillation following objectives parameters.

## OP 42

**Pulmonary Vein Stenosis after Infiltration With IgG4 Related Gammopathy**

Mohamed El-Saegh<sup>1</sup>, Tanjila Hakim<sup>2</sup>, Rachel Calvert<sup>1</sup>, Leanne Connelly<sup>1</sup>, Thomas Theologou<sup>1</sup>

<sup>1</sup> The James Cook University Hospital, Middlesborough, United Kingdom

<sup>2</sup> Liverpool Heart and Chest Hospital, Liverpool, United Kingdom

**Background:** A 57 year old male, had been suffering for more than 10 years with vague general symptoms of malaise, fatigue, abdominal discomfort and pruritus together with shortness of breath, chest tightness and some occasional palpitations on exertion. A CT scan revealed a multi-systemic disease process involving most of the anterior mediastinal lymph nodes together with parenchymal infiltrations of the liver, the kidneys and pleura. An anterior mediastinotomy and pleural biopsy were performed to clarify the diagnosis. A trans-oesophageal echo (TOE) was performed to exclude any myocardial or valve involvement of this systemic process. The histology report was highly suspicious of IgG4 related disease. The TOE showed severe left superior pulmonary vein stenosis by infiltration of the right superior pulmonary vein, causing a jet back to the left atrium.

**Material and Methods:** After undergoing several investigations including gastroscopy, barium swallow, MRI neck, and several biopsies there were no significant findings. Histology revealed reactive or non-specific inflammatory changes with no evidence of malignancy.

**Result:** Open pleural biopsy via mediastinotomy was performed during which a transesophageal echocardiogram was also performed. This revealed severe superior pulmonary stenosis.

**Conclusion:** This is a rare finding of IgG4-Related disease, where there is infiltration of the pulmonary vein causing left superior pulmonary vein stenosis, which was discovered during intra-operative TOE. Clinicians ought to be aware that when symptoms of shortness of breath and palpitations are reported by a patient with rare pathologies, like IgG4-RD, a TOE investigation could be an additional aid to diagnosis.

## OP 43

**Short-Term Outcomes of Type A & Type B Aortic Dissection Repair***Myat Soe Thet<sup>1</sup>, Aykut Kankoc<sup>1</sup>, Fatma Nur Baran Aksakal<sup>2</sup>, Ali Yener<sup>3</sup>*<sup>1</sup> English School of Medicine, Faculty of Medicine, Gazi University, Ankara, Turkey<sup>2</sup> Department of Public Health, Faculty of Medicine, Gazi University, Ankara, Turkey<sup>3</sup> Department of Cardiovascular Surgery, Faculty of Medicine, Gazi University, Ankara, Turkey

**Background:** Aortic dissection is a medical emergency with high mortality rate despite the recent advances in treatment modalities. Short-term mortality, complication rates, and 1-year survival rates are reported in this study for both type A and type B aortic dissections after respective surgical and medical treatments.

**Material and Methods:** A total of 26 patients, both type A (n=15) and type B (n=11) from 2008 through 2013 are retrospectively analyzed for short-term outcomes, such as mortality and complication rates, and also 1-year survival rates. Mann-Whitney U test, Fisher's exact test,  $\chi^2$  test and Kaplan-Meier survival analysis were used for statistical analysis.

**Result:** Overall short-term mortality rates for type A and type B aortic dissections are 66.7% (20.0% intraprocedural, 46.7% postprocedural) and 27.3% (9.1% intraprocedural, 18.2% postprocedural) respectively. Complication rates are 66.7% (20.0% intraprocedural, 46.7% postprocedural) for type A and 36.4% (9.1% intraprocedural, 27.3% postprocedural) for type B aortic dissection. 1-year survival rate is 33.3% for type A, and 72.7% for type B. There is no statistically significant difference between the mortality, complication rates and 1-year survival rates of type A and type B aortic dissections ( $P > 0.05$ ).

**Conclusion:** The short-term mortality and complication rates of aortic dissection remain considerably high disregard to the type of the dissection or the treatment modality. However, type B has slightly better outcome compared to type A aortic dissections.

## OP 44

**Short-Term Mortality and Complication Rates of Endovascular Repair Versus Open Surgical Repair for Aortic Aneurysms***Myat Soe Thet<sup>1</sup>, Aykut Kankoc<sup>1</sup>, Fatma Nur Baran Aksakal<sup>2</sup>, Ali Yener<sup>3</sup>*<sup>1</sup> English School of Medicine, Faculty of Medicine, Gazi University, Ankara, Turkey<sup>2</sup> Department of Public Health, Faculty of Medicine, Gazi University, Ankara, Turkey<sup>3</sup> Department of Cardiovascular Surgery, Faculty of Medicine, Gazi University, Ankara, Turkey

**Background:** Endovascular repairs (TEVAR/EVAR) has emerged as an alternative to conventional open surgical repair for both thoracic and abdominal aortic aneurysms. With the gaining popularity of endovascular repair, mortality, complications and survival rates of open surgical repair and endovascular repair are being compared.

**Material and Methods:** From 2008 through 2013, a total of 75 patients were assigned into two groups for retrospective analysis according to the treatment received. Group A (n=54) was treated with endovascular repair (either TEVAR or EVAR) and group B (n=21) received open surgical repair as treatment. Short-term mortality and complication rates, and also 1-year survival rates are compared between Group A and Group B. Mann-Whitney U test, Fisher's exact test,  $\chi^2$  test and Kaplan-Meier survival analysis were applied for statistical analysis.

**Result:** Overall short-term mortality rate of Group A is 16.7% and that of group B is 19.0%. Total complication rates are 14.8% for Group A, and 33.3% for Group B. 1-year survival is 85.2% for Group A, and 81.0% for Group B. There is no statistical significant difference between Group A and Group B in terms of short-term mortality and complication rates, and 1-year survival rate as well ( $P > 0.05$ ).

**Conclusion:** Open surgical repair and endovascular repair (TEVAR/EVAR) of aortic aneurysms have similar short-term rates of survival.

## OP 45

**Characterization of a Murine Model of Hindlimb Chronic Ischaemia**

Borja Herrero-De-La-Parte<sup>1</sup>, Ignacio Garcia-Alonso<sup>1</sup>,  
Maria C. Morales<sup>2</sup>, Maria D. Garcia-Vazquez<sup>2</sup>

<sup>1</sup> University of The Basque Country UPV/EHU, Leioa, Spain

<sup>2</sup> BioCruces Health Research Institute, Baracaldo, Spain

**Background:** Peripheral arterial disease affects around 10-20% of people over 70 in western countries. Up to 30% of patients cannot benefit from current treatments, while a significant proportion of those who undergo surgery will eventually lose their extremity. More research in this field is therefore mandatory, and so are appropriate animal models.

**Material and Methods:** Six adult and six young male Wag/RijCrl rats, and 19 BalbC mice were used. Under isoflurane anesthesia the common femoral artery was ligated. Capillary blood flow was assessed by means of a Laser Doppler (Oxford Array™). Three different measurements were performed in each limb (ischaemic and control) just prior and after artery ligation, and there on every week. A group of young rats treated with CsA (10mg/kg ip) received 700,000 mesenchymal stem cells or the solvent into the semimembranous muscle. After three weeks the animals were sacrificed and the semimembranous muscle was embedded in paraffin.

**Result:** Following artery ligation, capillary blood flow dropped to 24%±7.1 in adult rats, while in younger animals it only fell to 41%±4.7. Two weeks later, capillary flow was partially recovered (41%±9.8 and 73%±7.3 respectively). In mice, capillary flow fell initially to 48%±18.2, recovering to 67%±29.3 after 21 days. Animals with mesenchymal stem cells showed increased blood flow on day 8th (125% vs 58%, p<0.001) and 15th (117% vs 73%, p<0.001).

**Conclusion:** Chronic hindlimb ischemia was successfully developed in both animal models. Intramuscular injection of mesenchymal stem cells improved recovery of capillary blood flow following artery ligation.

## OP 46

**NIM-811 Reduces Skeletal Muscle Damages and Renal Complications after Lower Limb Vascular Operation**

Dávid Garbaisz<sup>1</sup>, Zsolt Turóczy<sup>1</sup>, Péter Arányi<sup>1</sup>,  
András Fülöp<sup>1</sup>, Olivér Rosero<sup>1</sup>, Edit Hermeszt<sup>2</sup>, Péter Ónody<sup>1</sup>,  
Gábor Lotz<sup>3</sup>, László Harsányi<sup>1</sup>, Attila Szijártó<sup>1</sup>

<sup>1</sup> Semmelweis University 1st Department of Surgery, Budapest, Hungary

<sup>2</sup> University of Szeged, Department of Biochemistry and Molecular Biology, Szeged, Hungary

<sup>3</sup> Semmelweis University 2nd Department of Pathology, Budapest, Hungary

**Background:** Vascular operations on lower extremities cause ischemic-reperfusion (IR) injury and rhabdomyolysis of skeletal muscle, which could induce remote kidney injury. NIM-811 has mitochondria specific effects. Our aim was to reduce damages in skeletal muscle and in the kidney after IR of the lower limb with NIM-811.

**Material and Methods:** Wistar rats underwent 180 minutes bilateral lower limb ischemia and 240 minutes reperfusion. Animals were divided into four groups called Sham (vehicle; n= 10pcs), NIM-sham (NIM-811+vehicle; n=10pcs), IR (vehicle+IR; n=10pcs), and NIM-IR (NIM-811+vehicle+IR; n=10pcs). Serum, urine and histological samples were taken. NADH-tetrazolium staining, muscle Wet/Dry (W/D) ratio calculations, and laser Doppler-flowmetry (LDF) were performed. Renal peroxynitrite concentration, serum TNF- $\alpha$  and IL-6 levels were measured.

**Result:** Lesser extent of histopathological alterations was presented in the NIM-IR group compared to the IR group. The serum necroenzyme levels were significantly lower in the NIM-IR group than in the IR group (LDH:p=0.01; CK:p=0.04). Muscle mitochondrial viability proved significantly higher (p<0.001) and renal function parameters were significantly better (creatinin:p=0.002; FENa:p=0.01) in the NIM-IR group compared to the IR group. Level of serum TNF- $\alpha$  was significantly lower (p=0.04), as well as W/D ratio and peroxynitrite concentration were significantly lower (W/D:p=0.04; peroxynitrite concentration:p=0.003) in the NIM-IR group compared to the IR group.

**Conclusion:** NIM-811 could have the potential of reducing rhabdomyolysis and the impairment of the kidney after lower limb IR injury.

## OP 47

**Adrenal Pathology : Up-to-Date in Surgical Treatment***Francesco Lapolla, Vincenzo Neri*

General Surgery - University of Foggia, Foggia, Italy

**Background:** We evaluated the results of the up-to-dated literature and compared, in our experience, the results of the laparoscopic (LA) versus open (OA) approach in the treatment of the various kind of adrenal pathology.

**Material and Methods:** From 2000 to 2013 we treated 61 patients (33 female, 28 male; mean age 57, 2 bilateral adrenalectomies). We performed 33 LA with lateral transperitoneal approach (13 right;20 left) and 28 anterior transperitoneal OA (16 right;12 left). The pathologic features were: Cushing's syndrome (4), primary hyperaldosteronism (15), pheochromocytoma (14), lymphoma (1), nonfunctioning adrenal adenomas (29).

**Result:** Among the immediate results a greater blood loss was evident in the OA; whereas we had a rather longer operative time in LA. There were three conversions to a laparotomic procedure (4.9%). In the postoperative period there were some pulmonary infections (6) and infection of the laparotomy (3) in the OA; in the laparoscopic group there were two parietal hematomas that cleared up spontaneously, in correspondence of a trocar access.

**Conclusion:** The size of the adrenal lesions for the LA is increased in the last years, but the standard indications are for lesions no more than 8-10 cm in size and confined within the gland. The morbidity in the miniinvasive approach is much lower than the open technique due to minor surgical stress and in the LA there is a very rapid resumption of the normal activities in the postoperative course. In conclusion the laparoscopic adrenalectomy with lateral transperitoneal approach is a safe and efficacious procedure.

## OP 48

**CD74 Expression And Its Therapeutic Potential In Thyroid Carcinoma***Shih-Ping Cheng, Chien-Liang Liu, Jie-Jen Lee, Tsang-Pai Liu, Ming-Nan Chien*

Mackay Memorial Hospital and Mackay Medical College, Taipei, Taiwan, Province of China

**Background:** CD74, also known as the invariant chain of major histocompatibility complex class II, may function as a receptor for macrophage migration inhibitory factor (MIF). Both CD74 and MIF have been shown to have pro-tumorigenic roles in several types of cancer. A humanized anti-CD74 monoclonal antibody, milatuzumab, is under investigation in patients with hematological neoplasms. The aim of this study was to evaluate the expression of CD74 and MIF and their

prognostic significance in thyroid carcinoma.

**Material and Methods:** We investigated CD74 and MIF expression in thyroid cancer by immunohistochemistry. The semiquantitative scoring of the immunohistochemical staining was compared with clinicopathologic factors. Cell growth, migration, and invasion of thyroid cancer cells treated with CD74 antibody were evaluated with MTT assay, colony formation, wound healing, and transwell assay.

**Result:** Cytoplasmic CD74 expression was observed in 60% papillary thyroid cancer and MIF expression in 65%. Thyroid cancer with CD74 expression exhibited larger tumor size, more extrathyroidal extension, and advanced disease stage. Treatment with CD74 antibody significantly inhibited cell growth, migration, and invasion of thyroid cancer cells. MIF expression did not correlate with clinicopathological parameters or CD74 expression.

**Conclusion:** CD74 expression in thyroid cancer correlates with tumor aggressiveness. CD74 may serve as a potential therapeutic target in thyroid cancer.

## OP 49

**Gene Expression Profile of Normal Thyroid Tissue as Indicator of Carcinoma***Roberto Ria<sup>1</sup>, Vittorio Simeon<sup>2</sup>, Annalisa Morano<sup>2</sup>, Angela Gurrado<sup>3</sup>, Iliaria, Fabiola Franco<sup>3</sup>, Giovanna Di Meo<sup>3</sup>, Stefania Trino<sup>2</sup>, Carmela Mazzoccoli<sup>2</sup>, Pellegrino Musto<sup>2</sup>, Antonia Reale<sup>2</sup>, Alessandro Pasculli<sup>3</sup>, Germana Lissidini<sup>3</sup>, Giuseppe Piccinni<sup>3</sup>, Angelo Vacca<sup>1</sup>, Mario Testini<sup>3</sup>*

<sup>1</sup> Department of Biomedical Sciences and Human Oncology, Section of Clinical Medicine. University Medical School of Bari "Aldo Moro", Bari, Italz

<sup>2</sup> Laboratory of Pre-Clinical and Traslational Research, IRCSS CROB of Rionero in Vulture, Rionero in Vulture (Pz), Italy

<sup>3</sup> Department of Biomedical Sciences and Human Oncology, Section of Endocrine, Digestive, and Emergency Surgery. University Medical School of Bari "Aldo Moro", Bari, Italy

**Background:** Gene expression profiling (GEP) is a powerful mean of dissecting the biology of cancer. Here, it has been used for the first time to characterize and compare normal thyroid tissues removed during surgery.

**Material and Methods:** A triple-blind prospective study was performed between May and October 2013 on 45 consecutive patients (13 M, 32 F; mean age: 52.8 years) who underwent thyroid surgery. A normal sample of the gland was isolated during operation and a comparative gene expression profiling was performed. Total RNA was isolated and the whole-GEP was determined. Raw data were extracted and computed normalized. Unsupervised analysis performed by Pearson correlation was applied to a subset of 50 genes which average change in fold expression levels (ACFEL) varied mainly from the mean across the whole panel. GEP was validated by qRT-PCR (significance by the Wilcoxon signed-rank test).



**Result:** Unsupervised analysis showed high samples clustering according to similar pathology: carcinoma, goitres, hyperfunctioning disease, normal tissues from patients with parathyroid disease. 50 genes were found differentially expressed at relatively high stringency (1.7 ACFEL). Seventeen genes showed a p-value < 0.05 and their differences were significant. Functional annotation revealed a role of these genes in the immune system response, and cell activation. The differential expression of all 17 genes was confirmed by qRT-PCR (p<0.05).

**Conclusion:** The distinct GEP detected may influence the insurgence and/or progression of thyroid cancer, its molecular classification, and thus pinpoint selective gene targets for new preoperative diagnostic approaches treatments and prophylactic strategies.

## OP 50

### Total Thyroidectomy by Loupe Magnification: A Comparative Study

Aly Saber<sup>1</sup>, Gouda M Ellabban<sup>2</sup>, Mohammad Rifaat<sup>3</sup>,  
Mohammad A Gad<sup>4</sup>,

<sup>1</sup> Port-Fouad General Hospital, Port-Fouad, Port-Said, Port-Said, Egypt

<sup>2</sup> Department of Surgery, Suez Canal University, Ismailia, Egypt, Ismailia, Egypt

<sup>3</sup> Faculty of Medicine, Department of Otorhinolaryngology, Suez Canal University, Ismailia, Egypt, Ismailia, Egypt

<sup>4</sup> Faculty of Medicine, Department of Surgery, Suez Canal University, Ismailia, Egypt, Ismailia, Egypt

**Background:** Total thyroidectomy has been accepted as current surgical therapy for benign and malignant thyroidal disorders but extensive resection might increase the risk of postoperative complications. Intensive effort should be spent to prevent recurrent laryngeal nerve injury and hypoparathyroidism, because they can be avoided with appropriate surgical technique during total thyroidectomy. The authors proposed that the use of a loupe for operative field magnification could improve the outcome of total thyroidectomy as regard to identification of both the recurrent laryngeal nerves and the parathyroids.

**Material and Methods:** Patients were subjected to total thyroidectomy with loupe magnification in group A and without loupe in group B. The status of vocal cords of all patients was checked postoperatively by laryngoscope. Serum calcium concentration immediately postoperatively and during follow-up was checked.

**Result:** Loupe magnification helps identification of external branch of superior laryngeal nerve and parathyroid preservation.

**Conclusion:** Total thyroidectomy by loupe magnification is feasible, improves the outcome, and should be done by experienced surgeon.

## OP 51

### Use of Bone Turnover Markers (PINP And CTX) in Primary Hyperparathyroidism

Parameswaran Rajeev<sup>1</sup>, Annie Movsesyan<sup>2</sup>, Jeremy Lynch<sup>2</sup>,  
Ali-Baharan<sup>3</sup>

<sup>1</sup> Department of Endocrine Surgery, National University Hospital, Singapore, Singapore, Singapore

<sup>2</sup> Department of Endocrine & General Surgery, St Mary's Hospital, Newport, Isle of Wight PO30 5TG, Newport, United Kingdom

<sup>3</sup> Department of Biochemistry, St Mary's Hospital, Newport, Isle of Wight PO30 5TG, Newport, United Kingdom

**Background:** Osteoporosis in Primary hyperparathyroidism (PHPT) is secondary to catabolic effect promoting osteoclast activity and bone resorption and this effect is predominant at cortical sites. The aim of study was to assess P1NP (bone formation marker) and CTX (resorption marker) as markers of accelerated bone turnover in patients with parathyroid disease and the effect of surgery.

**Material and Methods:** Retrospective study of patients diagnosed with parathyroid disease between Jan 2005–Dec2012 at a district general hospital. Serum calcium, intact parathyroid hormone (iPTH), bone-specific alkaline phosphatase (BAP), PINP and CTX were measured serially. Outcomes measured were cure, improvement in bone turnover markers and improvement in bone density on DEXA scans at 1 year post intervention. Patients with Vitamin D deficiency were treated with Vit D before intervention.

**Result:** 133 (112F:21M) patients (age 25-91 range yrs) underwent treatment for parathyroid disease. 10 patients were treated conservatively and 123 proceeded to surgery following localisation studies. Surgical treatment was with an open exploration under GA for adenoma (n=115) and hyperplastic disease (n=8). Following intervention PINP dropped significantly from a mean of 65.01ug/l to 25.63ug/l and CTX from 0.64ug/l to 0.16ug/l at 6 months. This change was reflected in improvement in BMD (T- scores) (3-17%) of both hip and spine. In 5 patients where surgical intervention failed there was no drop in the bone turn over markers.

**Conclusion:** CTX and PINP are good biochemical markers to predict improvement in bone mineral density in patients with primary hyperparathyroidism following surgery.

## OP 52

**Experimental Parathyroid Autotransplantation in Hypoparathyroidism**

Mehmet Erikoglu<sup>1</sup>, Bayram Colak<sup>2</sup>, Hatice Toy<sup>1</sup>, Mehmet Gurbilek<sup>1</sup>

<sup>1</sup> Necmettin Erbakan University Meram Medical Faculty , Konya, Turkey

<sup>2</sup> Gumushane Kelkit Ministry Hospital , Gumushane, Turkey

**Background:** In this experimental study using rats with hypoparathyroidism, our aim was to investigate whether the excised parathyroid tissue seeded in the liver and in the peritoneum, instead of the SCM muscle.

**Material and Methods:** In our study, four different groups, each consisting of 10 Wistar albino rats were used. Group 1 (Sham group): Parathyroid exploration only was made. Group-2 (SCM group): Parathyroidectomy was performed and the parathyroid tissue was seeded into the sternocleidomastoid muscle. Group-3 (Liver group): After parathyroidectomy, laparotomy was performed and the parathyroid tissue was seeded in the liver. Group-4 (Periton group). After parathyroidectomy, laparotomy was performed and the parathyroid tissue was seeded in the peritoneum. After 14 days, the rats were sacrificed and parathyroid hormone was measured, the parathyroid tissue was then excised and examined.

**Result:** When we compared group 1 with the other groups, a difference was observed in the levels of PTH hormone ( $p < 0.01$ ). There was no such difference between groups 2 and 3 ( $p > 0.01$ ). Similarly, there was no significant difference between Group 3 and 4 ( $p > 0.01$ ). In pathological examination, tissue loss, calcification, necrosis, foreign body reaction and fibrosis, there was no difference between Group 2 and Group 3 ( $p > 0.01$ ), Likewise, there was no difference between Groups 2 and Group 4 ( $p > 0.01$ ).

**Conclusion:** As a result, it was concluded that during thyroid surgery, the excised parathyroid tissue, in selected cases, may be planted in the liver and peritoneum.

## OP 53

**Laparoscopic RYGBP Effects on Adipose Tissue in an Obese Gottingen**

Laura Hernández Hurtado<sup>1</sup>, Idoia Díaz-Güemes Martín-Portugués<sup>1</sup>, José Luis De La Cruz Vigo<sup>2</sup>, Ana María Matos-Azevedo<sup>1</sup>, Juan Maestre Antequera<sup>1</sup>, Francisco Miguel Sánchez Margallo<sup>1</sup>

<sup>1</sup> Minimally Invasive Surgery Centre Jesús Usón, Cáceres, Spain

<sup>2</sup> Clínica San Francisco, León , Spain

**Background:** The objective of the current study was to assess body fat distribution, lipid profile, and leptin changes on an obese minipig subjected to a Roux-en-Y gastric bypass.

**Material and Methods:** 9 obese minipigs were enrolled in this study. Obesity was developed after a nine-month period of high-fat diet. Then, minipigs were subjected to a laparoscopic RYGBP. The procedure was accomplished laparoscopically by a 5-port approach. The parameters recorded were body weight, adipose tissue distribution, lipid profile, and plasmatic concentration of leptin. They were measured one week before surgery (T0) and 4 months after surgery (T1). Adipose tissue distribution (VAT -visceral adipose tissue- and SAT. subcutaneous adipose tissue-) was quantified with magnetic resonance imaging scan (MRI). Differences between time points were checked with a paired T-test. A  $p < 0.05$  was considered significant.

**Result:** SAT increased after surgery ( $1032.9 \pm 387.72$  vs  $1360.44 \pm 492.26$ ,  $p=0.051$ ), whereas visceral adipose tissue decreased significantly ( $1311.01 \pm 420.75$  vs  $672.74 \pm 180.32$ ,  $p=0.01$ ). Regarding lipid profile, total cholesterol ( $92.89 \pm 9.73$  vs  $76.22 \pm 13.05$  UI/L,  $p=0.09$ ) showed a significant decrease. Regarding correlation, body weight was positively correlated with SAT ( $r^2=0.689$ ,  $p=0.002$ ) and negatively correlated with leptin ( $r^2=0.591$ ,  $p=0.02$ ).

**Conclusion:** These results demonstrate that the altered gastrointestinal anatomy caused by RYGBP provokes changes in the energy metabolism as evidenced by the variation of the distribution of adipose tissue, although the insignificant changes on body weight

## OP 54

**Obese Gottingen Minipig as a Large Animal Model for Bariatric Surgery**

Laura Hernández Hurtado<sup>1</sup>,  
Idoia Díaz-Güemes Martín-Portugués<sup>1</sup>,  
José Luis De La Cruz Vigo<sup>2</sup>, Ana María Matos-Azevedo<sup>1</sup>,  
Juan Maestre Antequera<sup>1</sup>,  
Francisco Miguel Sánchez Margallo<sup>1</sup>

<sup>1</sup> Minimally Invasive Surgery Centre Jesús Usón, Cáceres, Spain

<sup>2</sup> Clínica San Francisco, León, Spain

**Background:** In this work an obese minipig swine model for bariatric surgery research and/or training purposes was developed.

**Material and Methods:** 11 male Gottingen minipigs participate in the study. Obesity was developed through administration of a high-fat diet during a period of 9 months. After this period the minipigs were subjected to a laparoscopic Roux-en-Y gastric bypass by an experienced bariatric surgeon. At the end of the procedure, the surgeon opinions related to the similarities and differences compare to human bariatric surgery were collected.

**Result:** All the studied parameters showed a progressive increase over the study period. Specifically at the end of the period of nine months with high-fat diet, a significant increase in weight ( $29.52 \pm 1.67$  vs  $51.90 \pm 5.78$  kg), neck circumference, abdominal circumference and lipid profile were observed. Regarding surgeon opinion, he stated that Veress needle and trocar placement were more difficult in obese model than in normal-weighted pigs, and more similar to obese people. He also remarked the similar sensation during preparation of the field for the execution of LRYGBP in the obese pig compared to morbid obese people due to the more demanding manipulation maneuvers of the bowel.

**Conclusion:** In conclusion, obese swine model would be appropriated for feasibility and safety studies of new stapling devices, and whenever survival studies are needed. On the other hand, this model is mandatory whenever obesity or any of its comorbidities are under study.

## OP 55

**Changes on Glucose Homeostasis in an Obese Minipig after LRYGBP**

Laura Hernández Hurtado<sup>1</sup>,  
Idoia Díaz-Güemes Martín-Portugués<sup>1</sup>,  
José Luis De La Cruz Vigo<sup>2</sup>, Ana María Matos-Azevedo<sup>1</sup>,  
Javier García Casado<sup>1</sup>,  
Francisco Miguel Sánchez Margallo<sup>1</sup>

<sup>1</sup> Minimally Invasive Surgery Centre Jesús Usón, Cáceres, Spain

<sup>2</sup> Clínica San Francisco, León, Spain

**Background:** The aim of this study is to assess the changes on glucose metabolism after a laparoscopic roux en Y gastric bypass in an obese Gottingen minipig, after a medium-term postoperative period wherein weight loss changes were minimum.

**Material and Methods:** 9 obese male Gottingen minipigs underwent a LRYGBP. Obesity was induced by feeding during a period of 9 months with a high-fat diet. After surgery, minipigs were fed with a high-caloric paste for four months in order to maintain the body weight. Fasting plasmatic levels of glucose, insulin, GLP-1 and glucagon were obtained prior to and after 4 months of LRYGBP. The blood samples were collected in conscious pigs. Glucose was determined immediately after blood sampling by an automated chemistry analyzer. Plasmatic insulin, GLP-1 and GIP concentrations were measured by a porcine specific enzyme-linked immunosorbent assay (ELISA).

**Result:** Body weight remained unchanged four months after surgery. Glucagon ( $1.12 \pm 0.67$  vs  $0.92 \pm 0.22$  ng/ $\mu$ L) and GLP ( $138.26 \pm 50.47$  vs  $147.11 \pm 110.29$ ) showed a slight decrease and increase, respectively. Whereas insulin concentration presented a statistically significant fall at the end of the study ( $2.27 \pm 0.84$  vs  $1.35 \pm 0.74$   $\mu$ g/dL,  $p=0.001$ ), along with glucose ( $100.86 \pm 7.27$  vs  $82.29 \pm 13.96$  mg/dL,  $p=0.02$ ).

**Conclusion:** This study showed that even maintaining body weight between narrow margins, LRYGBP causes long-term beneficial changes in the metabolism of glucose in obese minipigs.

## OP 56

**The Stabilization of Adhesion Formation in the Abdominal Cavity – A Rat Model**

Györgyi Szabó<sup>1</sup>, Gamal Eldin Mohamed<sup>2</sup>, Gabriella Arató<sup>3</sup>,  
Andrea Ferencz<sup>1</sup>, József Sándor<sup>1</sup>, Endre Bráth<sup>1</sup>, Domokos  
Csukás<sup>1</sup>, György Wéber<sup>1</sup>

<sup>1</sup> Department of Surgical Research and Techniques,  
Semmelweis University, Budapest, Hungary

<sup>2</sup> Europ Med, Budaörs Medical Center, Department of  
Day Surgery and Minimally Invasive Technique, Budaörs,  
Hungary

<sup>3</sup> Department of Pathology, St John Hospital, Budapest,  
Hungary

**Background:** Surgical procedures frequently cause adhesion formation. The consequence is infertility, motility disorders and pain. The development of adhesions is an acquired property which results in pathological alterations. One of the key molecules is plasminogen activator inhibitor-1 (PAI-1).

**Material and Methods:** 90 male Wistar rats were used for creating an animal adhesion model. 16 animals consisted the control group. In 74 operated animals a part of the parietal peritoneum was removed. The serosal surface of coecum was incised. The injured surfaces were desiccated. The operated animals were divided into eight groups depending on the length of postoperative (po) period. Then localization, extension and stabilization of adhesions was determined. Tissue samples were taken to follow-up cellular events and PAI-1 presence.

**Result:** Large-surface cohesive and columnar adhesion was the most frequent type. Stabilized adhesion appeared on the 3rd po. day and there number and proportion increased with comparison to the instabil or moderate stabil types. On the 7th day all of the adhesions were stabilized. In the early po. period damaged muscle fibres and invading neutrophil granulocytes could be observed. From the 3rd po. day active fibroblast and endothel cells appears. Histological findings showed 'unifying' process, but in stabilized adhesion the original borders of the tissues could not be detected. Nerve fibres and PAI-1 molecules were present in the adhesion tissue.

**Conclusion:** Regarding the stabilization process and the presence of PAI-1, the best way for prevention of adhesion formation could be discovered.

## OP 57

**The Structural Changes of the Pancreas in Experimental Acute Pancreatitis in Rats**

S.O Abiola<sup>1</sup>, P.G Rasputin<sup>1</sup>, S.D Andreeva<sup>2</sup>,  
O.V Mashkovtsev<sup>3</sup>, E.V. Haar<sup>4</sup>

<sup>1</sup> General Surgery Department, Kirov State Medical  
Academy, Kirov, Russian Federation

<sup>2</sup> Pathology Department, Kirov state Agricultural  
Academy, Kirov, Russian Federation

<sup>3</sup> Pathology Department, Kirov state Agricultural  
Academy, Kirov, Russian Federation

<sup>4</sup> General Surgery Department, Kirov State Medical  
Academy, Kirov, Russian Federation

**Background:** Acute pancreatitis (AP) is a poly-etiological disease with complex pathogenesis. Mortality rate in AP ranges from 26% to 85%. Clinical manifestations of AP is associated with impaired function of the exocrine function of the pancreas and it develops either due to insufficient production of digestive enzymes or their premature activation. Objective: The purpose of the investigation is to study the morphological changes of the pancreas in rats with acute pancreatitis in the dynamics, taking into account the phases of development of the pathological process.

**Material and Methods:** The model of experimental AP was created by chloroethyl cryodestruction of the splenic segment of pancreas of 40 outbred white rats weighing 180-220g. The pancreatic tissue specimen were taken after at 1,3,7,14 days after surgery. Key parameters selected to evaluate the morphological condition of the exocrine parenchyma includes: nuclear area, cytoplasmic area and nuclear-cytoplasmic ratio of acinar cells.

**Result:** On the 1st day there was a sharp decrease in the nuclear area and acinar cell, On the 3rd day there was an increase in the average nuclear area, by the 7th day of pancreatitis there was a slight increase in the cytoplasmic area, at the 14th day of AP nuclear-cytoplasmic ratio was high, indicating the recovery process in the survived parts of the exocrine parenchyma.

**Conclusion:** Complex morphometric study of cells of the exocrine parenchyma of pancreas in experimental AP in rats contributes to the definition of the morphological criteria of metabolic disorders in the affected organ at various stages of the pathological process.

## OP 58

**Intra- and Postoperative Investigations of Microcirculatory and Hemorheological Parameters of a Musculocutaneous Flap Ischemia-Reperfusion Model in the Rat**

Zoltán Klárik, Enikő Tóth, Éva Lilla Kovács, Ferenc Kiss, Norbert Németh

Department of Operative Techniques and Surgical Research, Institute of Surgery, Faculty of Medicine, University of Debrecen, Debrecen, Hungary

**Background:** Intraoperative and postoperative monitoring of microcirculation could provide essential information on flaps' survival and viability after ischemia-reperfusion (I/R). Our aim was to investigate whether I/R of latissimus dorsi musculocutaneous flaps (LDMF) affects the microcirculatory and micro-rheological parameters, and to analyze the possible predictive value of the intraoperatively performed tests.

**Material and Methods:** In two groups of anesthetized male CD rats, LDMF were made bilaterally. In Group I (n=6) the left flap was sutured back after 2h, while on the contralateral side just after its preparation. In Group II (n=6) the flap pedicle was clamped for 2h, otherwise the same protocol was used. Over the skin (proximal-middle-distal region) laser Doppler tests were done before/after the preparation, during the applied protocol and in the postoperative period. The extent of necrotic areas was also determined by photo analysis. Hematological and hemorheological examinations were carried out.

**Result:** In Group I, 2h flap-immobilization resulted in decreased skin microcirculatory values. After ischemia in Group II, the values almost completely normalized except for the apical region. Skin necrosis was observed along the flap edges and in two cases on the whole flap. In these flaps, retrospectively, the intraoperative microcirculatory values remained below the average. Erythrocyte aggregation and deformability did not show obvious difference.

**Conclusion:** Two-hour flap I/R caused more prominent deterioration in the local microcirculation than in the micro-rheological parameters. The intraoperative observation of microcirculation may have significant relevance in the prediction of flaps' viability. (Grants: Bridging Fund-2012, Postgraduate Scholarship A2-ACSJD-12-0380)

## OP 59

**Fluid Flow-Trypanosome Interaction at the Blood Brain Barrier**

Brandon J. Sumpio<sup>1</sup>, Bauer E Sumpio<sup>1</sup>, Dennis J. Grab<sup>2</sup>

<sup>1</sup> Yale University School of Medicine, New Haven, United States

<sup>2</sup> Johns Hopkins University, Baltimore, United States

**Background:** African trypanosomes are pathogens transmitted by the tsetse fly and are responsible for Human African Sleeping Sickness. The mechanism for the how the trypanosomes cross the blood brain barrier or how the microvascular flow in the brain affect this is unknown. We hypothesized that flow conditions at the blood brain barrier affect Trypanosome entry through the endothelial barrier.

**Material and Methods:** Human brain microvessel endothelial cells (HBMEC) were cultured on Electric Cell-Substrate Impedance Sensing flow chambers, which can detect transendothelial electrical resistance (TEER). HBMEC are exposed to 2 or 14 dynes/cm<sup>2</sup> shear in the presence or absence of trypanosomes for up to 24 hrs.

**Result:** When trypanosomes were added to HBMEC exposed to 2 dynes/cm<sup>2</sup>, TEER dropped from 1800 to 1200. When flow rate was 14 dynes/cm<sup>2</sup>, TEER increased back to 1800, but after several hours, the trypanosomes still were able to penetrate.

**Conclusion:** Under low laminar flow conditions, the trypanosomes were able to pass through the blood brain barrier within hours of infection. Under high levels of shear stress, the blood brain barrier was better maintained and did not allow tyranosome penetration until several hours.

## OP 60

**Response of ThtColon Wall to Application of a Mechanical Stress**

Jenifer Barrie<sup>1</sup>, Peter Culmer<sup>1</sup>, Samuel Neilson<sup>2</sup>, Anne Neville<sup>1</sup>, David G. Jayne<sup>2</sup>

<sup>1</sup> The University of Leeds, Leeds, United Kingdom

<sup>2</sup> St James' University Hospital, Leeds, Leeds, United Kingdom

**Background:** Laparoscopic surgery involves instrumented grasping of the colon with the risk of iatrogenic injury. We aimed to analyses the mechanical and histological response of the wall of the large bowel to indentation stresses.

**Material and Methods:** Indentation stresses of 50kPa, 160kPa and 255kPa were applied to fresh, ex vivo porcine colon using a modular universal surface tester and held for 5, 30 or 60s on the serosal surface. Indentations were repeated 20 times. The percentage decrease in thickness of each histological layer was compared to a control region and muscle disruption was identified.

**Result:** For 50kPa indentation the percentage reduction of the submucosal depth increased with increasing time (15% for 5s, 28% for 30s and 45% for 60s). In the 160kPa indentation the submucosal depth also reduced by 45% over a 60s indentation even despite a sample with a thick submucosal layer. In 255kPa samples the longitudinal muscle and serosal depth were affected but not as markedly (20% reduction over 5 seconds and 27% reduction over 60 seconds). The 255kPa samples were unique as in the 30s and 60s group there were slides with completely obliterated longitudinal muscle, indicating that at this level the submucosal layer may be unable to withhold the applied stress.

**Conclusion:** Mechanical stresses, equivalent to those in laparoscopic grasping, result in changes to the depth of the colon wall, particularly in the submucosa and at longer durations of stress application. Further analysis will determine safe tissue handling thresholds.

#### OP 61

##### Effects of Limb Ischaemic Preconditioning in Ovariectomized Rats

Dénes Garab<sup>1</sup>, Dóra Bodnár<sup>1</sup>, Sándor Nyíri<sup>1</sup>, Levente Pócs<sup>2</sup>, Ágnes Janovszky<sup>3</sup>, Mihály Boros<sup>1</sup>, Andrea Szabó<sup>1</sup>

<sup>1</sup> Institute of Surgical Research, University of Szeged, Szeged, Szeged, Hungary

<sup>2</sup> Department of Traumatology, County Hospital of Kecskemét, Kecskemét, Kecskemét, Hungary

<sup>3</sup> Department of Oral and Maxillofacial Surgery, University of Szeged, Szeged, Szeged, Hungary

**Background:** During elective orthopedic surgery or fracture repair, tourniquet ischaemia of osteoporotic bones may carry the risk of postischaemic inflammatory complications. We previously demonstrated that exogenous estrogen and ischaemic preconditioning (IPC) ameliorates periosteal inflammatory reactions induced by limb ischaemia-reperfusion (IR). In the present experiments, the effect of IPC in these reactions was examined during experimental osteoporosis.

**Material and Methods:** Three-month old female Sprague-Dawley rats were bilaterally ovariectomized (OVX) or sham-operated (SH). 12 weeks later, the periosteal microcirculatory consequences (neutrophil leukocyte-endothelial interactions) of 60-min complete limb ischaemia and 180 min reperfusion were examined by fluorescence intravital microscopy in sham-operated (SH+IR) and OVX animals (OVX+IR). In further groups, limb IPC ( $2 \times 10^7/10''$  I-R) was elicited before I-R in sham-operated (SH+IPC+IR) and OVX rats (OVX+IPC+IR) (n=6-9). In another series, intravascular neutrophil leukocyte activation (CD11b adhesion molecule expression) changes were assessed by flow cytometry (n=7-9).

**Result:** Rolling and adhesion of leukocytes to the periosteal postcapillary venules and leukocyte CD11b expression were increased after limb IR; these reactions were attenuated by

IPC. In OVX animals, the number of rolling leukocytes was moderately reduced, but adherent leukocyte numbers and CD11b expression were not affected by IPC.

**Conclusion:** Our data shows that the ameliorating effects of IPC against limb IR-induced inflammatory complications are partially lost in the presence of chronic estrogen withdrawal. These data suggest a limited efficacy of IPC to improve the postischaemic microcirculatory inflammatory consequences of tourniquet ischaemia in osteoporotic situations. (Supported by: OTKA K104656, TÁMOP 4.2.4. A/2-11-1-2012-0001, TÁMOP 4.2.2A-11/1/KONV-2012-0035, TÁMOP 4.2.2A-11/1/KONV-2012-0073).

#### OP 62

##### Postconditioning Is Able to Improve Small Intestinal Microcirculation after Lower Limb Ischemia

Zsolt Turóczy<sup>1</sup>, András Fülöp<sup>1</sup>, Zoltán Czigány<sup>1</sup>, Gabriella Varga<sup>2</sup>, Olivér Rosero<sup>1</sup>, Tünde Tökés<sup>2</sup>, József Kaszaki<sup>2</sup>, Gábor Lotz<sup>3</sup>, László Harsányi<sup>1</sup>, Attila Sziártó<sup>1</sup>

<sup>1</sup> 1st Department of Surgery, Semmelweis University, Budapest, Hungary

<sup>2</sup> Institute of Surgical Research, University of Szeged, Szeged, Hungary

<sup>3</sup> 2nd Department of Pathology, Semmelweis University, Budapest, Hungary

**Background:** Major lower limb vascular surgeries may result in severe, remote injury of the gastrointestinal system, which has high mortality rates. Postconditioning is a technique with potential capability of reducing remote gastrointestinal complications. Our aim was to assess the remote macro- and micro-hemodynamic changes of the small intestine following an infrarenal aortic occlusion and to evaluate the effects of postconditioning on these alterations.

**Material and Methods:** Male Wistar rats underwent 3 hours of infrarenal aortic occlusion followed by 4 hours of reperfusion. In one group, postconditioning was applied. During the experiment blood pressure, superior mesenteric artery flow and mucosal microcirculation of duodenum, jejunum and ileum were assessed. At the end of the experiment, samples were taken from each intestinal segment for histological examinations.

**Result:** Superior mesenteric artery flow, as well as segmental small bowel microcirculation showed significant impairment in the IR group in contrast to the sham-operated group, (flow: p=0.012; microcirculation(duodenum): p=0.012; microcirculation(jejunum): p=0.008; microcirculation(ileum): p=0.002), while histological damage was significantly elevated. Strong negative correlation was found between microcirculatory values and histological damage (r= -0.911, p<0.001). Postconditioning was able to limit flow reduction in all small bowel segments and in the superior mesenteric artery (flow: p=0.009; microcirculation(duodenum): p=0.009;

microcirculation(jejunum):  $p < 0,001$ ; microcirculation(ileum):  $p < 0.001$ ), and was able to significantly reduce histological damage.

**Conclusion:** Microcirculatory impairment might be responsible for remote intestinal injury following infrarenal aortic occlusion. Postconditioning was able to reduce this remote intestinal damage.

#### OP 63

### C5a Antagonist Therapy Reduces Inflammation after Abdominal Hypoperfusion

András T Mészáros<sup>1</sup>, Gabriella Varga<sup>1</sup>, Dániel Érces<sup>1</sup>, Szilárd Szűcs<sup>1</sup>, Tamás Fischer-Szatmári<sup>1</sup>, Chun Cao<sup>1</sup>, Hidechika Okada<sup>2</sup>, Noriko Okada<sup>2</sup>, József Kaszaki<sup>1</sup>, Mihály Boros<sup>1</sup>

<sup>1</sup> Institute of Surgical Research, University of Szeged, Szeged, Hungary

<sup>2</sup> Department of Immunology, Nagoya City University, Nagoya, Japan

**Background:** Non-occlusive mesenteric ischemia is a relatively common and possibly fatal complication associated with surgical interventions in elderly patients. The exact pathophysiology is still unknown but circumstantial evidence suggests that complement activation plays decisive role in this process. Our objective was to investigate the long-term consequences of complement C5a antagonist (AcPepA) treatment on the circulatory changes in a clinically relevant small animal model of transient mesenteric hypoperfusion.

**Material and Methods:** In two groups of anesthetized rats ( $n=6$ , each) the mean arterial pressure of the splanchnic area was kept between 40-50 mmHg for 60min by partial aortic occlusion (PAO), a third group ( $n=6$ ) served as control. The first group was treated with AcPepA (4 mg/kg iv) 15 min before the end of ischemia, while the vehicle for AcPepA was administered to the other groups. After 24 hrs the animals were re-anesthetized and systemic macrocirculation, mesenteric artery flow and ileal microcirculation were monitored for 2 hrs. Plasma HMGB-1, ET-1 and TNF- $\alpha$  levels were determined.

**Result:** 24 hrs after PAO the circulatory parameters were significantly deteriorated as compared to the control group, intramural red blood cell velocity was significantly decreased, while plasma HMGB-1, ET-1 and TNF- $\alpha$  levels were elevated. The AcPepA treatment normalized the macrocirculatory parameters, improved the intramural microcirculation and the changes in inflammatory parameters as compared to the PAO group.

**Conclusion:** 24 hrs after PAO the circulatory parameters were significantly deteriorated as compared to the control group, intramural red blood cell velocity was significantly decreased, while plasma HMGB-1, ET-1 and TNF- $\alpha$  levels were elevated. The AcPepA treatment normalized the macrocirculatory parameters, improved the intramural microcirculation and the changes in inflammatory parameters as compared to the PAO group.

#### OP 64

### Microbiological Evaluation and Resistance Pattern in Complicated Intra-Abdominal Infections in Developing Country

Noman Shahzad, Abdul Rehman Alvi, Rabia Quratulain, Joveria Farooqui

Aga Khan University Hospital, Karachi, Pakistan

**Background:** Morbidity and mortality rates associated with complicated Intra-abdominal Infections remain exceedingly high. Source control and appropriate use of empirical antibiotics are cornerstones of early management. Selection of empiric antibiotics depends upon microbiological profile and resistance patterns of commonly encountered organisms in hospital and community. In developing countries, data sources are limited to guide selection empiric antibiotics. Use of empirical regimens in this scenario can result in either under treatment or unnecessarily broad coverage. Objective of our study was to find out frequency of various micro-organisms and their resistance patterns to help decide empiric antibiotics in complicated intra-abdominal infections.

**Material and Methods:** We conducted review of medical records of patients admitted in last three years from Jan 2011 to Dec 2013. Adult patients of age > 16 years, who were admitted with complicated intra-abdominal infections were included in the study. Data regarding their demographics, clinical presentation, source of infection, culture reports was collected.

**Result:** Mean age of 317 patients included in the study was 51+18 years. Common sources of infection were biliary (30%) and large bowel (22.7%). Common organisms reported were E. Coli (56.2%), Enterococci (28.4%) and Klebsiella Pneumoniae (15.1%). 75% of E Coli and 55% of Klebsiella Pneumoniae were Extended Spectrum Beta Lactamase (ESBL) producers. Carbapenem resistance was present in 8% of Klebsiella Pneumoniae isolates. Frequency of Vancomycin Resistant Enterococci (VRE) was 10%.

**Conclusion:** High prevalence of resistance to various broad spectrum antibiotics needs to be considered while planning empirical antibiotic therapy in complicated intra-abdominal infections.

#### OP 65

### M1 Polarised Macrophages Develop an Endotoxin Tolerance-Like Phenomenon in Response to Bacterial Stimulation

Niamh Foley, Jh Wang, Prof Hp Redmond

Cork University Hospital/University College Cork, Cork, Ireland

**Background:** Macrophages, an important component of immunity, are divided into subpopulations based on their

functional phenotypes.

Aims:

1. Establish a predominant M1 and M2 polarisation pattern in vitro.
2. Examine the inflammatory cytokine response to bacterial stimulation in polarised cells.
3. Determine the phagocytic activity in polarised cells after stimulation with bacteria.

**Material and Methods:** Peritoneal and bone marrow derived macrophages were harvested from C57BL/6 mice. Cells were exposed to polarising stimuli for 18-24 hours. LPS and IFN- $\gamma$  were used to induce M1 and IL-4 was used to induce M2. ELISA was performed on the supernatant to confirm the M1 and M2 phenotypes. Polarised cells were further stimulated with heat-killed *S. aureus* and *S. Typhi* or FITC-labeled *E. coli*. Inflammatory cytokine production and phagocytosis were assessed by ELISA and FACS analysis.

**Result:** M1 macrophages were characterised by high levels of TNF-alpha and IL-12p70. M2 macrophages were characterised by high levels of TGF-beta and low levels of IL12p70. M1 polarized macrophages, when exposed to gram-positive and gram-negative bacteria, had lower levels of TNF-alpha than M2 macrophages. Phagocytosis assays revealed similar results for both M1 and M2 macrophages.

**Conclusion:** M1 macrophages are expected to produce higher levels of TNF-alpha, however we found that M1 macrophages exposed to bacterial stimulation had lower levels of TNF-alpha compared with their M2 counterparts. This unexpected result indicates a tolerisation effect developed during the M1 polarisation, and further work is required to clarify the underlying mechanism(s).

## OP 66

### Preoperative IABP in High Risk Patients Undergoing CABG. Metanalysis Update

Thomas Theologou<sup>1</sup>, David Kennedy<sup>1</sup>, Jennifer Whiteley<sup>1</sup>, Mohamad Bashir<sup>1</sup>, Arvind Rengarajan<sup>2</sup>, Omar Khan<sup>3</sup>, Tom Spyt<sup>4</sup>, David Richens<sup>5</sup>, Mark Field<sup>1</sup>

<sup>1</sup> Liverpool Heart and Chest Hospital, Liverpool, United Kingdom

<sup>2</sup> Department of Cardiothoracic Surgery, Nothern General Hospital, Sheffield, Sheffield, United Kingdom

<sup>3</sup> Department of Cardiothoracic Surgery, Nottingham City Hospital Nottingham, Nottingham, United Kingdom

<sup>4</sup> Department of Cardiac Surgery, Glenfield General Hospital, Leicester, United Kingdom

<sup>5</sup> Department of Cardiothoracic Surgery, Nottingham City Hospital, Nottingham, United Kingdom

**Background:** There is increasing evidence that certain cardiac surgery patients benefit from a period of preoperative augmentation with the intra aortic balloon pump. The aim for this update metanalysis is to look for new RCTs since 2010 and update the decision making process when using IABP during CABG for high risk cases.

**Material and Methods:** Randomised controlled trials (RCTs) of any size or length were included. Data collection and analysis papers were assessed for inclusion by two authors independently and differences were settled by consensus with a third author. Data are presented in the form of odds ratios (OR) and 95% confidence intervals (CI).

**Result:** In the last metanalysis six trials were included. This update adds the results of four further trials. Data from a total of 556 patients were included in the meta-analysis of mortality outcomes; 7 studies on-pump and 3 studies off pump. Generally, the patients were considered as "high risk" and 286 were treated preoperatively with IABP and 240 served as controls. There were fourteen hospital deaths in the intervention arm and 32 in the non-intervention arm (OR 0.18, 95% CI 0.08 to 0.41;  $P < 0.0001$ ). Clear Benefit has been recorded of the use of the IABP in female population.

**Conclusion:** Evidence suggests that preoperative IABP may have a beneficial effect on mortality and morbidity in specific high risk patient groups undergoing on or off pump coronary artery bypass grafting. The use of the IABP on the female high risk cases looks to be beneficial.

## OP 67

### Comparing Mortality and Post-Operative Survival with the New TAVI at LHCH

Thomas Theologou<sup>1</sup>, David Kennedy<sup>2</sup>, Jennifer Whiteley<sup>1</sup>, Mohamad Bashir<sup>1</sup>, Arvind Rengarajan<sup>2</sup>, Omar Khan<sup>3</sup>, Tom Spyt<sup>4</sup>, David Richens<sup>5</sup>, Mark Field<sup>1</sup>

<sup>1</sup> Liverpool Heart and Chest Hospital, Liverpool, United Kingdom

<sup>2</sup> Cardiology Department and of Liverpool Heart and Chest Hospital, Liverpool, United Kingdom

<sup>3</sup> Cardiac Anesthesia Department of Liverpool Heart and Chest, Liverpool, United Kingdom

**Background:** Transcatheter aortic valve implantation (TAVI) is an alternative method for treatment of severe aortic valve stenosis in high-risk patients. Recently the TAVI procedure has emerged as an effective alternative method for the treatment of severe aortic valve stenosis in high-risk patients. This innovative technique has been adopted in our institution since 2008 with a beneficial effect on patients who were excluded from conventional surgical management. The aim of this study is to compare the mortality and survival rate of these approaches with traditional AVR.

**Material and Methods:** 142 patients were operated on between 2008 and 2013 at LHCH. The procedures were undertaken using both the transapical and transfemoral approaches. Retrospective observational cohort study analysis has been performed assessing the mortality and morbidity of this population. The outcome data from the TAVI patients was propensity matched to a conventional AVR group. A Kaplan Meier curve was developed allowing prediction of survival following the two procedures.

**Result:** From the total of 142 patients who underwent



a TAVI, 71 of these were transapical and 69 were via a transfemoral approach. The TAVI group had an in hospital mortality rate of 3.5% which is comparable to conventional AVR. The median survival rate for TAVI patients was 3.6 years (95% CI 3.1-4.5) and there was a 4 year survival of 48% (95% CI 34-61%).

**Conclusion:** TAVI at LHCH has a comparable mortality and predicted survival rate with conventional AVR. This procedure is a safe and viable option in high risk surgical candidates.

## OP 68

### Surgical Management of Great Saphenous Varicosities: A Meta-Analysis

*Np Lynch<sup>1</sup>, M Clarke<sup>2</sup>, G Fulton<sup>1</sup>*

<sup>1</sup> Department of Surgery Cork University Hospital, Cork, Ireland

<sup>2</sup> Royal College of Surgeons Ireland, Dublin, Ireland

**Background:** This meta-analysis synthesizes the available evidence of randomised controlled trials (RCT) comparing endovenous laser therapy (EVL) to traditional open surgery, high ligation and/or stripping (HLS), for the treatment of great saphenous vein varicose (GSV) veins in terms of clinical effectiveness, patient satisfaction and complications.

**Material and Methods:** The authors searched MEDLINE, CINAHL, EMBASE and the Cochrane library to identify eligible studies. All randomised controlled trials comparing EVLT to HLS that used ultrasound examination as an outcome measure and had follow up of one year or more were included. Pooled risk ratios with 95% confidence intervals were used as the measure of effect for each dichotomous outcome.

**Result:** Eight eligible publications relating to six RCTs were identified. The clinical efficacy of EVLT is comparable to that of surgery in the relatively short follow up period described in the studies. Meta-analysis of the data revealed a trend towards higher risk of ultrasound recurrence after EVLT at 12 months (RR, 2.38; 95% CI, 0.68-8.3; I<sup>2</sup> = 56.6%). Quality of life questionnaires reveal similar outcomes for EVLT and surgery. Meta analysis revealed a trend towards a lower risk of infection in the EVLT group (RR 0.32, 95 %CI 0.10-0.9) than that in the surgery group.

**Conclusion:** There is some weak evidence to suggest that EVLT has a higher risk of ultrasound detected recurrence at 12 months following treatment compared to open surgery. However it may be associated with less sensory complications, pigmentation and infection.

## OP 69

### Investigation of Novel Biomarkers in an Experimental Model of Chronic Heart Failure

*Eszter M. Végh, Balázs Sax, Klaudia Vivien Nagy, Annamária Kosztin, Violetta Kékesi, Gábor Szűcs, Endre Zima, Béla Merkely*

Heart and Vascular Center, Faculty of Medicine, Semmelweis University, Budapest, Hungary

**Background:** Pathophysiology of heart failure are under extensive research. Recently, several regulatory peptides, including adrenomedullin (ADM), ghrelin (GHR) and leptin (LT) were suggested to be potential biomarkers of heart failure. We aimed to investigate plasma concentrations of the above peptides in comparison with elevation of the marker endothelin-1 (ET-1) and atrial natriuretic peptide prohormone (proANP), during development of experimental heart failure.

**Material and Methods:** Pacemaker was implanted in dogs (n=9) for rapid right ventricular pacing (240/min). Echocardiographic measurements were performed weekly, functional staging was assessed, and plasma concentrations of ADM, GHR, LT, ET-1 and proANP (ELISA) were measured simultaneously.

**Result:** Decompensation of heart failure occurred after 22±4 days of pacing. Echocardiography revealed seriously impaired left ventricular function (EF, p<0.01), dilation of left (LVEDD, p<0.01) and right (RVEDD, p<0.01) ventricle, and increasing mitral and tricuspidal insufficiency. Plasma levels of peptides significantly increased (ADM: 440±53 vs 292±48pg/ml; GHR: 1655±286 vs 952±139 pg/ml; LT: 750±241 vs 434±177 pg/ml; ET-1: 5.27±0.94 vs 3.68±0.56 pg/ml; and proANP: 7329±950 vs 870±189ng/ml, p<0.05). Positive correlation was found between GHR level and LVEDD (r=0.44, p<0.05) and LVEDS (r=0.45, p<0.05) parameters, as well as between ET-1 concentration and LVEDS (r=0.48, p<0.02).

**Conclusion:** Right ventricular tachypacing induced chronic heart failure is suitable for examination of biomarker agents. Significant elevation of plasma adrenomedullin, ghrelin and leptin concentrations during the development of heart failure suggest the possible use of these peptides as novel biomarkers of the disease.

## OP 70

**When Should We Measure Matrix Metalloproteinase-9 and Tissue Inhibitor of Metalloproteinase-1 Regarding Postoperative Cognitive Dysfunction after Carotid Surgery?***Bálint Nagy<sup>1</sup>, Gábor Woth<sup>1</sup>, Ákos Mérei<sup>1</sup>, Lilla Nagy<sup>2</sup>, János Lantos<sup>3</sup>, Gábor Menyhei<sup>4</sup>, Lajos Bogár<sup>1</sup>, Diána Mühl<sup>1</sup>*

<sup>1</sup> Department of Anesthesiology and Intensive Therapy, University of Pécs, Pécs, Hungary

<sup>2</sup> Medical School of Pécs, University of Pécs, Pécs, Hungary

<sup>3</sup> Department of Surgical Research and Techniques, University of Pécs, Pécs, Hungary

<sup>4</sup> Department of Vascular Surgery, University of Pécs, Pécs, Hungary

**Background:** Carotid endarterectomy (CEA) is performed day by day worldwide and is considered a safe intervention regarding major complications. Post-operative cognitive dysfunction (POCD) is however a frequent (20-30%) subtle complication and is now the focus of significant interest. Recent publications examine MMP-9 - TIMP-1 system in CEA and CEA related POCD, although nobody have evaluated the exact perioperative time course yet. We aimed therefore to describe this possible important and missing point.

**Material and Methods:** Patients scheduled for elective CEA (n=54) were considered for enrollment. Age and gender matching atherosclerotic patients (n=20) were served as controls. Blood sampling was performed at four time points: preoperatively, one hour postoperatively, first and third postoperative morning.

**Result:** We observed significant elevation of MMP-9 only at first postoperative morning compared to preoperative values. Regarding TIMP-1 no difference is experienced preoperatively, but we measured significantly decreased TIMP-1 immediately after CEA and TIMP-1 remained at this level until first postoperative morning. MMP-9/TIMP-1 increased significantly right after CEA and increased further until first postoperative day. However, compared to controls, we noted significantly elevated MMP-9 and MMP-9/TIMP-1 ratios at all time points.

**Conclusion:** Our study provides information on the perioperative dynamics of MMP-9-TIMP-1 system. Based on our results, we could recommend measuring of MMP-9 and TIMP-1 preoperatively and at the first postoperative morning. Our results should be considered in case of study planning in the field of MMP-9-TIMP-1 system in CEA and associated disorders.

## OP 71

**Aortic Valve Replacement by Ross Procedure-Total Root Technique: Video Presentation***Mustafa Cikirikcioglu<sup>1</sup>, Jalal Jolou<sup>1</sup>, Kamran Ahmadov<sup>1</sup>, Nancy Poirie<sup>2</sup>, Smail El-Hamamsy<sup>2</sup>*

<sup>1</sup> Universitz Hospital of Geneva, Geneva, Switzerland

<sup>2</sup> Montreal Heart Institute, Montreal, Canada

**Background:** The Ross procedure (RP) is the replacement of the patient's pathological aortic valve (AV) with his own pulmonary valve (PV), and the replacement of the PV with a pulmonary homograft (PH). In this video presentation we describe a step-by-step approach of the Ross total root technique.

**Material and Methods:** A median sternotomy is performed. The aorta is cannulated in the aortic arch and bicaval cannulation is used. After cross-clamping and cardioplegia induction, a low transverse aortotomy is performed.

**Result:** PV autograft is harvested. The first septal artery is avoided by keeping the incision line 2mm below the attachment of the cusps. PH harvesting is completed by a transverse incision proximal to the PA bifurcation. After examining the PH, the infundibular muscle is trimmed down to 2mm below the insertion of the cusps in order to exclude the devascularised muscular part. The autograft is then implanted as a total root using interrupted 4-0 prolene sutures. The coronary artery ostia are reimplanted using a running 6-0 prolene. The proximal and distal anastomosis of the PH are performed using a running 4-0 and 5-0 prolene respectively. The remaining PA is cut 2-3mm above the level of the sinotubular junction in order to reduce the risk of autograft dilatation by the systemic blood pressure.

**Conclusion:** The RP is a not complex operation, but it requires attention to several technical details which have a direct impact on short and long-term outcomes. These details can be learned through video presentations.

## OP 72

**Should Marfan Patients Undergoing Mitral Valve Repair Have Simultaneous Prophylactic Aortic Root Replacement?***Mustafa Cikirikcioglu, Jalal Jolou, Sanjay Cherian, Hajo Muller, Jean-Paul Vallee, Kamran Ahmadov, Patrick Myers, Afksendiyos Kalangos*

Universitz Hospital of Geneva, Geneva, Switzerland

**Background:** Significant mitral regurgitation (MR) could be the first manifestation in Marfan Syndrome, even before the onset of aortic dilatation or aortic regurgitation (AR). We aimed to analyse the role of simultaneous prophylactic aortic root replacement in Marfan patients presenting primarily with MR, undergoing mitral valve repair.

**Material and Methods:** A 4-year (2007-2010) retrospective analysis of a single surgeon's experience included 13 Marfan patients (11 males, 2 females) aged between 12 to 60 years (mean 40.3). Pre-operative MR was Grade III or more in all patients. Mechanisms of MR were anterior leaflet prolapse in 2 patients, bi-leaflet prolapse in 11. All patients underwent mitral annuloplasty using biodegradable intra-annular ring along with other mitral valve repair techniques. No patient had significant pre-operative AR, however, the aortic root diameter was greater than the physiologic range for their corresponding BSA, hence, all patients underwent simultaneous prophylactic valve sparing aortic root replacement.

**Result:** Follow-up was complete in all patients, ranging from 1 to 4 years (mean 2.4). Post-operative MR at 6 months was Grade 0 in 8 patients, Grade 1 in 5. No further progression was seen during the follow-up period. No progression in AR or aortic root complications were noted. There were no post-operative deaths.

**Conclusion:** Marfan patients with mitral regurgitation can be successfully repaired, with good shortterm results. In patients with aortic root diameter greater than their normal physiologic range, simultaneous prophylactic aortic root replacement is safe and effective in preventing complications associated with the disease.

#### OP 73

### Controlled Reperfusion of Infrarenal Aorta Decreased Ischaemic-Reperfusion Injuries after Aortic Clamping in Vascular Surgery

J. Werling<sup>1</sup>, T. Nagy<sup>1</sup>, V. Kovács<sup>1</sup>, L. Sínay<sup>2</sup>, E. Arató<sup>2</sup>, T. Gy. Veress<sup>1</sup>, I. Takács<sup>1</sup>, I. Szeleczman<sup>1</sup>, P. Hardi<sup>1</sup>, K. Sárvári<sup>1</sup>, G. Jancsó<sup>1</sup>

<sup>1</sup> University of Pécs, Department of Surgical Research and Techniques, Pécs, Hungary

<sup>2</sup> University of Pécs, Department of Vascular Surgery, Pécs, Hungary

**Background:** Long aortic clamping in vascular surgery induces reperfusion injury accompanied with oxidative stress and inflammatory responses. The hypothesis of this study was that the aortic occlusion followed by controlled reperfusion (CR) can reduce the ischaemia-reperfusion injury, the systemic and local inflammatory response induced by oxydative stress.

**Material and Methods:** Animal model was used. Control group: animals underwent a 4-hour infrarenal aortic occlusion followed by continuous reperfusion. Treated group: animals were treated with CR: after a 4-hour infrarenal aortic occlusion we made CR for 30 minutes with the crystalloid reperfusion solution (blood:crystalloid solution ratio 1:1) on pressure 60 Hgmm. Blood samples were collected different times. The developing oxydative stress was detected by the plasma levels of malondialdehyde, reduced glutathion, thiol groups and superoxide dismutase. The inflammatory response was

measured by phorbol myristate acetate-induced leukocyte reactiv oxygene species production and detection of change in myeloperoxidase levels. The animals were anaesthetised one week after terminating ligation and biopsy was taken from quadriceps muscle and large parenchymal organs.

**Result:** CR significantly reduced the postischaemic oxydative stress and inflammatory responses in early reperfusion period. Pathohistological results: The rate of affected muscle fibers by degeneration was significantly higher in the untreated animal group. The infiltration of leukocytes in muscle and parenchymal tissues was significantly lower in the treated group.

**Conclusion:** CR can improve outcome after acute lower-limb ischaemia. The results confirm, that CR might be also a potential therapeutic approach in vascular surgery against reperfusion injury in acute limb ischaemia. (Supported by OTKA K108596.)

#### OP 74

### Low Therapeutical Implications of a Temporal Artery Biopsy Supports a Less Invasive Diagnostic Strategy

Kirsten De Burlet, Philip De Reuver, Gooke Lagaay, Juliette De Ree, Hendrik Boot, Frank Bellot, Denise Nio

Spaarne Ziekenhuis, Hoofddorp, Netherlands

**Background:** A Temporal Artery Biopsy (TAB) is the gold standard for diagnosing Giant Cell Arteritis (GCA). However the therapeutical implication of the outcome of a TAB is scarcely reported. The aim of this study was to analyze the therapeutic implications of TAB and to identify predicting factors for GCA other than a positive biopsy.

**Material and Methods:** A retrospective review was performed including all patients who underwent a TAB, or were treated with corticosteroids for supposed temporal arteritis between January 2005 and December 2012. The database was statistically analyzed using uni- and multivariate analysis.

**Result:** A retrospective review was performed including all patients who underwent a TAB, or were treated with corticosteroids for supposed temporal arteritis between January 2005 and December 2012. The database was statistically analyzed using uni- and multivariate analysis.

**Conclusion:** As the outcome of a TAB results in a change of therapeutical strategy in the minority of patients, the value of this invasive diagnostic procedure should be reassessed in each patient.

## OP 75

**Short-Term Outcomes of Robotic Surgery for Colorectal Cancer**

Hiroyuki Sawada, Hiroyuki Egi, Minoru Hattori, Koji Kawaguchi, Takahisa Suzuki, Manabu Shimomura, Kazuaki Tanabe, Takao Hinoi, Masazumi Okajima, Hideki Odan

Hiroshima University, Department of Surgery, Hiroshima, Japan

**Background:** In recent years, robotic surgery has been proposed as an alternative to laparoscopic procedures. The aim of this study was to evaluate the feasibility and short-term outcomes of robotic surgery for colorectal cancer compared with conventional laparoscopic surgery.

**Material and Methods:** We analyzed in the short-term clinicopathologic outcomes between the robotic surgery group and the conventional laparoscopic group. Both groups were balanced in terms of age, gender, American Society of Anesthesiologists (ASA) score, body mass index (BMI), operative history, TNM staging and tumor location.

**Result:** There were no significant differences in the short-term clinicopathologic outcomes between the robotic surgery group and the conventional laparoscopic group. However, the operative time was significantly longer in the robotic surgery group than in the conventional laparoscopic surgery group.

**Conclusion:** Our early experience indicates that robotic surgery is a feasible and safe procedure in patients with colorectal cancer.

## OP 76

**The Procedure of Laparoscopic Lymphadenectomy for Right-Sided Advanced Colon Cancer**

Hiroyuki Egi<sup>1</sup>, Masazumi Okajima<sup>2</sup>, Takao Hinoi<sup>1</sup>, Manabu Shimomura<sup>1</sup>, Hiroyuki Sawada<sup>1</sup>, Minoru Hattori<sup>3</sup>, Hideki Ohdan<sup>1</sup>

<sup>1</sup> Department of Surgery, Hiroshima University Hospital, Hiroshima city, Japan

<sup>2</sup> Department of Surgery, Hiroshima City Hospital, Hiroshima city, Japan

<sup>3</sup> Advanced Medical Skills Training Center, Hiroshima city, Japan

**Background:** Recently, several studies have revealed the oncological safety of laparoscopic surgery against to colon cancer. Moreover, laparoscopic surgery expected to be standard treatment not only early colon cancer but also advanced colon cancer. Hence, safe procedures of lymphadenectomy have to be established as soon as possible. When laparoscopic surgery for right-sided advanced colon cancer is performed, care must be taken to not injure any other organs and occur bleeding. The aim of this report is to describe our technique of

safe lymphadenectomy for advanced right-sided colon cancer.

**Material and Methods:** After establishing the operating field, we can see the avascular site of mesocolon. Our method for approaching right-sided colon cancer is to open this avascular site of mesentery through which we can first see the duodenum, and then make a dissection between the mesocolon and Gerota's fascia. This method allows us to reach on the front of duodenum and pancreas safely, and to make it easy to detect Superior mesenteric vein (SMV), Superior mesenteric artery (SMA) and their branch.

**Result:** With this new, we are now able to safely perform laparoscopic surgery with D3 lymphadenectomy and have so far experienced no intraoperative complications.

**Conclusion:** Our approach is a very useful approach because we can reach on the duodenum and pancreas easily, and detect SMV and SMA which have some variations of their branch.

## OP 77

**Robotic Partial Nephrectomies. Single Centre Experience**

Graziano Ceccarelli, Alberto Patrì, Alessandro Spaziani, Alberto Bartoli

Minimally Invasive Surgery Dep. and Robotic Unit, Spoleto, Italy

**Background:** Small renal masses are commonly diagnosed incidentally and can be treated with nephron-sparing surgery, preserving renal function and obtaining the same oncological results as radical surgery. Minimally invasive or robotic approach is today a gold standard.

**Material and Methods:** We analyzed our series of 32 consecutive patients (two with 2 tumours and 1 with 4 bilateral tumours), for a total of 37 robotic nephron-sparing surgery, performed between June 2008 and July 2012. The technique differs depending on tumour site and size.

**Result:** The mean tumour size was 3.6 cm. No conversion in open surgery. Vascular clamping was performed in 22 cases with a mean warm ischemia time of 21.5 minutes and the mean total procedure time was 149.2 minutes. Mean estimated blood loss was 187.1 ml. Mean hospital stay was 4.4 days. Histopathological evaluation confirmed 24 cases of clear cell carcinoma, 3 chromophobe tumours, 1 collecting duct carcinoma, 5 oncocytomas, 1 leiomyoma and 1 cavernous haemangioma, 2 benign cysts. Associated surgical procedures were performed in 10 cases. The mean follow-up time was 28.1 months. Intraoperative complications were 3 cases of important bleeding not requiring conversion to open or transfusions. No evidence of tumour recurrence in the follow up.

**Conclusion:** Robotic nephron-sparing surgery is a safe and feasible technique. Robotic technology in our experience made it possible a safe minimally invasive management, including vascular clamping, tumour resection and parenchyma reconstruction, especially in challenging situations: hilar, posterior or intra-parenchymal localization.

**OP 78****Totally Minimally Invasive Esophagectomy with Gastric Tube Reconstruction**

Adel Denewer, Adel Fathi, Ahmed Setit, Mohamed Hegazy, Ashraf Khater, Osama Hussein, Sameh Roshdy, Fayez Shahatto

Department of Surgical Oncology, Oncology Center (OCMU), Faculty of Medicine, Mansoura University, Mansoura, Egypt

**Background:** Minimally invasive esophagectomy (MIE) nowadays is replacing the classic open technique. Additional studies are needed to confirm its safety and efficacy.

**Material and Methods:** Sixty patients with esophageal carcinoma were enrolled in this study. Patients were evaluated preoperatively, underwent thoracoscopic and laparoscopic procedures for assessment of resectability. Resectable patients underwent thoracoscopic radical esophagectomy with laparoscopic gastric tube reconstruction and anastomosis through neck incision.

**Result:** Forty seven patients were operable and 13 patients were inoperable. The mean operative time for the whole procedure was  $5.97 \pm 1.66$  hours. The mean blood loss was  $250 \pm 138.07$  cc. The mean overall hospital stay was  $15.51 \pm 4.24$  days. Common postoperative complications included pneumonia (17%), pleural effusion (8.5%), cervical anastomotic leakage (8.5%), and wound infection (4.3%). One patient died in the early postoperative period (18 days).

**Conclusion:** We conclude that totally endoscopic (thoracoscopic and laparoscopic) esophagectomy is feasible and relatively safe technique. Beside its efficacy as an assessment tool, total esophagectomy and lymphadenectomy could be performed in the same time.

**OP 79****Feasibility of Laparoscopy in Treatment of Early Endometrial Carcinoma**

Adel Denewer, Adel Fathi

Department of Surgical Oncology, Oncology Center (OCMU), Faculty of Medicine, Mansoura University, Mansoura, Egypt

**Background:** Endometrial carcinoma is the most common gynecologic malignancy diagnosed. Laparoscopic hysterectomy become standard in most of studies due to safety and feasibility of the technique but for oncological outcome still needs long term follow up.

**Material and Methods:** Descriptive study of 20 cases of Stage I and II endometrial carcinoma with BMI < 35. Total laparoscopic hysterectomy with pelvic lymphadenectomy was performed in all patients.

**Result:** The mean age: 65 years, no. of LNs dissected: 12,

Blood loss: 30 ml, Mean operative time: 3 hours, Intraoperative complication: Rectal injury in 1 case, Conversion to open surgery: 2 cases, Length of hospital stay: 3 days.

**Conclusion:** Laparoscopy is an effective procedure in treatment of early endometrial carcinoma in terms of oncological safety, convalescence time and post-operative complications especially in obese patients.

**OP 80****Ergonomics in Less Surgery: Use of 1 Straight and 1 Articulated Instruments**

Francisco J. Pérez-Duarte, Blanca Fernández-Tomé, Ana María Matos-Azevedo, Juan Alberto Sánchez-Margallo, Marcos Lucas-Hernández, Idoia Díaz-Güemes Martín-Portugués, Francisco Miguel Sánchez-Margallo

Jesús Usón Minimally Invasive Surgery Centre, Cáceres, Spain

**Background:** Laparoendoscopic single-site (LESS) surgery performed with two articulated instruments entails greater level of muscular activity than conventional laparoscopy. The objective of this study is to evaluate surgeons' ergonomics during LESS surgery, performed with the combination of one straight and one articulated instruments, by determining muscular workload and comparing it with the performance of conventional laparoscopy.

**Material and Methods:** The study group was composed of 24 surgeons, with different levels of previous experience. Each of the participants performed coordination and cut tasks on a physical simulator through Laparoscopy (LAP) and LESS. Straight standard laparoscopic instruments were used for LAP, whilst for LESS subjects had one straight (dominant hand) and one articulated instrument (non dominant hand). During both tasks, muscular activity of biceps brachii, triceps brachii, forearm flexors and extensors, and trapezius muscles was registered through surface electromyography.

**Result:** In the cut task, the degree of muscle activity was lower in conventional laparoscopy, but with significant differences only in the trapezius muscle (LAP  $7.27 \pm 3.56$  vs. LESS  $13.41 \pm 3.78$ ;  $p \leq 0.05$ ). During the coordination exercise, LESS also seem to entail greater muscle activity but without any significant statistical differences.

**Conclusion:** LESS surgery implies greater level of muscle activity in the trapezius muscle when we compare it with traditional laparoscopy. By analysing these results together with others obtained in similar studies of our group, we can also conclude that the use of one straight and one articulated instrument during LESS surgery correlates with better ergonomics compared with the use of two articulated instruments.

**OP 81****Robotic Pancreatic Surgery, Experience and Literature Review**

Graziano Ceccarelli, Alessia Biancafarina, Enrico Andolfi, Alberto Bartoli, Alberto Patrìti

Minimally Invasive Surgery Dep. and Robotic Unit,  
Spoleto, Italy

**Background:** Minimally invasive surgery of the pancreas represents one of the most challenging surgical field. Robotic surgery allows to overcome many laparoscopic limitations.

**Material and Methods:** A systematic review and retrospective personal experience analysis of 48 patients performed between 2006 and 2013, was made to analyse results of robotic pancreatic procedures.

**Result:** From March 2006 to September 2013, 48 patients underwent robotic-assisted surgery for different pancreatic diseases by the same equipe of surgeons. The average age was 75.2 years (range 47–83 years). Distal pancreatectomy were 21 (13 spleen preserving); 18 duodenopancreatectomies (1 total pancreatectomy); 8 enucleoresections; 1 central pancreatectomy. Diagnosis was: 11 pancreatic ductal adenocarcinoma, 8 ampullary adenocarcinoma, 11 neuroendocrine tumors, 9 cystic tumors, 5 IPMNs, 2 chronic pancreatitis, 1 renal metastasis, 1 leiomyosarcoma. Mean operating time was 175 min for distal pancreatectomy and 380 min (320–470) for duodeno-pancreatectomy. There were 2 conversions to open surgery. Mean length of stay was 7.2 days (3–15 days) for distal pancreatectomy; 9.4 days (7–31 days) for duodenopancreatectomy. The postoperative morbidity rate was 21% and the mortality rate was 2.08% (1 patient).

**Conclusion:** Robot-assisted pancreatic surgery is increasing. Bleeding loss and fistula rate comparing minimally invasive and open procedures, are the most interesting aspects to investigate. The magnified view and the surgical precision allowed by robotic technology, especially to perform the pancreato-jejunostomy are a reason for the lower morbidity rate in robotic technique. Duodeno-pancreatectomy is feasible and safe but it takes a longer operative time.

**OP 82****A New Minimally Access Hydrocelectomy**

Aly Saber

Port-Fouad General Hospital, Port-Fouad, Port-Said,  
Port-Said, Egypt

**Background:** While controversy exists about the treatment of hydrocele; hydrocelectomy remains the treatment of choice for the management of hydroceles. Standard surgical procedures for hydrocele may cause postoperative discomfort and complications. To ascertain the acceptability of minimally access hydrocelectomy through 2

cm incision and the outcome as regard morbidity reduction and recurrence rate.

**Material and Methods:** 42 adult patients, aged 18–56 years underwent hydrocelectomy as day case procedure through 2 cm scrotal skin incision and excision only of a small disc of the parietal tunica vaginalis.

**Result:** The operative time ranged between 12–18 minutes and the mean was 15 minutes. The outcome measures included patient satisfaction, postoperative complications.

**Conclusion:** This procedure requires minor dissection and minimal manipulation during treatment. It also resulted in no recurrence, minimal complications and requires a short operative time.

**OP 83****Laparoscopic Liver Resection in Patient with the Previous Abdominal Surgery**

Yukihiro Okuda, Etsuro Hatano, Satoru Seo, Kojiro Taura, Kentaro Yasuchika, Akira Mori, Toshimi Kaido, Shinji Uemoto

Graduate school of Medicine, Kyoto University, Kyoto,  
Japan

**Background:** Hepatocellular carcinoma and liver metastasis from colorectal cancer often occur intrahepatic recurrence even after hepatic resection and many patients need for repeated hepatectomy. The aim of this study is to assess the safety and the feasibility of laparoscopic hepatic resection (LHR) in the patients with the previous history of abdominal surgery.

**Material and Methods:** Among 104 patients who underwent LHR for hepatocellular carcinoma (HCC; n=73) or metastatic liver tumor (MLT; n=31), 41 patients had the history of abdominal surgery (AS group) and the others had no history of abdominal surgery (NAS group). In AS group, 14 patients had the history of surgery in the upper abdomen, especially 9 patients underwent hepatectomy.

**Result:** In AS group, the numbers of the patients with HCC and MLT were 15 and 26, and, in NAS group, 58 and 5, respectively (p<0.001). In AS group and in NAS group, the mean ICGR15 was 13% and 21% (p<0.001), and the ratio of Child-Pugh classification A was 100% and 87% (p=0.02). The median operative time, blood loss, the frequency of the use of Pringle maneuver, open conversion rate and the mean hospital stay had no significant difference (270min vs 264min, p=0.50; 120ml vs 150ml, p=0.10; 51% vs 52%, p=0.91; 2.4% vs 3.2%, p=1.0; 15days vs 13days, p=0.41). There was no significant difference of the morbidity in AS and NAS group (5% vs 11%, p=0.48).

**Conclusion:** Conclusion LHR in patients with the history of abdominal surgery was safe and feasible.

## OP 84

**Laparoscopic vs Open Peritoneal Dialysis Catheter Insertion, The Loci-Trial**

Jeff A. Lafranca<sup>1</sup>, Sander M. Hagen<sup>1</sup>, George P. Akkersdijk<sup>2</sup>, Jan J. Wever<sup>3</sup>, Hendrikus J.A.N. Kimena<sup>1</sup>, Marike Wabbijn<sup>1</sup>, Arjan M. Van Alphen<sup>2</sup>, Jan N.M. Ijzermans<sup>1</sup>, Frank J.M.F. Dor<sup>1</sup>

<sup>1</sup> Erasmus MC, University Medical Center Rotterdam, Rotterdam, Netherlands

<sup>2</sup> Maastad Ziekenhuis Rotterdam, Rotterdam, Netherlands

<sup>3</sup> Haga Ziekenhuis, The Hague, Netherlands

**Background:** Key to successful peritoneal dialysis (PD) is the presence of a well-functioning PD catheter. Several complications, such as in- and outflow obstruction, peritonitis, exit-site infections, leakage and migration, can lead to catheter removal and loss of peritoneal access. The type of insertion technique used may greatly influence the occurrence of complications, however, a well-designed RCT is lacking.

**Material and Methods:** This multicenter RCT was designed as a pilot-study, because sufficient data to power was lacking. All patients eligible for PD between 2011 and 2014 were included and electronically allocated and randomized between laparoscopic versus open PD catheter insertion. Follow-up was 6 months. Several outcome measures were analyzed, as well as quality of life and postoperative X-rays to assess catheter position.

**Result:** Fifty-one patients were included. Twenty-five patients underwent open catheter insertion and twenty-six laparoscopic insertion. No significant differences in PD catheter survival at 6 weeks were found. Skin-to-skin operation time was significantly different in favor of the laparoscopic technique with a median of 25 minutes compared to 32 minutes in the open technique ( $p = 0.01$ ). No difference was seen in catheter survival and quality of life at 6 months.

**Conclusion:** Although little difference was found between groups, the reduction of 22% in operation time using the laparoscopic technique may be clinically relevant and positively affect cost-effectiveness of the technique. A powered RCT is recommended to investigate whether the laparoscopic method is more cost-effective.

## OP 85

**Validation of a Training Model in a Gynecologic Laparoscopic Surgery**

Belén Moreno Naranjo, Blanca Fernández Tomé, Silvia Enciso Sanz, Idoia Díaz-Güemes, Francisco Miguel Sánchez-Margallo

Jesús Usón Minimally Invasive Surgery Center, Cáceres, Spain

**Background:** We present our experience about a training model in gynecologic laparoscopic surgery and the determination of face validity by the attendants. It has been used in our center during more than 20 years and arose from the collaboration and effort of many professionals in the field of health.

**Material and Methods:** Data included in the study have been obtained in 13 workshops held between 2010 and 2013 with a total of 213 attendants. The courses have a total duration of 21 hours. They begin with a theoretical session about basic knowledge of laparoscopic surgery, ergonomics and instruments. After that, the attendants carry out hands-on physical simulator to develop laparoscopic dexterity. On the second and third days, it consists of hands-on animal model where they can perform different techniques.

**Result:** 93.3% of the attendants consider correct the distribution theory-practice. 75.55% were in accordance with the total duration of the course, 24.45% considered that it should be of longer duration. All techniques carried out throughout the course obtained a score higher than 9 points over 10, being the dissection of vascular structures the best valued (9.54 points). Regarding skills self assessment, 82.82% of the participants considered that they had progressed much and 92.13% considered themselves capacitated to perform trained procedures on live patients.

**Conclusion:** The training model has proved to be very well appreciated enabling students to gain knowledge and improve skills. Providing, in addition, confidence to the application of learned techniques to the clinical practice.

## OP 86

**Use of Johans as Knot Pusher for Lap Appendectomy- Safety & Feasibility**

Khurram Siddique<sup>1</sup>, Khalid Khan<sup>1</sup>, Anil Kaul<sup>2</sup>, Muhammed Hanif Shiwan<sup>2</sup>

<sup>1</sup> Barnsley Hospital, Rotherham, United Kingdom

<sup>2</sup> Whiston Hospital, Liverpool, United Kingdom

**Background:** The base of appendix can be secured by stapling or with endoloops. The authors have reported the use of Johan forceps as endoloop pushers for laparoscopic appendectomy.

**Objectives:** A feasibility study of safety and cost effectiveness

of using Johan forceps as endoloop pushers for laparoscopic appendicectomy

**Material and Methods:** A prospectively collected data of all patients who underwent laparoscopic appendicectomy by this technique at two separate institutions was reviewed. Three standard extra-corporeal endoloops utilising one vicryl tie were deployed using Johan forceps. Demographics, operative findings, post-op stay, post-op complications as well as readmissions were recorded & analysed.

**Result:** Total number of patients was 69. There were 46 (66.6%) males while rest were female with an age of \*24 (14-77). Inflamed appendix (including perforation, localised abscess) was noted in 81% of cases, while 19% had grossly normal appendix. There were no intra-operative complications. The post-op stay was \*2(1-4) days. Complications include 4 (5.8%) wound infections which were managed conservatively. 7(%) patients were re-admitted due to pain. The cost of one vicryl tie was £0.5 Vs £49.80 (for 3 standard endoloops available in the market). The cost analysis showed Johan assisted appendicectomy to be 99 times cheaper than the standard marketed endoloops.

\*Median

**Conclusion:** Our early experience confirms that use of Johan forceps as endoloop knot pushers is a feasible and safe technique with promising results. It is a cheap and safe alternative to the standard endoloops available in the market.

#### OP 87

##### Ossi- an in-Vivo Model for Experimental Evaluation Of Bone-Titanium Contact

Tamás Harangozó<sup>1</sup>, Gergely Hriczó-Koperdák<sup>1</sup>,  
Sándor Farkasdi<sup>2</sup>, Szilvia Koncz<sup>2</sup>, Dávid Pammer<sup>2</sup>,  
Ágnes Kocsis<sup>2</sup>, Gábor Varga<sup>2</sup>, József Blazsek<sup>1</sup>,  
Marco Berardini<sup>3</sup>

<sup>1</sup> Semmelweis Egyetem-Department of Oral Biology, Budapest, Hungary

<sup>2</sup> Budapest University of Technology and Economics-Department of Materials Science and Engineering, Budapest, Hungary

<sup>3</sup> Università degli Studi "Gabriele D'Annunzio", Odontoiatria e Protesi Dentaria, Pescara, Italy

**Background:** Osseointegration is a direct, rigid fixation of titanium implants within the bone. Non-invasive and invasive methods are available to measure implant stability. A new experimental model was developed at our department to evaluate osseointegration and new bone formation, named OSSI. Up till now, only tangential fixation force could be measured, but in the past few months we succeeded in the adaptation of our model to a non-invasive method - Resonance Frequency Analysis (RFA).

**Material and Methods:** 51 female Wistar rats were used in our study (ethical permission No. 1799/003/2009). Screw type titanium implants were fabricated what enabled us to measure implant stability by RFA. An axial cavity

(diameter 1.3 mm) for implant placement was drilled into the exposed joint surface of rat tail vertebrae. 4, 8 and 16 weeks after surgery, rats were sacrificed under Nembutal anesthesia and caudal vertebrae were harvested. Implant stability was measured using a non-invasive system utilizing RFA (Osstell, Sweden). Stability was displayed in ISQ (Implant Stability Quotient). Biomechanical properties were further characterized by measuring the maximum extraction force.

**Result:** The average values of RFA were 23.98, 34.66 and 52.85 ISQ. The outcome of the pull-out test has shown 24, 56.16 and 116.125 Newtons in average.

**Conclusion:** We established to calculate the value of titanium implant fixation with bone surface. Our study may provide such results to the clinics of orthopedic traumatology as well as dentistry, which are essential in validating the bone-implant contact, and designing implantological procedures.

#### OP 88

##### Telescoping Colonic Anastomosis In Dogs

Aly Saber<sup>1</sup>, Mohammed ,H. Shekidef<sup>2</sup>

<sup>1</sup> Port-Fouad General Hospital, Port-Fouad, Port-Said, Port-Said, Egypt

<sup>2</sup> Professor of Surgery, Anesthesiology and Radiology. Faculty of Veterinary Medicine, Suez Canal University, Ismailia, Egypt

**Background:** Colorectal anastomotic leakage remains one of the most feared post-operative complications. The telescoping technique has been used but never widely acclaimed. The aim was to study both the external and internal features and the microscopic configuration of the invaginating.

**Material and Methods:** After the scheduled three-week's post-operative period, animals were reopened for second-look laparotomy to detect: external appearance of the anastomosis, internal appearance of the anastomosis and histopathological study.

**Result:** Good and fair ratings were seen for external and internal appearance of the anastomosis while no poor rating were detected in our experiments. Microscopic study revealed good healing process of the anastomotic lines.

**Conclusion:** Our data showed that the telescopic anastomosis is a secure, easy to be constructed, fast and cheap procedure for colonic anastomoses.

#### OP 89

##### Lasheen's Needles for Closure of Wound of PNS and Trocar Port

Ahmed E Lasheen

Zagazig University, Zagazig, Egypt

**Background:** Pilonidal disease is a common chronic disorder of the sacrococcygeal region; and its surgical manage-



ment is still a matter of discussion. The ideal therapy would be a quick cure that allowed patients to return rapidly to normal activity, that is minimally invasive with no morbidity, a low risk of complication and easy to learn.

**Material and Methods:** Sixty seven patients with pilonidal disease were subjected to excision and partial closure procedure, from November 2006 to March 2010 at General Surgery Department, Zagazig University Hospital, Zagazig University, Egypt. The mean age was 27.5 years. Complete but close excision of all diseased tissues was achieved. Then, the wound partially was closed from the deepest parts only by multiples buried vertical mattress sutures by using Lasheen's needle, and left the superficial wound parts to heal by second intention. The follow up period was ranged from 14-39 months (mean 27 months).

**Result:** The mean hospital stay was 12 hours, mean operation time was 30 minutes and mean time to return to normal activity was 8 days (range 7-12 days). Nine cases show superficial wound infection and one case of recur-rence.

**Conclusion:** Excision and partially closure technique by using Lasheen's needle for pilonidal diseases is minimal invasive and less morbidity, easy to learn and has favorable results regarding to return to normal activity, rate of recurrence and cosmetically acceptable.

## OP 90

### Digestive Anastomosis and Bovine Pericardium Patch: From Animal to Human

Angela Gurrado<sup>1</sup>, Germana Lissidini<sup>1</sup>, Luigi D'ambra<sup>2</sup>, Germana Lissidini<sup>1</sup>, Luigi Giovanni Greco<sup>1</sup>, Giuseppe Piccinni<sup>1</sup>, Stefano Berti<sup>2</sup>, Emilio Falco<sup>2</sup>, Mario Testini<sup>1</sup>

<sup>1</sup> Department of Biomedical Sciences and Human Oncology, Unit of Endocrine, Digestive, and Emergency Surgery, University Medical School of Bari, Bari, Italy

<sup>2</sup> Department of General Surgery, "Sant'Andrea" Hospital of La Spezia, La Spezia, Italy

**Background:** Postoperative dehiscence is a major complication of digestive anastomosis (DA). Biologic materials have been introduced as reinforcement of abdominal wall hernia in contaminated setting. Our previous experimental studies on pigs, based on biochemical, tensiometric, and immunohistochemical evidences, showed that bovine pericardium patch (BPP) is also effective as reinforcement of DA, significantly improving healing process, and preventing leakage in cases of iatrogenic perforation. In this preliminary study we propose the use of BPP as reinforcement of DA in human.

**Material and Methods:** From 2011 to 2013, 28 patients (11 F, 17 M; mean age: 69 y, range: 36-80 y) were treated at two Units of general surgery in Italy. In 18 (Group A) a mechanical high-risk anastomosis was reinforced by BPP fixed by sutures around the anastomotic line, and in 10 (Group B), in which a postoperative anastomotic leak appeared, a direct suture

overlaid through BPP was performed. Group A included large bowel (N=5), small bowel (N=6), esophagojejunal (N=6), and pancreatojejunal anastomoses (N=3); Group B included 8 anastomotic leakages (N=8).

**Result:** No mortality was observed. In Group A all anastomoses healed without complications. In Group B leakage was clinically and radiologically stopped, and patients showed an uneventful follow-up. The medium follow-up was 29 months (range:1-36).

**Conclusion:** This preliminary experience in human confirms that the use of BPP wrapping digestive anastomosis improves the healing process in high-risk conditions; moreover, it successfully manages the appearance of anastomotic failure. Further prospective studies with larger series are needed to validate this method.

## OP 91

### Remote Ischemic Preconditioning Decreases Renal Ischemia-Reperfusion Injury

Kapelouzou Alkistis<sup>1</sup>, Athanasiadis Dimitrios<sup>2</sup>, Katsimboulas Michail<sup>1</sup>, Martikos George<sup>2</sup>, Peroulis Michail<sup>2</sup>, Balafas Evangelos<sup>1</sup>, Vasdekis Spyridon<sup>2</sup>, Kostakis Alkiviadis<sup>1</sup>, Liakakos Theodoros<sup>2</sup>, Lazaris Andreas<sup>2</sup>

<sup>1</sup> Center of Experimental Surgery, Biomedical Research Foundation, Academy of Athens, Athens, Greece

<sup>2</sup> 3rd Surgical Department, Medical School, National and Kapodistrian University of Athens, Attikon Teaching Hospital, Athens, Greece

**Background:** Temporary renal ischemia consists a significant factor that increases morbidity and mortality after thoracoabdominal aortic aneurysm (TAAA) open repair. Remote ischemic preconditioning (RIPC) has been considered a mean of decreasing ischemia/reperfusion injury (IRI) in various tissues. Aim of the study was to identify the effect of RIPC in reducing renal IRI in an animal model of TAAA open repair

**Material and Methods:** Twenty male swine were divided in 4 groups: Sham (control), IR, RIPC15, and RIPC3x5. All animals, except in the Sham group, underwent a 30 minutes visceral ischemia after a concomitant subphrenic and infrarenal aortic clamping followed by a 200 minutes reperfusion before the closure of the abdominal cavity. In RIPC15 group the preconditioning consisted of 15 minutes of ischemia followed by 15 minutes of reperfusion, while in RIPC3x5 group of 3 cycles of 5 minutes ischemia followed 5 minutes of reperfusion. Elective renal vein blood was retrieved from the renal vein in specific time intervals of reperfusion, ranging from 30 minutes to 24 hours post-ischemia. Using ELISA techniques, serum was examined for various parameters indicating IR injury (MDA), inflammation and renal tissue damage (CRP, TNF $\alpha$ , Troponin I), as well as renal function (Urea, Creatinine, Cystatin C, NGAL).

**Result:** All examined parameters were found to be less impaired in animals of RIPC groups compared to IR group, at a

significant statistical level.

**Conclusion:** Blood data demonstrate a beneficial effect in reducing renal IRI induced in a way similar to the one during a TAAA open repair, when RIPC has been preceded the IRI.

## OP 92

### Cognition Guided Liver Surgery

Mohammadreza Hafezi<sup>1</sup>, Arianeb Mehrabi<sup>1</sup>, Beal Mueller<sup>1</sup>, Lena Maier-Hein<sup>2</sup>, Arash Saffari<sup>1</sup>, Hannes Kenngott<sup>1</sup>, Markus W Buechler<sup>1</sup>

<sup>1</sup> General, Visceral and Transplantation Surgery, University of Heidelberg, Heidelberg, Germany

<sup>2</sup> DKFY Heidelberg, Heidelberg, Germany

**Background:** The importance of symbiosis of technology and surgery has been emphasized. Without technological innovation there is no progress in surgery. Technology assists surgeons to enable a higher quality patient care. However, more and more problems interface between different systems and surgeons. It means, although there are always more powerful systems e.g. in image processing but there is only limited possible to combine these data.

**Material and Methods:** For liver surgery, there are very precise image tools to measure remnant liver volume. Additionally, more complex information like liver function, intraoperative spatial relationships remains out of consideration. Consideration of such information to determine final cut for removal of a tumor and success depends on surgeon. But even highly experienced surgeons in critical situations make errors where they find a suboptimal solution.

**Result:** The Cognition Guided Surgery thinks like a human wizard. The system takes pre-, intra- and postoperative information and interprets them. The system continuously perceives process and relevant data (perception). It takes the experiential knowledge (knowledgebase) and recognizes the current situation based on data, (interpretation) and if necessary performs appropriate action. It means the simulation of liver resection and target structures for safe execution of next operation step (action).

**Conclusion:** Crucial requirement for cognitive system is a common platform, will be merged and integrated various modular components. Close interdisciplinary collaboration with clinical partners will remove the clinical requirements. By using a cognitive system it will be easier for surgeon in the future, to find an ideal therapy for patients and these perform with optimal quality.

## OP 93

### A Benchtop Model for Comparison of Implant Abrasiveness

Tim D. Ebner, Angela Throm, David Jermin, Elizabeth Contini, Dwight Bronson

Covidien, North Haven, United States

**Background:** Surgical staplers are commonly used surgical devices which enable surgeons to simultaneously cut and staple tissue. In some cases staple line reinforcement material, or buttress, may be added to increase compression and reinforce fragile tissue. A benchtop test was developed to model the use of buttress and investigate abrasive effects of dynamic, cyclical contact between buttressed staple lines and surrounding tissue with quantitative and objective metrics.

**Material and Methods:** Staple line wedges were formed in synthetic media using various buttress products and a custom abrasion substrate was fabricated by polymerizing agarose gel with aluminum oxide in suspension. An electromechanical system was used to cycle wedges against the gels in a controlled repeatable manner. A high resolution 3D laser scanner was then used to measure the volume of each defect, allowing for objective comparisons between buttress groups.

**Result:** Mean defect volume was 32.1, 185.7, 134.4, 86.6, and 552.5 mm<sup>3</sup> for Groups A, B, C, D, and E, respectively. All groups followed a normal distribution (p-value > 0.05). Based on the 95% Bonferroni confidence intervals, there were statistically significant differences between some of the groups.

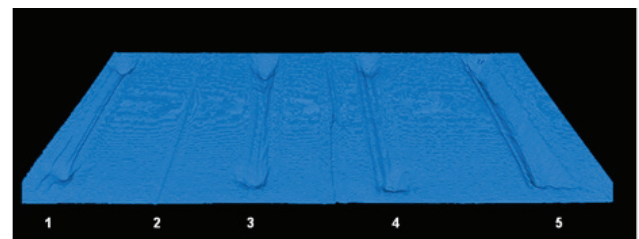


Figure 1: Surface rendering of an agarose gel after treatment with five specimens, produced at ImageIQ, Inc (Cleveland, OH)  
Table 1: Summary table with sample size, mean, standard deviation and the p-value for normality, by group A-E  
Table 1: Summary table with sample size, mean, standard deviation and the p-value for normality, by group A-E

Group	Sample Size	Mean (mm <sup>3</sup> )	Standard Deviation (mm <sup>3</sup> )	Normality (p-value)
A	9	32.1	16.6	0.515
B	9	185.7	132.5	0.857
C	9	134.4	127.7	0.136
D	6	86.6	71.5	0.184
E	9	522.5	198.8	0.245

**Conclusion:** Initial testing showed feasibility of the method to compare abrasiveness between devices with slight differences in composition. This is a new tool for product development, from benchmarking the performance of predicate products to evaluating new product concepts. Ultimately this method may be adapted to model the application of other devices to evaluate potential abrasiveness with objective and quantitative metrics.

#### OP 94

### Is Quality of Life of Pancreatic Carcinoma Patients Sensitive to The Type of Treatment?

Miroslav Ryska<sup>1</sup>, Radek Pohnan<sup>1</sup>, Ondrej Ryska<sup>1</sup>, Ladislav Dusek<sup>2</sup>

<sup>1</sup> Surgery Dept., <sup>2</sup> Faculty of Medicine, Charles University, Prague, Czech Republic

<sup>2</sup> Institution of Biostatistics and Analyses, Brno, Czech Republic

**Background:** The aim of this report is to present the results of a prospective study of quality of life (QoL) in the early peri-treatment period of patients with pancreatic ductal adenocarcinoma.

**Material and Methods:** A total of 151 patients, average age 64 years (44–89), underwent treatment according to tumour staging. To monitor QoL, we used a questionnaire SF 36/2 before treatment and 3 months thereafter.

**Result:** The exploration and radical resection patients were with similar baseline QoL (61.8±16.9 vs. 62.8±15.6). Patients indicated for biliodigestive anastomosis QoL was significantly higher than in patients indicated for endoscopic stent (54.9±18.8 vs. 30.0±7.1,  $p < 0.001$ ). All patients observed after 3 months, showed a significant reduction in QoL with the exception of the Stent group. Input value of QoL in patients in whom exploration was performed, was not significantly different from the value of QoL after 3 months. Bleeding, abdominal abscess, biliary or pancreatic fistula or wound infection did not result in significant impairment of QoL after 3 months of treatment. Bleeding, abdominal abscess, biliary or pancreatic fistula or wound infection did not result in significant impairment of QoL after 3 months of treatment.

**Conclusion:** Quality of life of patients with pancreatic carcinoma is sensitive to the stage and to type of the treatment. Results of our study may affect the determination of optimal treatment of the patients with CP.

#### OP 95

### Partial Fistulectomy and Fistular Wall Flap for High Perineal Fistula

Ahmed E Lasheen

Zagazig University, Zagazig, Egypt

**Background:** Controversy surrounds the management of

fistula in an especially the high type. This study assesses the clinical results of a partial fistulectomy with a closure of the internal opening using a fistular wall flap for the management of high perineal fistulas.

**Material and Methods:** This technique was performed in 50 patients with this condition, with the aid of a fistulectomy tube. The clinical outcome was assessed in terms of continence and recurrence for a period of 22 months after operation.

**Result:** The technique is easy to perform, results in less morbidity, and provided successful healing in 49 patients. A recurrent fistula occurred in one patient. No continence disturbance was noted during the follow-up period.

**Conclusion:** This technique is thus considered to be an effective method for managing high perineal fistulas since it was found to demonstrate good results in terms of recurrence and continence.

#### OP 96

### Mechanical Strength and Rheological Properties of Surgical Tissue Adhesives

Konstantinos A. Vakalopoulos<sup>1</sup>, Zhouqiao Wu<sup>1</sup>, Leonard Kroese<sup>1</sup>, Gert-Jan Kleinrensink<sup>1</sup>, Hans Jeekel<sup>1</sup>, Richard Vendamme<sup>2</sup>, Dimitra Dodou<sup>3</sup>, Johan Lange<sup>1</sup>

<sup>1</sup> Erasmus Medical Centre, Rotterdam, Netherlands

<sup>2</sup> European Research Committee, Nitto Europe NV, Genk, Belgium

<sup>3</sup> Delft University of Technology, Delft, Netherlands

**Background:** Little is known on the mechanical strength of tissue adhesives directly after application. Furthermore, rheological profiling may be important in understanding mechanical performance and explaining differences between adhesives. This study provides new data on the mechanical strength and rheology of a comprehensive list of tissue adhesives with regard to colorectal adhesiveness.

**Material and Methods:** 11 surgical tissue adhesives were included: 3 cyanoacrylates (CA), 2 fibrin glues (FG), 3 polyethylene glycol adhesives (PEG) and 3 albumin based adhesives (AB). Tubular rat colonic segments were glued together. Tensile (T), shear (S) and peel (P) strength were measured. Shear storage ( $G'$ ) and shear loss ( $G''$ ) moduli were also evaluated.

**Result:** CA adhesives were stronger than AB (T:  $p=0.017$ ; S:  $p=0.064$ ; P:  $p=0.000$ ), which, in turn, were stronger than PEG (T:  $p=0.000$ ; S:  $p=0.000$ ; P:  $p=0.018$ ). PEG were stronger than FG for shear ( $p=0.013$ ) and comparable for tensile and peel strength ( $p>0.05$ ). Within-group variation was smallest for CA. Mechanical strength correlated strongly between performed tests. Rheological properties ( $G'$  and  $G''$ ) correlated strongly with mechanical strength for all adhesives combined.

**Conclusion:** CA are the strongest and most homogenous group in terms of mechanical strength. Hydrogels (FG, AB) are heterogeneous, with lower mechanical strength than CA. FG are mechanically the weakest adhesives. Rheological

profiles correlate to mechanical strength and may be useful for predicting mechanical performance.

## OP 97

### Finding Criteria to Improve Accuracy of CT in Detecting Anastomotic Leakage

Huiberts, Donkervoort

OLVG, Amsterdam, Netherlands

**Background:** Detecting anastomotic leakage in an early stage after colorectal surgery is essential to minimize morbidity. Computer Tomography (CT) has a relatively good specificity in detecting anastomotic leakage but sensitivity is low. This study investigates which radiological criteria are most predictive for anastomotic leakage and if a set of criteria can improve sensitivity of CT-imaging.

**Material and Methods:** All patients that underwent CT-imaging within 16 days after colorectal surgery between jan 2006 and december 2012 because of clinical suspicion of anastomotic leakage were included for analysis (108 patients). Two independent radiologists, blinded for the clinical outcome, reviewed all the CT-scans based on a set of potential predictive criteria for AL.

**Result:** Anastomotic leakage was determined at relaparotomy in 34 (30.6%) of the 108 patients with a clinical suspicion of AL. Review of CT-scans based on the set of criteria resulted in sensitivity of .68 (95% CI .52-.83) for radiologist 1 and of .79 (95% CI 0.66-0.93) for radiologist 2. Specificity was .87 (95%CI .79-.94) for both radiologists. Univariate analysis revealed fluid, air near the anastomosis, air intra-abdominally and contrast leakage to be associated with. Multivariate analysis showed that only contrast leakage was a significant predictor for both radiologists.

**Conclusion:** Contrast leakage is the only independent predictor for AL. Sensitivity is not improved to a satisfactory level using a selected set of criteria. Cautiousness in the interpretation of CT-images is required.

## OP 98

### Infiltrates of CD68+ Macrophages and Neutrophils Predict Anastomotic Leakage

Dominik Schöb, Tim Schuler, Christian D. Klink, Karsten Junge, Daniel Busch, Pulf P. Neumann, Marcel Binnebösel

Klinik für Allgemein-, Viszeral- und Transplantationschirurgie, Uniklinik RWTH Aachen, Aachen, Germany

**Background:** Anastomotic leakage in elective laparoscopic sigmoid resection due to diverticulitis is a complication with a remarkable morbidity and mortality. The aim of this study was to evaluate the predictive value of a potential pre-existing low grade inflammation regarding the

incidence of anastomotic leakage.

**Material and Methods:** Patients with either chronically recurrent diverticulitis or sigmoid stenosis caused by chronic diverticulitis were included in this study. Patients underwent laparoscopic sigmoid resection with end-to-end stapler anastomosis. For immunohistochemical evaluation the anastomotic tissue acquired rings were preserved and further processed. As markers of cellular immune response CD68+ macrophages, neutrophils, CD3+ T-lymphocytes, and CD11c+ dendritic cells as well as other key receptors of inflammatory response were evaluated within the acquired sample of colonic bowel wall tissue. Clinical and immunohistochemical data was compared between groups (leakage vs. no leakage).

**Result:** 83 patients were included in this study. Seven patients suffered an anastomotic leakage, one of which required reoperation. The remaining six patients were treated conservatively. The matched-pair analysis revealed a significantly higher percentage of CD68+ macrophages and neutrophils in the colonic wall obtained at the index operation in both the mucosal and submucosal layer for the leakage group.

**Conclusion:** A pre-existing low grade inflammation represented by infiltrates of macrophages and neutrophils is a predictor for increased risk of developing colon anastomotic leakage. In further studies the importance of those inflammatory cells has to be illuminated on a molecular level in order to develop potential and specific therapeutic approaches to avoid an aberrant intestinal wound healing.

## OP 99

### Geriatric Aspects of Colorectal Surgery in Oroshaza, Hungary

Istvan Zöllei, Alzubi Ali

Teaching Hospital, Oroshaza, Hungary

**Background:** Both the incidence and the natural mortality of cancer rise with advancing age. Surgery is regularly applied in the treatment of elderly patients with colon cancer, while chemotherapy is less frequently offered. Radiotherapy, as part of complex therapy of colon cancer, is not acceptable because of its side-effects. Neoadjuvant chemo-radiotherapy is more frequently used in the complex therapy of rectal cancer of "young" patients, but it is not so popular in the geriatric group.

**Material and Methods:** During the last 8 years 412 operations were performed electively or urgently because of colon cancers in Oroshaza. The ages of 226 patients were lower than 70 years and the ages of 186 patients were over than 70 years. During that period 240 operations were performed electively or urgently because of rectal cancers in Oroshaza. The ages of 130 patients were lower than 70 years and the ages of 110 patients were over. Authors applied relatively the same radical surgical tactics in both groups.

**Result:** Comorbidities were much higher in both elderly groups. The early postoperative mortality rate of younger group was 3,09% and 4,5% was in the elderly group. The

postoperative surgical complications were similar in both groups. Relatively large difference was found in the cardiac complications.

**Conclusion:** The early postoperative mortality rates were acceptable in both groups (elective and urgent cases together): 3.09 % (in youngers) and 4.5% (in elderly group). The “relatively radical” surgical treatment gave chance to have good quality of life in the elderly groups.

#### OP 100

### Induction Chemotherapy Followed by Surgery for Stage IV Gastric Cancer

Shugo Ueda, Yoshikage Inoue, Mami Yoshitomi, Yoichiro Uchida, Taku Iida, Akiyoshi Kanazawa, Hiroaki Terajima

Tazuke Kofukai Medical Research Institute, Kitano Hospital, Osaka, Japan

**Background:** Prognosis of gastric cancer with peritoneal dissemination is poor. If the limited peritoneal dissemination is controlled by chemotherapy, gastric cancer will become surgically resectable. Combination with S-1, an oral 5-fluorouracil derivative, and cisplatin is highly effective and regarded as a standard regimen for nonresectable or metastatic gastric cancer.

**Material and Methods:** We retrospectively analyzed 164 patients of gastric cancer with stage IV at Kitano Hospital between 2002 and 2011. Peritoneal dissemination and cytology was diagnosed by laparoscopy before induction chemotherapy.

**Result:** Prognosis of the patients who did not receive chemotherapy was very poor. Patients with single stage IV factor lived longer than those with multiple stage IV factors. Induction chemotherapy group survived longer than non-induction chemotherapy group. Prognosis of patients who underwent gastrectomy was better than that of patients without gastrectomy. Positive peritoneal cytology disappeared in 16 of 25 (64%) patients after the induction chemotherapy. Patients with R0 resection survived longer than those with noncurative resection.

**Conclusion:** Limited peritoneal dissemination of gastric cancer is highly sensitive to induction chemotherapy with S-1 plus cisplatin. Curative resection after disappearance of peritoneal dissemination seems to lead to longer survival.

#### OP 101

### PPAR $\gamma$ -Dependent Macrophage Differentiation Ameliorates Adhesion Formation

Gun-Soo Hong, Timo Schwandt, Kathy Stein, Jörg C. Kalff, Sven Wehner

Department of Surgery, University of Bonn, Bonn, Germany

**Background:** Peritoneal adhesions emerge in 75% after abdominal surgery. This can lead to obstruction and other complications. Our former data indicate an association of M2 macrophage differentiation with less adhesion formation. Here investigated the physiological inducer of this M2 macrophage differentiation as a therapeutic approach to prevent adhesion formation.

**Material and Methods:** Peritoneal adhesions were induced by placing four ischemic buttons in the peritoneum of mice and scored after seven days. Macrophage differentiation was determined by M1 and M2 macrophage marker expression via quantitative PCR, arginase activity assay and immunohistochemical analysis within the ischemic buttons after three days. Adhesions were induced in IL-4 -/-, IL-10 -/- and CD11bcre PPAR $\gamma$  flox/flox mice and induction of M2 macrophages differentiation was compared to wildtype controls. Pioglitazone, a PPAR $\gamma$  agonist, was given daily via gavage three days before surgery and after surgery.

**Result:** Adhesion formation was significantly aggravated in CD11bcre PPAR $\gamma$  flox/flox mice compared to controls, but was unaffected in IL-4 -/- and IL-10 -/- mice. M2 macrophage marker expression was also significantly suppressed in CD11bcre PPAR $\gamma$  flox/flox mice. Pioglitazone-treatment significantly reduced the expression of M1 macrophage marker, while M2 macrophages marker were significantly enhanced. Adhesion formation was significantly reduced after Pioglitazone treatment compared to untreated controls.

**Conclusion:** Our data suggest a key role of PPAR $\gamma$ -dependent M2 macrophage differentiation during adhesion formation. Pioglitazone-treatment induced a polarization to M2 macrophage differentiation which suppresses adhesion formation. PPAR $\gamma$  agonism could be promising strategy to prevent adhesion formation after abdominal surgery.

#### OP 102

### Etanercept Restores Vasocontractile Sensitivity Affected by Mesenteric I/R

Salih Erpulat Ozis<sup>1</sup>, Tamila Akhayeva<sup>2</sup>, Sahika Guner<sup>1</sup>, Sibel Serin Kilicoglu<sup>1</sup>, Arzu Pampal<sup>1</sup>

<sup>1</sup> Ufuk University Faculty of Medicine, Ankara, Turkey

<sup>2</sup> Ankara University Faculty of Pharmacy, Ankara, Turkey

**Background:** The aim of the study is to evaluate in vivo and in vitro effects of etanercept, a TNF-alpha blocker, on the contractile responses of superior mesenteric artery (SMA) in

an experimental model of mesenteric ischemia/reperfusion.

**Material and Methods:** After obtaining animal ethics committee approval, 24 male Sprague-Dawley rats were allocated to 3 groups. Control group (Gr C, n=6) underwent a sham operation, ischemia/reperfusion and treatment groups underwent 90min ischemia and 24h reperfusion (Gr I/R, n=12, Gr I/R+E, n=6). The treatment group received 5mg/kg etanercept intravenously at the beginning of reperfusion. At the end of reperfusion, all animals were sacrificed and bowel mesentery and ileum were excised. Third branch of SMA was dissected in order to evaluate the contractile responses. We also investigated in vitro drug effect using organ bath incubation of etanercept on vasocontractile responses in Gr I/R. The excised ileums were analyzed under light microscope.

**Result:** We found that endothelin-1 and phenylephrine-mediated vasocontractile sensitivity obtained from SMA increased in Gr I/R when compared to Gr C. Both intravenous administration and organ bath incubation of etanercept decreased sensitivity of contractile agent on Gr I/R. Apart from the mucosal injury, lamina propria disintegration and denuded villous tips observed in Gr I/R, the epithelial injury and the subepithelial edema were found to be milder in Gr I/R+E.

**Conclusion:** Our results indicate that etanercept can be a promising agent as it does not only inhibit inflammation by blocking TNF-alpha in ischemia/reperfusion injury but also restores vascular contractility during reflow.

#### OP 103

##### Gallbladder Perforation for Acute Cholecystitis: 10- Year Results

*Silvia Guzmán Suarez, Helena Alvarez García, Paula Senra Del Río, Enrique Casal Nuñez, Fabio Ausania*

Hospital Xeral-Cíes de Vigo, vigo, Spain

**Background:** Gallbladder perforation for acute cholecystitis: 10-year results on morbidity, mortality and preoperative risk prediction at a tertiary care centre.

**Introduction:** Gallbladder perforation (GBP) is a life threatening complication of acute cholecystitis occurring in approximately 2-11% of patients. The aim of this study is to analyse all factors associated with morbidity and mortality, and assess the accuracy of preoperative risk prediction scores.

**Material and Methods:** Medical records of 1033 patients who underwent cholecystectomy for acute cholecystitis in our centre between 2002 and 2012 were reviewed. Preoperative, intraoperative and postoperative relevant data was analysed with univariate and multivariate statistical methods to identify all factors associated with postoperative complications and mortality. Accuracy of ASA, POSSUM and APACHE II scores was also compared using receiver-operating characteristics (ROC) methodology.

**Result:** 137 (12,4%) patients with gallbladder perforation were identified. Morbidity and mortality rates were 57.7% and 9.5% respectively. At multivariate analysis,

preoperative albumin (P=0.007, OR 0.175), open surgery (P=0.011, OR 37.78) and preoperative sepsis (P=0.002, OR 51.647) were associated with complications, and preoperative sepsis was the only factor independently associated with hospital mortality (P=0.007, OR 9.127). APACHE II score was superior to both ASA and POSSUM scores; however the accuracy was fair (AUC<0.80).

**Conclusion:** Preoperative sepsis is the most important factor associated with postoperative morbidity and mortality following GBP and it can be helpful to identify those patients needing the highest level of care possible.

#### OP 104

##### Results in Patients Greater than 80 Years Old after Colorectal Surgery

*Daniel Schraffl, Renzo Joos, Peter Villiger*

Cantonal Hospital Chur, Chur, Switzerland

**Background:** There are several challenges in surgical treatment of colorectal diseases in patients over 80. Our goal was to determine outcomes after colorectal surgery with postoperative quality of life (evaluated according to SF-36) and mortality.

**Material and Methods:** This study includes postoperative colorectal surgery patients over 80 years between January 1, 2009 and December 31, 2013. Data was taken from our hospital database, general practitioner and patient interviews. We included curative and palliative as well as elective and emergency interventions.

**Result:** One hundred and seven patients (46 male, 61 female, age between 80 and 99 years, mean age 87,2 +/- 5 years) were studied. Median follow up was 29 months. Five patients were lost to follow up. The overall mortality rate was 39,2%. The 30 - day mortality rate of all patients was 13%. Ten of 14 patients that died within the first 30 days had an emergency surgery. Based on SF-36 results, most of surviving patients had an improvement in postoperative quality of life. Patients without benefit most often claimed aggravation of pre-existing defecation problems. The correlation between ASA score and functional renal impairment mortality was highest in first 30 days.

**Conclusion:** Operation in patients over 80 years is safe. Emergency surgery has a much higher mortality rate than elective surgery. Risk factors include a high ASA score and functional renal impairment. Postoperative survivors demonstrated superior SF-36 scores and improved quality of life.

## OP 105

**Assessing the Need for a Medication Card in Cardiothoracic Surgery***Dimitrios Challoumas<sup>1</sup>, Georgios Dimitrakakis<sup>2</sup>*<sup>1</sup> School of Medicine, Cardiff University, Cardiff, United Kingdom<sup>2</sup> Department of Cardiothoracic Surgery, University Hospital of Wales, Cardiff, United Kingdom

**Background:** The aim of this audit was to investigate whether patients remember the names of their medications and if our proposed intervention (a wallet-fitted card with the names of their medications) would make them feel safer.

**Material and Methods:** Fifty-four (54) patients (mean age 68.2 years; both in-patients and out-patients in cardiothoracic surgery) were interviewed with the aid of a 5-step questionnaire. Results were analysed using SPSS.

**Result:** According to what patients reported, more than half of them (56%) remembered the names of only some of their medications, 11% did not know the names of any of their medications, and only 33% said they knew them all; interestingly, less than half had any kind of list on them with the names of their medications at the time of presentation at the hospital. Most of them (87%) answered yes when asked whether a medication card would make them feel safer and only 2% said they would not carry the card on them at all times if it was given to them free of charge.

**Conclusion:** The extent of the problem is apparent and our proposed intervention appeared to be significantly supported by patients. The card we suggest (visa card size) would be of minimal cost and, in our opinion, would substantially increase patients' safety and satisfaction. A larger study will be carried out in the future as well as a pilot study at a subsequent stage to evaluate the practicability of and patients' adherence to our proposed intervention.

## OP 106

**A New Surgical Technique to Repair Coronary Sinus Injury after Retrograde Cardioplegia: An Experimental Study***R Demaria<sup>1</sup>, A Seghrouchni<sup>2</sup>, Jc Sinquet<sup>1</sup>, E Lorenzelli<sup>2</sup>, H Taillades<sup>3</sup>*<sup>1</sup> Thoracic and Cardiovascular Surgery Unit Arnaud de Villeneuve Hospital, Montpellier Teaching Hospital, 371, avenue du Doyen G. Giraud 34295, Montpellier, France<sup>2</sup> Radiology Unit Arnaud de Villeneuve Hospital, Montpellier Teaching Hospital, 371, avenue du Doyen G. Giraud 34295, Montpellier, France<sup>3</sup> Experimental surgical laboratory, Faculty of medicine, Montpellier University, Montpellier, France

**Background:** Retrograde cardioplegia is very useful in cardiac surgery. However, it remains a risky technique

and some coronary sinus injuries are reported, sometimes difficult to repair. We describe a simple, reproducible and rapid to perform technique to treat these injuries, with the use of a new hemostatic sponge (Tachosyl<sup>®</sup> Nycomed).

**Material and Methods:** On 5 swines (mean weight: 30 kg), cardiopulmonary bypass was instituted between both vena cava and ascending aorta, after medial sternotomy. A left ventricular venting was positioned in the left ventricle via right superior pulmonary vein. After cross clamping and crystalloid cardioplegia (Custodiol<sup>®</sup>, Eusapharma), an injury of 5mm long was performed with a lancet on the coronary sinus. Then, hemostatic sponge (Tachosyl<sup>®</sup> Nycomed) of 2 cm sides was positioned on the injury, taking care of having less blood as possible on the application field. After 3 minutes of application with a tepid compress, the hemostasis obtained was evaluated with an objective scale (duration before hemostasis, quality).

**Result:** The procedure was possible for each swine. The quality of hemostasis obtained was qualified as very satisfactory, with no residual bleeding. The duration for obtain hemostasis was between 3 and 5 minutes. However, quality of application on a dry field, and the 3 minutes duration of application of the tepid compress were mandatory to obtain these satisfactory results.

**Conclusion:** It is possible to treat with efficacy a peroperative severe injury of the coronary sinus with correct application of a hemostatic sponge. However, long term results must be evaluated by further experimental study.

## OP 107

**Pediatric Extra Corporeal Life Support- The Cohort Analysis of 47 Patients Concerning Peripheral and Central Cannulation Techniques***Yves Fougere, Kamran Ahmadov, Patrick Myers, Jalal Jolou, Mustafa Cikirikcioglu, Afksendiyos Kalangos*

Universitz of Geneva, Geneva, Switzerland

**Background:** Extra-corporeal life support (ECLS) is an advanced cardio-pulmonary resuscitation technique which is reserved to the pulmonary and/or cardiac failure patients with an intact neurologic status. The aim is to describe our ECLS results on a pediatric patient population.

**Material and Methods:** This is a retrospective cohort study includes all children (< 16years) who received ECLS during last 10years in the University Hospitals of Geneva. We wanted to see also if there are the differences in terms of complications between central and peripheral implantations.

**Result:** 47 patients received ECLS: 39central and 8peripheral implantations. All ECLS applications were veno-arterial type. Main indication was the circulatory failure following a cardiac operation (72.3%). The average duration on ECLS was 4.6±4.8 days (1 hour-26 days). Survival was 48.9% among all patients and 58.8% in patients after cardiac surgery. There was: 48.9% of bleeding complications on all patients: 51.3% and 37.5% in the central and peripheral

ECLS respectively. 40.4% of infectious complications (46.2% central and 12.5% peripheral ECLS). 21.3% of mechanical complications (12.3% central and 62.5% peripheral ECLS). 19.1% of cerebral complications (12.8% in the central versus 50% in the peripheral ECLS).

**Conclusion:** The ECLS treatment following cardiac surgery improves the survival of the high risk mortality patients when used with a good indication and timing. Hemorrhagic, infectious and thrombotic complications are more frequent for central ECLS. Technical, cerebral and lower limb ischemic complications are more frequent during peripheral ECLS implantations.

## OP 108

### Pharmacological and Ischaemic Postconditioning in Vascular Surgery to Prevent Renal Complications

Péter Arányi<sup>1</sup>, Rita Stangl<sup>1</sup>, Zsolt Turóczy<sup>1</sup>, Dávid Garbaisz<sup>1</sup>, Gábor Lotz<sup>2</sup>, László Harsányi<sup>3</sup>, Attila Szijártó<sup>1</sup>

<sup>1</sup> Semmelweis University, Experimental Surgery and Training Center of 1st Department of Surgery, Budapest, Hungary

<sup>2</sup> Semmelweis University, 2nd Department of Pathology, Budapest, Hungary

<sup>3</sup> Semmelweis University, 1st Department of Surgery, Budapest, Hungary

**Background:** A most severe complication of infrarenal aortic and lower extremity major arterial reconstructions is an acute renal failure. The underlying mechanism an ischaemia-reperfusion injury of a vast mass of muscle tissues, and a consequential metabolic and haemodynamic upset. The aim of the study was to apply (ischaemic) postconditioning and also the mitochondrial K<sup>+</sup>ATP-channel agonist levosimendan, as a “pharmacological postconditioning”, and investigate their effects on the muscle ischaemia-reperfusion injuries and the corollary renal dysfunction.

**Material and Methods:** Male Wistar rats underwent bilateral lower limb 180min ischaemia followed by reperfusion. Postconditioning consisted of 6 cycles of 10s aortic reocclusion and 10s declamping. Intravenous levosimendan was administered continuously (0,02µg/bwkg/h) throughout the whole course of ischaemia and the first 3h of reperfusion. Results of the pretreatment groups were compared with sham-operated and ischaemia-reperfusion control groups. Hemodynamic monitoring was performed by invasive arterial blood pressure registering and a kidney surface laser Doppler flowmetry. After 4h and 24h of reperfusion serum, urine and histological samples were collected.

**Result:** Muscle viability studies showed no significant improvement with the use of postconditioning, on the other hand levosimendan administration resulted in significantly preserved viability. At the same time renal functional laboratory tests and kidney histology demonstrated significantly less expressed kidney injury in both treated

groups. Systemic hemodynamics improved only in the postconditioned group after reperfusion, but kidney microcirculation was significantly less impaired in both treatment groups.

**Conclusion:** The results claim a protective role for postconditioning and also levosimendan “pharmacological postconditioning” in major vascular surgeries to prevent renal complications.

## OP 109

### Co-Administration of Levosimendan and Different Catecholamines in Experimental Heart Failure: Haemodynamic and Arrhythmogenic Effects

Vivien Klaudia Nagy, Eszter Mária Végh, Balázs Sax, Annamária Kosztin, Gábor Szűcs, Endre Zima, Nóra Túri-Kováts, Violetta Kékesi, Béla Merkely

Semmelweis University Heart and Vascular Center, Budapest, Hungary

**Background:** Ca<sup>2+</sup>-sensitiser levosimendan became first-line treatment in acute systolic dysfunction. We aimed to evaluate haemodynamic and arrhythmogenic effects of levosimendan (LEV) administered together with catecholamines (dobutamine, DOB; dopamine, DA; norepinephrine, NE) in a canine heart failure (HF) model.

**Material and Methods:** HF (n=12) was induced by chronic right ventricular tachy-pacing. Two groups of anesthetized animals were constituted: Group I. - continuous infusion of LEV (0.1 g/kg/min iv.) with 10-10 minutes infusions of CAs: DOB3-6-12, DA4-8-16 és NE0,04-0,08-0,16 (µg/kg/min, iv.); Group II. - CAs were given in same doses without LEV. Measured, calculated variables: blood pressure (BP), left ventricular end-diastolic pressure (LVEDP), contractility (dP/dt<sub>min</sub>-max), duration of monophasic action potential at 50%, 90% of repolarisation (MAPD50, MAPD90).

**Result:** In Group I. LEV alone did not alter mean BP (105±13 mmHg), LVEDP (28±5 mmHg). dP/dt<sub>max</sub>, dP/dt<sub>min</sub> were increased by 56±15, 49±15 delta % (p<0,001). There was further increase in dP/dt<sub>max</sub> with LEVO+CAs. In Group II. basal haemodynamics (BP, LVEDP, dP/dt<sub>max</sub>, dP/dt<sub>min</sub>) did not differ significantly from Group I. Moreover, CAs without LEV exerted cardiovascular responses similar to those in LEV+CA group.

Malignant ventricular arrhythmias were not observed in both groups. During LEV infusion MAPD50 decreased significantly (214±8 vs 242±9 msec, p<0,01), which was further shortened by LEV+NA0,16 (204±20 msec, p<0,02).

**Conclusion:** Co-administration of levosimendan and catecholamines elicited similar improvement in cardiac contractility to catecholamines given separately. This beneficial effect was not accompanied by malignant arrhythmias. (Granted by OTKA 10555)



## OP 110

**Cardiopulmonary Bypass Is Associated with Pulmonary Artery Endothelial Dysfunction: Therapeutic Potential of Tezosentan**

Marie-Claude Aubin<sup>1</sup>, Arnaud Mommerot<sup>2</sup>,  
André Y. Denault<sup>3</sup>, Jocelyn Dupuis<sup>4</sup>, Michel Carrier<sup>2</sup>,  
Louis P. Perrault<sup>2</sup>

<sup>1</sup> Research Center, Montreal Heart Institute and Université de Montréal, Montreal, Quebec, Canada, Montreal, Canada

<sup>2</sup> Research Center, Montreal Heart Institute and Université de Montréal, Montreal, Quebec, Canada; Department of Cardiovascular Surgery, Montreal, Quebec, Canada; Department of Cardiac Surgery, University Hospital of Strasbourg, Strasbourg, France, Montreal, Canada

<sup>3</sup> Department of Anesthesiology, Montreal Heart Institute, Montreal, Quebec, Canada, Montreal, Canada

<sup>4</sup> Research Center, Montreal Heart Institute and Université de Montréal, Montreal, Quebec, Canada; Department of Medicine, Université de Montréal, Montreal, Quebec, Canada, Montreal, Canada

**Background:** Whereas the increase in endothelin-1 (ET-1) level occurring during cardiopulmonary bypass (CPB) elicits sustained deleterious effects on the cardiovascular system, it remains presently unknown whether it is the sole peptide implicated in the vasomotor alteration of the pulmonary tree and whether the blockade of its receptors may be beneficial.

**Material and Methods:** Landrace swine were submitted to a 90 minute period of full bypass, followed by a 60 minute period of reperfusion; hemodynamic and biochemical parameters were assessed throughout the procedure. Vascular reactivity studies were performed on pulmonary coronary arteries in order to evaluate the implication of various vasoconstricting agents; the role of ET-1 was further evaluated through measurements of its plasmatic levels. In a separate set of experiments, swine submitted to CPB were treated with tezosentan, a non-selective ETA and ETB blocker, by inhalational or intravenous route. Hemodynamic and vascular reactivity studies were performed.

**Result:** Vascular reactivity studies demonstrated that the contractility of pulmonary arteries to prostaglandin F<sub>2α</sub> and to the prostaglandin H<sub>2</sub> analog U46619 was preserved in the CPB group compared to sham. By contrast, the maximal contraction to ET-1 was significantly increased. The implication of the peptide was supported by a significant increase in plasmatic levels after the 60 minute period of reperfusion compared to baseline. In animals treated with tezosentan, hemodynamic disturbances such as poor oxygen exchange and increase in mean pulmonary artery pressure were prevented with inhaled and intravenous tezosentan. However, the development of pulmonary CPB-associated endothelial dysfunction was not prevented in both treated groups.

**Conclusion:** Thus, following CPB, an abnormal activation

of the ET-1 transduction pathway may significantly contribute to the development of the pulmonary vasomotor alteration. Blockade of its action with a non-selective receptor antagonist prevent, depending on the route of administration, the hemodynamic impairments but not the pulmonary endothelial dysfunction, two factors contributing to the development of pulmonary hypertension.

## OP 111

**Investigation of Tachotop® as a Vehicle for Therapeutic Drug Delivery**

Attila Farkas<sup>1</sup>, Ferenc Rényi-Vámos<sup>2</sup>, Balázs Gieszer<sup>1</sup>,  
Balázs Döme<sup>3</sup>, Balázs Hegedűs<sup>4</sup>, József Tóvári<sup>5</sup>,  
Mir Ali Reza Hoda<sup>6</sup>

<sup>1</sup> National Institute of Oncology Thoracic Surgery Department, Budapest, Hungary

<sup>2</sup> National Institute of Oncology Thoracic Surgery Department, Medical University of Vienna Thoracic Surgery Department, Budapest, Hungary

<sup>3</sup> National Institute of Oncology Thoracic Surgery Department ; National Koranyi Institute ; Medical University of Vienna Thoracic Surgery Department, Budapest, Hungary

<sup>4</sup> National Koranyi Institute, Budapest, Hungary

<sup>5</sup> National Institute of Oncology Clinical Pharmacology Department, Budapest, Hungary

<sup>6</sup> Medical University of Vienna Thoracic Surgery Department, Vienna, Austria

**Background:** The local tumor recurrence in thoracic surgery is one of the most common problems when the lung cancer is could be removed only by atypical resection. The effects of Tachotop® as a surgical carrier containing chemotherapeutic agents will be investigated in subcutaneous in vivo xenograft tumor models of human NSCLC in mice.

**Material and Methods:** First, 106 tumor cells will be s.c. injected in 100 microliter serum-free medium into groups of 5- to 7-week-old female SCID mice and their growth patterns will be studied. When primary tumors reach the size of ~1cm<sup>3</sup> they will be surgically removed leaving minimal residual tumor tissue behind (subtotal resection). Next, mice will be assigned into different treatment groups, each consisting of ten animals:

- (1) control group without sponge or systemic treatment
- (2) empty Tachotop® sponge placed into the tumor bed
- (3) Tachotop® with gemcitabine/cisplatin
- (4) mice without sponge but receiving systemic (i.p.) gemcitabine/cisplatin

**Result:** The experiments are scheduled to last for 28 days from the beginning of treatment. If no significant differences are obtained between the different groups by 28 days, the experiments may have to be continued for up to 28 days or until mice in a given group will have to be sacrificed. The animals' bodyweight will be monitored three times per week as an indicator of the systematic effects and tumor

progression. Following the termination of the animals the tumors will be carefully removed, weighed and fresh frozen for further studies.

**Conclusion:** Our conclusions are still under evaluation.

## OP 112

### Unique Reconstruction Technique in a Young Patient after Manubrial Resection in Grade II Chondrosarcoma

Ákos Kocsis, Bernadett Lévy, László Agócs

National Institute of Oncology, Budapest, Hungary

**Background:** Approximately 30% of malignant, primary bone tumors are chondrosarcomas, which most frequent develop on the anterior chest wall. Patients who are treated with adequate surgical intervention recover, 10 years survival rate is 97%. Besides the aesthetic outcome, preservation of breathing and loading are crucial.

**Material and Methods:** Authors present a case of a 44-year-old male patient operated on Grade II. chondrosarcoma of the manubrium. Concerning the youth of the patient, immediately reconstruction was carried out. The infiltrated part of the sternum was resected with wide margins. The reconstruction was performed with Dual Mesh covered by a pedicled left sided pectoral major muscle. As a unique technique, authors used the tendon of the semitendinous muscle to fix both clavicles together to give the stability and function for the chest wall.

**Result:** After an uneventful postoperative period the patient has a fast recovery.

**Conclusion:** There are no data in the literature for such a method to fixate the anterior chest wall.

## OP 113

### Vascular Prosthesis Lined with Autologous Endothelial Cells: Porcine Model

Jaroslav Chlupac<sup>1</sup>, Elena Filova<sup>2</sup>, Tomas Riedel<sup>3</sup>, Eduard Brynda<sup>3</sup>, Rudolf Poledne<sup>4</sup>, Lucie Bacakova<sup>2</sup>

<sup>1</sup> Dept. of Transplant Surgery, Institute for Clinical and Experimental Medicine; Dept. of Biomaterials and Tissue Engineering, Institute of Physiology, Academy of Sciences of the Czech Rep., v.v.i., Prague, Czech Republic

<sup>2</sup> Dept. of Biomaterials and Tissue Engineering, Institute of Physiology, Academy of Sciences of the Czech Rep., v.v.i., Prague, Czech Republic

<sup>3</sup> Institute of Macromolecular Chemistry, Academy of Sciences of the Czech Rep., v.v.i., Prague, Czech Republic

<sup>4</sup> Laboratory for Atherosclerosis Research, Institute for Clinical and Experimental Medicine, Prague, Czech Republic

**Background:** Cardiovascular surgery is confronted by thrombosis and intimal hyperplasia of prosthetic bypass grafts

[1]. Seeding of endothelial cells can reduce thrombogenicity; however, current animal models have limited relevancy [2]. The aim was to establish a clinically relevant porcine model of seeded peripheral bypass.

**Material and Methods:** Vascular prostheses (knitted Dacron, 6mm, VUP, Joint-Stock Comp., Brno, CZ) were modified with cell-adhesive protein assemblies - fibrin gel and fibronectin. Autologous endothelial cells were harvested from internal jugular vein and seeded in the lumen. Endothelialized and control grafts were implanted in the same animal. Surgical feasibility of hind-limb bypass was tested in 5 animals (iliac-femoral, aortic-external iliac, aortic-internal iliac) and 5 other seeding procedures were performed. The patency was assessed by clinical status, angiography or ultrasound. Explants were observed in confocal microscope.

**Result:** Mean period of double-stage seeding procedure was 50±16 days. Mean seeding density was 60×10<sup>exp3</sup> cells/cm<sup>2</sup>. Two seeded grafts spontaneously occluded together with control grafts during 22 and 38 days, one got thrombosed due to sepsis, one due to poor outflow tract and one remained patent 22 days while control graft got occluded.

**Conclusion:** The most durable surgical setting is bilateral aortic-internal iliac bypass graft with ligature of the external iliacs. Minipig represents more suitable model than domestic pig. Pre-coating vascular prosthesis with fibrin/fibronectin provides substratum for colonization with autologous endothelium. This may subsequently enhance the graft patency. [1] Chlupac J et al.: *Physiol Res*, 2009, 58 S2, 119. [2] Zilla P et al.: *Biomaterials*, 2007, 34, 5009.

## OP 114

### Hepatic Hemodynamic Changes After Stepwise Liver Resection

Mohammad Golriz, Saroa Elsakka, Arman Edalatpour, Jalal Arwin, Nahid Rezaei, Reza Hafezi, Camelia Garoussi, Arash Saffari, Maryam Ashrafi, Golnaz Emami, Arianeb Mehrabi

Department of General, Visceral and Transplantation Surgery, University of Heidelberg, Heidelberg, Germany

**Background:** Extended liver resection has increased during the last decades. However, hepatic hemodynamic changes after resection and the consequent complications like small for size syndrome are still a challenging issue. The aim of this study was to systematically evaluate the role of sequential liver resection on hepatic hemodynamic changes.

**Material and Methods:** To evaluate this effect we performed 25, 50 and 75% sequential liver resections in 8 pigs. Before and after each resection the flow of the hepatic artery (HAF) and portal vein (PVF) in relation to the 100 gram remnant liver as well as pressure of the portal vein (PVP) were measured and compared between the groups.

**Result:** Following sequential liver resection, the total hepatic inflow (HAF+PVF) increases gradually. In details, the HAF decreases 17% and PVF increases 73% after extended

liver resection (75%). Also, with sequential liver resection, the PVP increases gradually up to 33% after extended liver resection (75%).

Parameters	Before Resection	Resection 25%	Resection 50%	Resection 75%	Trend
HAF (ml/min/100g)	29	29	25	24	17% ↓
PVF (ml/min/100g)	102	134	150	279	173% ↑↑↑
THF (ml/min/100g)	131	163	175	303	131% ↑↑
PVP (mmHg)	12	13	15	16	33% ↑

**Conclusion:** Sequential increase in the liver resection volume decreases the HAF/min/100g and increase the PVF/min/100g and PVP. This results in a THF with poorer O<sub>2</sub> blood supply and higher pressure. This phenomenon can explain the mechanism of the postoperative complications of small for size syndrome, which lead to liver failure.

#### OP 115

### Hepatic Inflow Modulation after Extended Liver Resection via Shunt Surgery

Mohammad Golriz, Reza Hafezi, Nahid Rezaei, Jalal Arwin, Camelia Garoussi, Arash Saffari, Saroa Elsakka, Maryam Ashrafi, Golnaz Emami, Arianeb Mehrabi

Department of General, Visceral and Transplantation Surgery, University of Heidelberg, Heidelberg, Germany

**Background:** One of the most challenging issues after extended liver resection is decrease of the hepatic artery flow and increase of the portal vein flow and pressure in the remnant liver with the risk of small for size syndrome (SFSS). The aim of this study was to evaluate the role of shunt surgery in hepatic inflow modulation after extended liver resection.

**Material and Methods:** 24 pigs were divided into three groups: Group A: 75% liver resection without shunt (n=8); Group B) 75% liver resection with side to side portocaval shunt (PCS S-S); Group C: 75% liver resection with end to side portocaval shunt (PCS E-S). The flow of the hepatic artery (HAF) and portal vein (PVF) in relation to the 100 gram remnant liver as well as the pressure of the portal vein (PVP) were measured and compared between the groups.

**Result:** In Group A, extended liver resection (75%) decreased the HAF (20%) and increased the PVF (119%) and PVP (68%). In Group B, the PCS S-S following extended liver resection (75%) could increase the HAF (12%) and decrease the PVF (78%) and PVP (48%) in comparison to Group A. In Group C, the PCS E-S following extended liver resection (75%) could increase the HAF (44%) and decrease the PVP (38%) in comparison to Group A.

Parameters	Baseline	Group A 75% Resection	Group B 75% Resection + PCS S-S	Group C 75% Resection + PCS E-S
HAF (ml/min/100g)	30	24	27	34
PVF (ml/min/100g)	127	279	60	
PVP (mmHg)	9.5	16	8.3	9.9

**Conclusion:** Portocaval shunt can increase the dropped HAF and reduce the increased PVF and PVP, after extended liver resection. In increasing the HAF after extended liver resection, the PCS E-S seems to be more effective than PCS S-S. In case of the risk of SFSS, the hepatic inflow modulation after extended liver resection through portocaval shunt might prevent the consequent postoperative complications.

#### OP 116

### Opportunistic Use of Foley Catheter to Make a Water-Dripping Electrocautery

Yuzo Yamamoto, Masato Yoshioka, Go Watanabe, Yuki Abe, Hiroshi Uchinami

Department of Gastroenterological Surgery, Akita University Graduate School of Medicine, Akita, Japan

**Background:** Recent high-tech surgical energy devices are well-designed for unique action, but they are lacking in versatility. Therefore multiple energy devices often contaminate the operation table. Moreover, the expense for disposable unit of these instruments is by no means negligible. We made a little ingenuity for transforming a common monopolar electrocautery into a water-irrigating one by an opportunistic use of Foley catheter.

**Material and Methods:** A common 22-Fr Foley catheter was cut short to about 8cm. The urine port was shortened so that a hand piece of a cautery can be stuck in it. The shaft of the 5-mm ball electrode (13-cm length) was inlaid in the urine drainage channel. The valve of the balloon port was cut off and an extension tube was equipped.

**Result:** Upon hepatic parenchymal resection, only the electrode of cautery was replaced by the ball electrode prepared as in materials. The hand piece was connected to the electrode inside the urine port. The balloon channel was used for introducing a saline solution. In harmony with the resection by CUSA, small Glissons and hepatic veins were coagulated using the ball electrode with saline irrigation. Soft coagulation mode produced a more satisfactory sealing effect. Sealed funiculi were then cut by scissors sharply. There was neither postoperative bleeding nor significant bile leakage up to now.

**Conclusion:** Our improvised water-irrigating monopolar electrocautery can be easily fabricated within several minutes using inexpensive, common medical supplies, and

yields satisfactory effects without increasing the number of energy device for single surgery.

#### OP 117

### Surgical Microwave Tissue Precoagulation in Liver Resection For Hepatocellular Carcinoma

Amr Abdelraouf<sup>1</sup>, Magdy M A Elsebae<sup>2</sup>, Hussam Hamdy<sup>2</sup>

<sup>1</sup> General Surgery National Hepatology and Tropical Medicine Research Institute, Cairo, Egypt

<sup>2</sup> Theodor Bilharz Research Institute, General Surgery Department, Giza 12411, Egypt, cairo, Egypt

**Background:** Minimizing operative blood loss in hepatic resection for HCC with cirrhosis by microwave technology has recently attracted considerable attention. Here we describe the treatment outcomes achieved at our institution for intraoperative use of the microwave tissue precoagulation in hepatic resection as treatment of HCC.

**Material and Methods:** Twenty-six selected patients received elective hepatic resections using intraoperative microwave tissue precoagulation as their initial therapy for hepatocellular carcinoma in cirrhotic liver. The patients who were enrolled for our study were chosen according to the Barcelona criteria for HCC management. The safety, therapeutic effect and recurrence were prospectively evaluated and analyzed.

**Result:** All the procedures were completed as planned. The median duration of the operation was 118 (range, 65–250) minutes with a median resection time of 45 (range 30–80) minutes. The median blood loss for resection was 165 (range, 100–750) mL. One patient required blood transfusion. The average time taken to coagulate the anticipated liver transection plane was less than 15 min. There was no operative mortality. The median postoperative hospital stay was 6 days. The median follow-up of patients was 14 months. At last follow up, recurrent tumors were noted in three (11.5%) of the patients (local in one and remote in two of the patients).

**Conclusion:** Our initial results show that surgical microwave tissue precoagulation in liver resection for hepatocellular carcinoma in cirrhotic liver is safe and effective treatment. It achieves an acceptable recurrence rate. Longer follow-up is required to determine the long-term outcome of this new treatment modality.

#### OP 118

### Contrast-Enhanced Intraoperative Ultrasound for Colorectal Liver Metastases Gaining Imaging Complete Remission after Chemotherapy

Junichi Arita, Yohihiro Ono, Michiro Takahashi, Yoshinori Takeda, Yosuke Inoue, Yu Takahashi, Akio Saiura

Cancer Institute Hospital of Japanese Foundation for Cancer Research, Tokyo, Japan

**Background:** Colorectal liver metastasis (CRLM) sometimes diminish or disappear after chemotherapy and difficult to identify during operation.

**Material and Methods:** Among consecutive 131 patients undergoing hepatic resection with curative intent, 86 underwent chemotherapy. Of them, 72 patients underwent contrast-enhanced CT, Gd-EOB-DTPA-enhanced MRI, intraoperative ultrasound (IOUS), and CE-IOUS using perflubutane. Disappearing liver metastases (DLM) and tumors 1 cm or less after chemotherapy were assessed.

**Result:** A total of 31 DLMs were noted in 10 patients. Four DLMs were visible during IOUS, all of which were also visible during CE-IOUS, and 11 DLMs were visible during CE-IOUS though missed during IOUS. Sixteen DLMs were missed during both IOUS and CE-IOUS; 9 of them were resected using anatomical resection and 7 were not resected. One of the 9 resected DLMs were proven to be CRLM. Three of the 7 followed-up DLMs grew to be apparent CRLM. In summary, 19 of the 31 DLMs were not true complete remission. Fourteen tumors which were visible in preoperative images were 0.5 cm or less in diameter. The sensitivities of contrast-enhanced CT, Gd-EOB-DTPA-enhanced MRI, IOUS, and CE-IOUS for detecting these tumors were 93%, 93%, 86%, 100%, respectively. The sensitivities of those for 40 tumors between 0.6 and 1 cm in diameter were 88%, 93%, 90%, 100%, respectively.

**Conclusion:** CE-IOUS would be necessary for the patients with CRLM undergoing preoperative chemotherapy even if Gd-EOB-DTPA-enhanced MRI was performed.

#### OP 119

### The Effect of Portal Vein Ligation on Drug-Metabolizing Function of the Liver

Edit Háfra<sup>1</sup>, András Fülöp<sup>2</sup>, Attila Szijártó<sup>2</sup>, Katalin Monostory<sup>1</sup>

<sup>1</sup> Research Centre for Natural Sciences, Hungarian Academy of Sciences, Budapest, Hungary

<sup>2</sup> 1st Department of Surgery, Semmelweis University, Budapest, Hungary

**Background:** The portal vein ligation (PVL) induced regenerative and atrophic processes might accompany by alteration in liver drug-metabolizing function. The metabolism of xenobiotics primarily depends on the levels

and activities of cytochrome P450 enzymes (CYP). The aim of this preliminary study is to evaluate the alterations in gene expression of different CYP enzymes after portal vein ligation in healthy rats' liver.

**Material and Methods:** Male Wistar rats underwent PVL. Liver samples from the ligated and non-ligated liver lobes were taken before (0) and 24, 48, 72 and 168 hours after PVL. The alteration in liver mass and the histological characteristics of liver lobes were determined. Furthermore, the mRNA levels of CYP1A1, CYP1A2, CYP2B1, CYP2B2, CYP2C6, CYP2C11, CYP2C13, CYP3A1, and CYP3A2 were quantified by real-time PCR in liver samples.

**Result:** PVL induced considerable atrophy of portal deprived liver lobes (3.16 vs. 0.85 g / 100g BW), while the non-ligated part of liver showed compensatory hyperplasia (0.97 vs. 3.28 g / 100g BW). The regenerative process was characterized by a significantly elevated mitotic activity of hepatocyte (21.43 vs. 139.23 / HPF), while in the ligated lobes necrotic and apoptotic cell death was typical. The regenerative and atrophic processes differently influenced the expression of the examined drug-metabolizing enzymes.

**Conclusion:** PVL induced regenerative and atrophic processes affects the mRNA expression of different CYP enzymes, which alterations could considerable influence the drug-metabolizing capacity of liver until the PVL triggered liver regeneration is completed.

## OP 120

### Impact of Sarcopenia on Survival Following Resection of Pancreatic Cancer.

Shinya Okumura, Toshimi Kaido, Yuhei Hamaguchi, Yasuhiro Fujimoto, Kohei Ogawa, Akira Mori, Etsuro Hatano, Toshihiko Masui, Kyoichi Takaori, Shinji Uemoto

Division of Hepato-Biliary-Pancreatic and Transplant surgery, Department of Surgery, Graduate School of Medicine, Kyoto University, Kyoto, Japan

**Background:** Skeletal muscle depletion, referred to as sarcopenia, may be an objective and comprehensive patient-specific risk factor of mortality and morbidity. The present study investigated the impact of the quantity and quality of skeletal muscle on survival in patients undergoing resection of pancreatic cancer

**Material and Methods:** This study comprised 218 patients who underwent resection of pancreatic cancer between January 2004 and December 2012. The quantity and quality of skeletal muscle were evaluated by psoas muscle index (PMI) and intramuscular adipose tissue content (IMAC) at the umbilical level of preoperative CT, respectively. The correlations between PMI or IMAC and other patient factors, the overall survival rate in patients classified according to PMI, and poor prognostic factors after pancreatic resection were analyzed.

**Result:** PMI in male was significantly higher than

that in female ( $p < 0.001$ ). IMAC in male was significantly lower than that in female ( $p < 0.001$ ). PMI was significantly correlated with BMI in both sexes, and ChE in male. IMAC was significantly correlated with age in both sexes, and inversely correlated with Alb in female. The overall survival rate in patients with low PMI was significantly lower than that in patients with normal PMI ( $p = 0.005$ ). Multivariate analysis showed that low PMI, advanced pathological stage, age (over 70) were independent poor prognostic factors in all patients. High IMAC was a poor prognostic factor in male following pancreaticoduodenectomy.

**Conclusion:** Preoperative sarcopenia was a poor prognostic factor in patients undergoing resection of pancreatic cancer.

## OP 121

### Regulation of Liver Lobe Size with Contradictory Signals

Wei Weiwei, Utz Settmacher, Uta Dahmen

Jena University Hospital, Department of General, Visceral and Vascular Surgery, Jena, Germany

**Background:** Portal vein ligation (PVL) leads to atrophy of dependent liver lobes and hypertrophy of intact liver lobes, while partial hepatectomy (PHx) leads to hyperplasia of residual liver lobes. It is unclear that how the portal flow deprived-liver lobes adjust its size under the proliferative stimulus induced by PH. In this study we investigated the size regulation of individual liver lobe in the combined model-PVL+PHx.

**Material and Methods:** We established new rodent model of 20%PVL+70%PHx and 70%PVL+20%PHx respectively. Liver lobe size recovery were evaluated 1, 2, 3 and 7 after operation in terms of liver lobe weight and hepatocyte proliferation. 20%PVL, 20%PH, 70%PHx, 70%PVL and sham operation were performed as controls.

**Result:** Ligated right lobe had a 30% growth with moderate proliferation after 20%PVL+70%PHx, but the ligated lobes (LLL and ML) after 70%PVL+ 20%PHx shrank to 50% of its original size (low proliferation), while the ligated lobe after 20%PVL or 70%PVL shrank to 30% (no proliferation). CL in both combined groups grew to 4 fold size showing prolonged proliferation, whereas 3 fold after 70%PHx following a typical proliferative activity.

**Conclusion:** The atrophic stimulus can be buffered by the proliferative stimulus induced by PHx. The size regulation of portally-deprived lobe depends on the balance of the two opposite stimuli. Hyperperfusion causes significant proliferation in non-ligated lobe.

## OP 122

**Remnant Liver Tissue Injury Following Radiofrequency-Assisted Hepatectomy**

Petros Ypsilantis<sup>1</sup>, Maria Lambropoulou<sup>2</sup>,  
Anastasios Karayiannakis<sup>1</sup>, Miroslav Milicevic<sup>3</sup>,  
Predrag Bulajic<sup>3</sup>, Dimitrios Zacharoulis<sup>4</sup>,  
Constantinos Simopoulos<sup>1</sup>

<sup>1</sup> Laboratory of Experimental Surgery and Surgical Research, School of Medicine, Democritus University of Thrace, Alexandroupolis, Greece

<sup>2</sup> Laboratory of Histology and Embryology, School of Medicine, Democritus University of Thrace, Alexandroupolis, Greece

<sup>3</sup> 1st Surgical Clinic, School of Medicine, University of Belgrade, Belgrade, Serbia

<sup>4</sup> Clinic of Surgery, School of Medicine, University of Thessaly, Larisa, Greece

**Background:** Radiofrequency (RF) assisted hepatectomy minimizes perioperative blood loss. Contemporary techniques used are the sequential-coagulate-cut (SCC) technique and the one using the Habib 4X bipolar electrode. Animal studies have shown that liver RF ablation induces mild injury to remnant liver tissue. We sought to study remnant liver tissue injury after each technique.

**Material and Methods:** Sixteen pigs were assigned to 4 groups; resection of part of the left lateral and left median lobes using the SCC technique (group SCC), the Habib 4X electrode (group H) or the “crash-clamp” technique (group CC), and sham operation (group Sham). Liver tissue samples were excised at 48 hours from the right lateral lobe for histological and immunohistochemical assessment of tissue injury.

**Result:** The histopathologic score was increased in groups SCC (mean, 4.1±0.7) and CC (4.4±1.3) but not in group H (1.5±0.9). The apoptotic index was increased in all study groups being more pronounced in group SCC (mean, 3.4±0.3) compared to groups H (2.9±0.2 apoptotic bodies per optical field) and CC (2.9±0.3). Interleukin-6 expression was increased in all study groups being more pronounced in group H (2.8) compared to groups SCC (1.0) and CC (1.5). Tumor necrosis factor- $\alpha$  and nuclear factor- $\kappa$ B expression was equally increased in all study groups.

**Conclusion:** Both RF-assisted hepatectomy techniques increased the expression of tissue injury markers on remnant liver, while only the SCC technique resulted in mild histologic lesions at 48 hours post operation.

## OP 123

**Anterior Abdominal Wall ‘Peritoneal Recess’: Cause of Chronic Abdominal Pain**

Khurram Siddique<sup>1</sup>, Ajai Samad<sup>2</sup>

<sup>1</sup> East Kent Hospitals NHS Foundation Trust, Ashford, United Kingdom

<sup>2</sup> Saint Helens and Knowsley NHS Trust, Liverpool, United Kingdom

**Background:** Chronic abdominal pain is a well-known cause of prolonged morbidity and patient frustration. Often it is managed symptomatically with high recurrence rate and no definite treatment.

**Material and Methods:** We present here a new potential space named as ‘Peritoneal Recess’ inside the abdomen which was found during diagnostic laparoscopy performed to look for the cause of recurrent abdominal pain.

**Case Report:** A middle aged patient presented with intermittent chronic abdominal pain without any obvious cause. All her investigations including small bowel studies were normal; however a recent CT scan raised the suspicion of an intra-abdominal hernia though there was no obvious lump on examination.

**Result:** A diagnostic laparoscopy was performed which revealed a left sided unilateral ‘Peritoneal Recess’ formed by a fold of peritoneum lying medial to linea-semilunaris and conforming to the curve of arcuate line ending up in a blind recess. No extra-peritoneal sac or defect was noted in the rectus sheath nor any contents were present in the recess. It seemed like the bowel was getting intermittently trapped inside the recess leading to partial kinking causing recurrent abdominal pain. By definition this is not a true hernia and we have named it as “Samad-Siddique’s pseudo-hernia”. The ‘Peritoneal Recess’ was closed with laparoscopic tackers to prevent bowel from further entering the ‘Recess’ which helped resolving the patient symptoms.

**Conclusion:** The ‘Peritoneal Recess’ may cause pseudo-herniation of small bowel resulting in chronic abdominal pain. We recommend diagnostic laparoscopy for confirmation followed by endoscopic fixation of the recess.

## OP 124

**Extrahepatic and Segmental Arterial Supply of the Human Liver and Their Clinical Implications: A Corrosion Cast Study**

Károly Németh<sup>1</sup>, András Szuák<sup>2</sup>, Mátyás Kiss<sup>2</sup>, Csaba Korom<sup>3</sup>, Kinga Karlinger<sup>3</sup>, László Kóbori<sup>1</sup>, Ágnes Nemeskéri<sup>2</sup>

<sup>1</sup> Semmelweis University, Transplantation and Surgical Department, Budapest, Hungary

<sup>2</sup> Semmelweis University, Department of Human Morphology and Developmental Biology, Budapest, Hungary

<sup>3</sup> Semmelweis University, Department of Radiology and Oncotherapy, Budapest, Hungary

**Background:** The hepatic arterial anatomy is highly variable with normal anatomy present in 50.7%-80.9% of cases. Recognition of abnormalities is of crucial importance, especially during liver transplantation, because an impaired hepatic arterial blood supply may result in ischemic complications. The purpose of our study was to investigate the anatomical variations of the extra- and intrahepatic arterial structures of the liver with particular attention to rare variations and their surgical management.

**Material and Methods:** Fifty human abdominal organ complexes were used to prepare corrosion casts by applying a multi-component resin mixture. Digestion was achieved by KOH at 60-65°C for one week. The extrahepatic arterial variations were classified according to Michels and the arterial supply of liver segments was described by the origins of their feeding arteries. 3D CT volumetric reconstructions were made of all specimens.

**Result:** The unclassified group showed the highest incidence with 32%, including 11 casts presenting arterial anatomy that have not been reported before. Normal anatomy was found only in 30%. The caudate lobe showed the most variable pattern, we observed 49 different vascular structures in 50 cases; whereas segment VIII. received its segmental artery from the same root in 68% of cases. Virtual hepatectomies were performed to demonstrate the optimal resection planes on the unclassified cases.

**Conclusion:** Significantly different frequencies of variations were found in our series compared to other publications. We detected new variations including extrahepatic, segmental and combined patterns. Our data may contribute to the reduction of complications during surgical interventions in the upper abdomen.

## OP 125

**Review of the Surgical Anatomy of the Human Liver And Its Surgical Relevancy in Liver Resection and Partial Liver Transplantation**

Mátyás Kiss<sup>1</sup>, András Szuák<sup>2</sup>, Károly Németh<sup>1</sup>, Zsolt Pápai<sup>2</sup>, Ildikó Horti<sup>2</sup>, Sándor Kovács<sup>2</sup>, Zsuzsanna Kürti<sup>2</sup>, Tien Nguyen Thuy<sup>2</sup>, Endre Gáti<sup>2</sup>, Laura Fekete<sup>2</sup>, Ibolyka Dudás<sup>3</sup>, Erzsébet Botos<sup>3</sup>, Csaba Korom<sup>3</sup>, Kinga Karlinger<sup>3</sup>, Klára Törő<sup>4</sup>, László Kóbori<sup>5</sup>, Ágnes Nemeskéri<sup>2</sup>

<sup>1</sup> Department of Human Morphology and Developmental Biology, Department of Transplantation and Surgery, Semmelweis University, Budapest, Hungary

<sup>2</sup> Department of Human Morphology and Developmental Biology, Semmelweis University, Budapest, Hungary

<sup>3</sup> Department of Diagnostic Radiology and Oncotherapy, Semmelweis University, Budapest, Hungary

<sup>4</sup> Department of Forensic Medicine, Semmelweis University, Budapest, Hungary

<sup>5</sup> Department of Transplantation and Surgery, Semmelweis University, Budapest, Hungary

**Background:** The precise knowledge of hilar and intrahepatic biliary and vascular variations is essential to further reduce the incidence of intra- and postoperative complications of partial liver transplantation and liver resections. Our aim was to investigate the frequency and surgical relevance of these anatomical variations.

**Material and Methods:** A new synthetic resin corrosion cast method was worked out and more than 450 human liver casts were made. Furthermore, for post mortem simulation of liver splitting, organs were injected with very special resin mixture before fixation, CT scan and 3D CT reconstruction were applied.

**Result:** The statistical analysis of 140 biliary duct preparations revealed new variations and subvariations and differences in frequencies of certain biliary duct variations, compared to data available in the international literature. The branching patterns and anastomoses of great surgical importance between the right and middle hepatic veins were observed and analyzed on 55 casts. Patterns of intrahepatic branching and extrahepatic arterial blood supply showed significant differences in comparison to data published by others (65casts). The hilar branching of portal vein displayed normal anatomy in 60% of preparations (70casts). Using our new model liver preparations, different types of splits could be planned, performed like in living.

**Conclusion:** We provide the first complex detailed data on the incidence of hepatic vascular and biliary variations in the Hungarian population. Differences among the available statistics may derive from genetic differences among populations. We organized successful international surgical training hands-on courses based on our model of liver split simulation.

## OP 126

**New Vessel-Lumen Filling Technique, for the Study of Neo-Microvascularisation of Autotransplanted "Spleen Chips"**

Mátyás Kiss<sup>1</sup>, Ágnes Nemeskéri<sup>1</sup>, Zsuzsanna Kürti<sup>1</sup>,  
Endre Gáti<sup>1</sup>, Bence Dorogi<sup>1</sup>, Ibolyka Dudás<sup>2</sup>, István Furka<sup>3</sup>,  
Norbert Németh<sup>3</sup>, Katalin Pető<sup>3</sup>, Erzsébet Ványolos<sup>3</sup>,  
Andrea Furka<sup>3</sup>, Irén Mikó<sup>3</sup>

<sup>1</sup> Department of Human Morphology and Developmental Biology, Semmelweis University, Budapest, Hungary

<sup>2</sup> Department of Diagnostic Radiology and Oncotherapy, Semmelweis University, Budapest, Hungary

<sup>3</sup> Department of Operative Technics and Surgical Research, Debrecen University, Debrecen, Hungary

**Background:** After splenectomy the protection of the body against infections can be seriously damaged. To maintain the function of the spleen, autotransplantation was developed at the Debrecen University (Furka's method.) For the investigation of the morpho-functional capacity of the splenic autotransplants, a new method was needed.

**Aims:** To develop a new vessel-lumen filling technique on Beagle dogs for the study of the neo-microvascularisation of splenic autotransplants placed into the omentum majus.

**Material and Methods:** In one Beagle dog, after spleen chips autotransplantation into the omentum majus, on the 72nd postoperative months, the abdominal organs were filled with special resin mixture. CT pictures were taken, some autotransplants were excised for biopsy. The arterial and venous systems of the abdominal organ complex removed from a splenectomized Beagle dog were filled with colour coded resin after 60 postoperative month and the soft tissues were removed with KOH solution.

**Result:** Our technique allows the detailed investigation of the rich neo-microvascular network of the survived, autotransplanted spleen chips. On the CT scan, the vessel connection between the bearing tissue and the autotransplanted splenic tissue could be traced. Data on the 3D vascular morphology of the post-splenectomy liver were obtained.

**Conclusion:** The new vessel-lumen filling technique was suitable for study of the neo-microvascularisation of the adhered spleen autotransplants. This method combined with High-Resolution-CT is suitable to carry out a study with a higher number of cases. The data may contribute to the formation of the post-examination protocol of the future autotransplanted patients after posttraumatic splenectomy (OTKA-K-49331,OTKA-K-105618,HU).

## OP 127

**Staple Line Analysis Of Functional Vascularity Using Microct"**

Matthew J. Nagelschmidt, Andrew M. Miesse, Jane Mayotte,  
Jerry Oldak, Michael Wegener, Jim Alberino, Dave Racenet

Covidien Surgical Solutions, North Haven, CT, United States

**Background:** The purpose of this investigation was to determine the feasibility to reliably image functional vascularity at the microscopic level; and also discern a difference between types of staple lines.

**Material and Methods:** Sprague-Dawley male rats were used in a barium-sulfate perfusion technique. The stomach of each rat was stapled across using a standard endoscopic surgical stapler. The perfusion needle with barium perfusate solution was placed into the left ventricle and infused throughout the rat via a syringe pump. The stomach was excised, fixed in formalin, and cooled overnight to allow for solidification before being sent to ImageIQ for micro-computed tomography (microCT) analysis.

**Result:** Initial analysis looked at mean vessel to staple distance, as well as vessel content in regions of interest along the staple line. Some staple lines had a lower mean vessel to staple distance, and also showed higher vessel content within the staple line than other devices.

**Conclusion:** Current results look promising in showing a difference more functional vascularity within the staple line of certain stapling devices. Future work will consist of bolstering the sample size for each group in order to perform proper statistical analysis. In addition, future analysis will focus on characterizing the amount of vessels inside the staple line to clearly demonstrate functional vascularity.

## OP 128

**3-Dimensional Modeling of the Female Pelvis from Anatomical Sections. A New Approach to Three-Dimensional Reconstruction of Complex Anatomical Structures**

Giraudet<sup>1</sup>, Cosson<sup>1</sup>, Rubod<sup>1</sup>, Patrouix<sup>2</sup>, Brieu<sup>2</sup>, Fontaine<sup>3</sup>,  
Lecomte-Grobras<sup>2</sup>

<sup>1</sup> University Hospital of Lille, France, lille, France

<sup>2</sup> Mechanical Laboratory of Lille, lille, France

<sup>3</sup> Department of Anatomy, Lille, France

**Background:** Suspension and support of pelvic organ are provided by perineum and pelvic floor muscles, as well as ligaments and fascias. Mecanisms of pelvic organ prolapse are complex and misunderstood. A simulation model of pelvic mobilities would be helpfull to better understand their mechanism. The anatomy of the female pelvis is still imperfectly known and existing models include only the



levator ani muscle regardless of the perineum muscles and ligaments. The anatomy of these models has been rebuilt only from pelvic MRI. We know inter and intra observer differences of MRI segmentation. It's necessary to use other method to validate the reconstruction. The aim of the study was to obtain a complete anatomical model of female pelvis with muscles and ligaments.

**Material and Methods:** Dissections were performed to highlight the different anatomical structures and a three dimensions scanner was performed at each step of the dissection. Anatomical reconstruction obtained from the segmentation of the previously performed MRI was compared with the results of the 3D scanner.

**Result:** We obtained a complete anatomical model of the female pelvis including organs, muscles and ligaments. Comparison of 3D scanner with MRI segmentation allowed us to validate the anatomy of our anatomical model.

**Conclusion:** This model will be used for teaching anatomy of the female pelvis. The methods used to obtain this anatomical model could be applied to other complex anatomical structures. We know biomechanical properties of pelvic tissues to simulate pelvic mobilities. We should better understand the pathophysiology of prolapse.

## OP 129

### Nuclear Disaster: How Should Surgeon Act?

#### Review from Nuclear Plant Disaster

Yoshikura Haraguchi<sup>1</sup>, Hosnino Masami<sup>2</sup>, Yozo Tomoyasu<sup>1</sup>, Nishi Hosei<sup>2</sup>, Sakai Motohiro<sup>1</sup>, Tsubata Tohru<sup>2</sup>

<sup>1</sup> Disaster Medicine Compendium Group, Japan and Keiyo Hospital, Tokyo, Tokyo, Japan

<sup>2</sup> Department of Surgery, Keiyo Hospital, Tokyo & Disaster Medicine Compendium Group, Japan, Tokyo, Japan

**Background:** Several serious nuclear disasters were caused for the last 15 years, even in Japan, which are reviewed from the viewpoint of the role of surgeon. The role of surgeon is important during such mega-disasters. However, trauma surgeon seemed useless in this nuclear disaster. We analyzed the medical team's roles including surgeon, mainly based on actual experiences.

**Material and Methods:** Fukushima Daiichi Nuclear Plant explosions, which followed the Higashinihon earthquake, 2011 with more than 20,000 death or missing, was the same level of the Chernobyl incident. This was reviewed based on our experience in site, compared with other nuclear disasters: i.e., The JCO criticality incident, 1999( 3 were severely contaminated, 200,000 people were involved), the Mihama nuclear plant's accident 2004 (ruptured secondary water cooling system, with 11 major burn), the Chernobyl incident, 1986 etc.

**Result:** Many serious problems are revealed: 1) Inappropriate basic preparedness and education against the special disaster such as nuclear disaster, i.e., most members

of Japan DMAT or disaster medical assistance team was laypersons, Insufficient transporting system to the weak/vulnerable people living in the contaminated district. Many aged inpatients seemed to be survived if appropriate triage and smooth transportation system with support of surgical teams was established.

**Conclusion:** To cope with the mega and complex disaster, academic approach is also essential. It is insufficient to take makeshift measures or use cheap tricks. Moreover, feeling of security/safety of people or people's reliability is important in the nuclear disaster to protect the society. Philosophy during mega-disaster should be reviewed.

## OP 130

### Surgeons and the Role of Disaster Medicine Compendium

Yoshikura Haraguchi, Yozo Tomoyasu, Hosei Nishi, Tsubata Tohru, Hosnino Masami

Disaster Medicine Compendium Group Japan and Department of Surgery, Keiyo Hospital, Tokyo, Japan

**Background:** There were several catastrophe in the last decades in the world. Make-up of systematic measuring and life-saving medical systems is urgent and essential issue. Our efforts for establishing disaster medicine, including ethical and philosophical points for surgeons are presented.

**Material and Methods:** Mega-disasters or catastrophe are researched basically under our actual medical experience in sites: i.e., the 9-11 attack in 2001 in USA, sarin toxic gas attack in 1995 in Tokyo, Hurricane Katrina in 2005, in USA, Indian Ocean earthquake with tsunami in 2004 in South Asia, the Chernobyl Incident in 1986 in USSR or Ukraine, as well as the Higashinihon Earthquakes with tsunami, followed by the Fukushima nuclear plant disaster in 2011 in Japan.

**Result:** Two different roles are demanded for surgeon: i.e., as a specialist with emergency surgical skills (micro-disaster field) and as triage officer and/or general control of medical teams (macro-disaster field). Moreover, we believe that knowledge and/or technic of treatment against special disasters, such as NBC or nuclear, biological and chemical hazards is necessary. Recently used sarin or other toxic gas in Syria supports.

**Conclusion:** Therefore, the disaster medicine compendium is a matter of great urgency. We compiled the disaster medicine compendium Japanese version as of the year 2005. Although usually the utilitarianism, so-called "The greatest good for the greatest number" by Bentham and Mill are accepted widely, there are problems left for saving the vulnerable people during disaster. The ethical or philosophical points are also reviewed.

## OP 131

**The Feasibility of Laparoscopic Appendectomy for Trainee Doctors**

Kazuhiro Hiyama<sup>1</sup>, Hideo Terashima<sup>2</sup>, Yoritaka Nakano<sup>1</sup>, Shuntaro Tsukamoto<sup>2</sup>, Yusaku Sumi<sup>2</sup>, Kazuhiro Takahashi<sup>2</sup>, Fumito Imamura<sup>2</sup>, Masahiro Kamiga<sup>2</sup>

<sup>1</sup> Department of Surgery, Hitachinaka General Hospital, Hitachinaka, Japan

<sup>2</sup> Hitachinaka Medical Education and Research Center, University of Tsukuba Hospital, Hitachinaka, Japan

**Background:** Laparoscopic surgery has widely prevailed, resulting in the coming of age in which trainee doctors need to perform LA as first experience of laparoscopic surgery. Thus, we evaluated the feasibility of LA for them.

**Material and Methods:** From April 2011 to August 2012, consecutive 55 cases were conducted appendectomy by trainee doctors in our hospital, including 31 cases of open appendectomy (OA group) and 24 cases of LA (LA group). Although trainee doctors had their first experience of laparoscopic surgery through LA, all of them had kept in practice using the dry box in advance. We made a comparative review of background factors and surgical outcomes between the two groups. A survey on attitudes toward LA was also carried out.

**Result:** Between OA and LA groups, there were no significant differences in patient backgrounds. Likewise, no significant differences were noted in the operating time, postoperative hospital stay, and the incidence of surgical site infection; 71.0 min vs 65.5 min, 4 days vs 3 days, and 4 cases vs 2 cases, respectively. A questionnaire survey showed that LA had the advantage of securing the operative field and anatomical understanding compared to OA.

**Conclusion:** When trainee doctors undertake LA as the first experience of laparoscopic surgery, the training with the dry box in advance allows for performing LA safely without prolonging operative time compared to OA. In addition, LA is thought to be beneficial in learning surgical anatomy.

## OP 132

**Subjective Validation of the Components of a Laparoscopic Training Program**

Silvia Enciso<sup>1</sup>, Idoia Díaz-Güemes Martín-Portugués<sup>1</sup>, Laura Hernández Hurtado<sup>2</sup>, Jesús Usón Gargallo<sup>1</sup>, Francisco Miguel Sánchez-Margallo<sup>1</sup>

<sup>1</sup> Minimally Invasive Surgery Centre Jesús Usón, Cáceres, Spain

<sup>2</sup> Laparoscopy Department of the Minimally Invasive Surgery Centre Jesús Usón, Cáceres, Spain

**Background:** Our objective was to obtain an evaluation of the didactic elements included in the laparoscopic training courses designed by our centre.

**Material and Methods:** Ten novice general surgeons enrolled this study. They attended an intensive course including a short theoretical session (1 hour) and a 20-hour hands-on session. This part consisted of progressive basic skills training on a physical simulator (7 hours) and animal training (13 hours), where several in vivo laparoscopic techniques (Nissen fundoplication, intestinal anastomosis, etc.) were practised by each surgeon. After the course, attendants evaluated the training program and the usefulness of its components by completing a questionnaire scored on a 5-point Likert scale.

**Result:** Course length was considered as very adequate, with an average score of 4.6±0.7. Usefulness of hands-on simulator for skills acquisition was rated on 4.7±0.2, whilst usefulness of animal training obtained the maximum score (5) by all attendants. Similarly, the animal model obtained better scores than the physical simulator for learning new techniques, as well as for skills maintenance. Regarding skills assessment, expert evaluation was considered more useful than virtual reality simulators assessment (3.9±0.9 vs. 3.1±1.4).

**Conclusion:** A very positive subjective evaluation of the training program elements was obtained by general surgeons. Animal model training was rated as the more useful component for skills acquisition, considering its practice very necessary before clinical application of laparoscopic surgery.

## OP 133

**Surgical Training in a Revascularized Soft Embalmed Pig Model**

Wouter Willaert, Wim Ceelen, Katharina D'Herde, Piet Pattyn

Ghent University Hospital, Ghent, Belgium

**Background:** Circulation in Thiel embalmed bodies is still absent. A long-term revascularization in Thiel embalmed pigs was developed and assessed for surgical training.

**Material and Methods:** Fresh pig cadavers were split into two specimens via thoracotomy. In every specimen, the thoracic aorta and inferior vena cava were cannulated. Thiel embalming solution was then pumped through the arterial cannula. Further embalming was done by immersion in an embalming solution. Dehydration was established through immersion in concentrated salt solution. Subsequently, both arterial and venous cannulas were connected with the pump that installed a circulation with Paraffinum Perliquideum (PP). This reperfusion was visualized on computed tomography. Later, several surgical procedures were tested on this model. Additionally, the course of PP in isolated embalmed small intestines was evaluated using in-vivo microscopy.

**Result:** Vascular embalming was performed under low arterial pressures (<70 mmHg). Dehydration almost reestablished the specimens' original weight. Circulation with PP was initiated in the vessels under low arterial pressures (<30 mmHg) during 80 minutes. Every organ was reperfused

but moderate lung edema, collections in the retroperitoneal space and in the small intestines were observed. Coronary artery bypass grafting; vascular anastomoses; resections on reperfused lungs, liver, kidneys, and spleen were performed. In-vivo microscopy showed that PP reached the smallest vessels explaining the observed leaks.

**Conclusion:** Thiel embalmed dehydrated pigs are feasible to establish prolonged vascular reperfusion. Vascular anastomoses and operations on reperfused organs in-situ can be trained under realistic circumstances. Further elaboration is needed to minimize leak in some fragile organs.

### OP 134

#### Comparison of Less Devices with Cut and Suturing Maneuvers

Ana María Matos-Azevedo, Laura Hernández Hurtado, Idoia Díaz-Güemes Martín-Portugués, Francisco Julián Pérez-Duarte, Miguel Ángel Sánchez-Hurtado, Francisco Miguel Sánchez-Margallo

Laparoscopy Department, Minimally Invasive Surgery Centre Jesús Usón, Cáceres, Spain

**Background:** Existing comparisons between the different LESS ports usually focus on economic cost and technical aspects rather than basing assertions on objectively assessed trials. We aimed to objectively compare the use of three different LESS access devices.

**Material and Methods:** 20 subjects were recruited to carry out two tasks on simulator: cut on a patented template, and intracorporeal interrupted sutures on porcine stomach. Both tasks were repeated during 9 consecutive sessions. Total task completion time was registered and performance was objectively assessed. Evaluations were carried out blindly by two expert raters.

**Result:** Improvement was observed with all devices total completion times for the cut task, and significantly so with the use of SILS ( $p=0.017$ ). SILS obtained the highest score, followed by GPN and XCN, without statistical significance. XCN showed a non significant improvement in performance from the first to the last week. On intracorporeal suturing, XCN demanded significant longer completion times when compared to SILS ( $p<0.001$ ) and to GPN ( $p<0.001$ ). There was significant improvement of performance times with SILS ( $p=0.003$ ), GPN ( $p<0.001$ ), and XCN ( $p<0.001$ ). There was significant improvement in performance with all LESS access devices from the first to the last week of training (SILS:  $p=0.003$ ; GPN:  $p=0.001$ ; XCN:  $p<0.001$ ).

**Conclusion:** There is no clear benefit of one LESS access device over the other. We advise surgeons to focus on specific procedures and patient characteristics and select the most appropriate LESS access device maintaining patients' and procedural safety standards.

### OP 135

#### A Clerking Proforma Can Improve Documentation in Surgical Admissions

Ronak Patel, Nina Gill, William Richards, Abu Sharif

Great Western Hospital, Swindon, United Kingdom

**Background:** Accurate documentation in patients' notes is paramount in facilitating patient safety. We aimed to assess the standard of surgical admission clerkings at our district general hospital.

**Material and Methods:** We carried out a retrospective audit of consecutive patients admitted to the surgical take. Accuracy of documentation pertaining to areas identified in national standards was recorded. After an initial audit, a surgical clerking proforma was introduced to improve documentation.

**Result:** 44 patient notes were reviewed in the initial audit (Group 1) and 41 patients after introduction of the proforma (Group 2). Significant improvements were seen in documentation of patient identifier details - documented correctly in 27% of Group 1, which improved to 66% in Group 2. Significant improvements were also seen in time and date of clerking (50% to 70%), medication history (43% to 93%), family history (2% to 29%), physical examination and blood results (14% to 61%) - all  $p$ -value $<0.05$ .

**Conclusion:** A clerking proforma can significantly improve documentation in a patient's admission notes facilitating better patient care and improving adherence to legal requirements.

### OP 136

#### Validation of a Training Program for Laparoscopic Radical Prostatectomy

Francisco J. Pérez-Duarte, Blanca Fernández-Tomé, Idoia Díaz-Güemes Martín-Portugués, Silvia Enciso Sanz, Ana María Matos-Azevedo, Miguel Ángel Sánchez-Hurtado, Laura Hernández Hurtado, Francisco Miguel Sánchez-Margallo

Jesús Usón Minimally Invasive Surgery Centre, Cáceres, Spain

**Background:** We present our experience in the design and development of a training program in laparoscopic radical prostatectomy. Preliminary validation of this program is also attempted.

**Material and Methods:** Our training model for Laparoscopic Radical Prostatectomy, with a total duration of 42 hours, is divided in two modules of 21 hours each, attended 1 month apart. The program begins with acquisition of basic laparoscopic dexterities through the performance of hands-on physical simulator tasks, followed by the performance of uretrovesical anastomoses also on physical simulator; during the second and third days of the course. Attendants

skills improvement was analyzed during this first module by registering task completion times and suturing quality by means of a controlled leak test. At the end of the training program, a subjective evaluation questionnaire on different didactic and organizational aspects was handed out to the attendants.

**Result:** Comparing the first and the last anastomoses hands-on simulator, we observed a significant decrease in surgical times (T1 40.1±4.6 vs. T6 24.01±3.34;  $p \leq 0.005$ ) and an also significant increase in intraluminal leak pressure (T1 8.27±7.33 vs. T6 21.09±6.72;  $p \leq 0.005$ ). A highly positive score was obtained on all questions concerning the different topics and techniques included in the training program ( $\geq 9$  points over 10).

**Conclusion:** The first module of our training model leads to significant decrease in uretrovesical anastomosis performance times, simultaneously increasing its quality. This training model was also very positively assessed by the attendants.

#### OP 137

### Nonsurgical Skills Predict Endoscopic Surgical Skills Not Before But after Training

Minoru Hattori, Hiroyuki Egi, Hiroyuki Sawada, Takahisa Suzuki, Koji Kawaguchi, Hideki Ohdan

Hiroshima University, Hiroshima, Japan

**Background:** It has been suggested that certain nonsurgical skills can be used to predict endoscopic surgical skills. This study aimed to conclusively determine whether nonsurgical skills are associated with endoscopic surgical skills before and after surgical training.

**Material and Methods:** We recruited 58 medical students into this study, and assessed their endoscopic surgical skills using the Hiroshima University Endoscopic Surgical Assessment Device (HUESAD). The participants performed 10 runs of HUESAD tasks before training. After they underwent box training and virtual reality simulator training, they performed 10 additional runs of the tasks. Finally, the participants responded to a questionnaire about their involvement in nonsurgical skills, including playing computer games, typing, sewing, playing musical instruments, and using chopsticks. Correlation coefficients were calculated for assessing the relationships between the nonsurgical skills and the HUESAD assessment scores.

**Result:** No significant correlation was found between any of the nonsurgical skills and initial endoscopic surgical skills. However, there was a significant correlation between the participants' ability to use chopsticks, scissors, ride a bicycle and playing games, and post-training endoscopic surgical skills. Several of the nonsurgical skills queried in this study did not correlate with pre- and post-training endoscopic surgical skills.

**Conclusion:** This is the clear demonstration that those certain nonsurgical skills predict endoscopic surgical skills

not before but after training. This approach can be useful for predicting the improvement in endoscopic surgical skills. The ability to predict endoscopic surgical skills would be important for designing custom training programs to ensure safety and high-quality operation in endoscopic surgery.

#### OP 138

### Neural Pathway Behind the Hepatoprotective Effect of Remote Perconditioning

Zoltán Czigány<sup>1</sup>, Zsolt Turóczy<sup>2</sup>, Flóra Puskás<sup>1</sup>, Dénes Kleiner<sup>2</sup>, Gábor Lotz<sup>3</sup>, André Homeyer<sup>4</sup>, László Harsányi<sup>2</sup>, Attila Szijártó<sup>1</sup>

<sup>1</sup> 1st Department of Surgery, Semmelweis University, Budapest, Hungary

<sup>2</sup> Institute of Pharmacognosy, Semmelweis University, Budapest, Hungary

<sup>3</sup> 2nd Department of Pathology, Semmelweis University, Budapest, Hungary

<sup>4</sup> Fraunhofer MEVIS, Institute for Medical Image Computing, Bremen, Germany

**Background:** Remote ischemic perconditioning (RIPER) has been already reported by our team to protect the liver from ischemic reperfusion injury (IRI) however the mechanism behind the positive effects of RIPER remains unrevealed. We aimed to investigate the potential role of neural elements to transfer protective signals evoked by perconditioning.

**Material and Methods:** Male Wistar rats were randomly allocated into six groups (Sham, IR, RIPER with or without denervation;  $n=7$ /group). Half of the animals underwent left femoral and sciatic nerve resection. Twenty minutes recovery was allowed. In IR and RIPER groups, normothermic, 60 minutes long partial (70%) liver ischemia was induced, parallel animals in RIPER groups received perconditioning treatment (4x5-5min IR, left femoral clamping). Hepatic microcirculation (laser-Doppler-flowmetry) and blood pressure were monitored during the first post-ischemic hour. After 24h reperfusion liver samples were taken for histology and for the detailed analysis of redox-state alterations. Automated image analysis software was used for necrosis-quantification (Fraunhofer-Mevis). Serum ALT, AST levels were measured.

**Result:** Microcirculation and blood pressure showed significant improvement during reperfusion with perconditioning which phenomenon was completely abolished by nerve resection ( $p < 0.05$ ; RIPER vs. IR, IR+denervation, RIPER+denervation). Results of necrosis-quantification showed similar pattern ( $p < 0.01$ ; RIPER vs. IR, IR+denervation and RIPER+denervation;  $6.6 \pm 2.5$  vs.  $37.9 \pm 3.1$ ,  $29.8 \pm 6.4$ ,  $34.7 \pm 4.7$  respectively). Besides non-characteristic changes of the AST levels, ALT values were significantly lower ( $p < 0.05$ ) in RIPER group when compared to the other IRI groups. Further supporting results were obtained from the analysis of redox-homeostasis.

**Conclusion:** Perconditioning could reduce liver IRI in our

model via a mechanism which most probably involves inter organ neural pathways.

#### OP 139

### The Long-Term Outcome of Antioxidant Therapy for the Treatment of Chronic Pancreatitis

Sukitha N Rupasinghe, Santhalingam Jegatheeswaran, Ajith K Siriwardena

Hepato-Pancreato-Biliary Surgery Unit, Manchester Royal Infirmary, Manchester, United Kingdom

**Background:** There is no effective medical therapy for chronic pancreatitis (CP) and micronutrient antioxidant therapy has been proposed to reduce oxidative stress at the acinar level. Although the large ANTICIPATE trial showed no benefit from antioxidant therapy, the study only examined treatment for 6 months. Longer-term treatment may be required to modulate chronic disease and this study looks at long-term outcome in patients with CP treated with antioxidant therapy.

**Material and Methods:** Case notes of patients with CP treated during the 8 years to 1st January 1998 were identified from hospital final diagnosis codes (ICD 10 K86.1 and K86.0). Eighteen patients (10 [55%] male) with CP were treated with micronutrient antioxidant therapy.

**Result:** The most common aetiology was alcohol (12 [66%]). Median (range) follow-up in months was 66(12-120). At presentation 13(72%) had abdominal pain and at last follow-up 8 (44%) reported pain ( $P=0.18$ ; Fisher's exact). At presentation 1 (6%) was on insulin compared to 4(22%) at last follow-up ( $P=0.34$ ; [Fisher's]). Eight (44%) were on opiates at baseline and 6(33%) ( $P=0.73$ ; [Fisher's]) at the end.

**Conclusion:** Although a small cohort, this is the first report of the long-term use of micronutrient antioxidant therapy in CP. There appear to be no treatment-related complications from long-term use. Accepting risk of type II error, there appears to be no effect of therapy on the natural history of the disease with no effect on relief of pain or preservation of islet function.

#### OP 140

### The Effects of Perfluorocarbon Emulsions on Experimental Acute Necrotizing Pancreatitis in Rats

S.O Abiola<sup>1</sup>, P.G Rasputin<sup>1</sup>, S.D Andreeva<sup>2</sup>, O.V Mashkovtsev<sup>3</sup>

<sup>1</sup> General Surgery Department, Kirov State Medical Academy, Kirov, Russian Federation

<sup>2</sup> Pathology Department, Kirov state Agricultural Academy, Kirov, Russian Federation

<sup>3</sup> Pathology Department, Kirov State Medical Academy, Kirov, Russian Federation

**Background:** Perfluorocarbon emulsions are blood substitute solutions with anti-ischemic and gas transport properties, they stimulate tissue growth and strengthen reparative regeneration. One of the major components of the pathology of Acute Necrotizing Pancreatitis (ANP) is the impaired microcirculation and the subsequent development of ischemic processes with the activation of anaerobic glycolysis and lipid peroxidation which leads to necrosis.

**Objectives:** The aim of this study is to investigate the effects of Perftoran: the Russian preparation of the group of Perfluorocarbon (PFC) emulsions on the course and outcome of ANP

**Material and Methods:** Rats were divided into 4 groups, the 1st group included rats with surgically modeled ANP (upper-median laparotomy with a 1.5 minute cold exposure of the splenic segment of the pancreas), the 2nd group included rats with perftoran administered intraperitoneally at a dose of 0.5ml per 100g for a period of 5 days after surgically induced ANP, the 3rd group included rats who were performed just upper-median laparotomy, the 4th group included intact rats. The following parameters were investigated during the experiment: The mortality rate, morphological state of the pancreas, vital organs and immune system after the administration of Perftoran.

**Result:** The use of PFC Emulsions on experimental ANP in rats resulted in decreased mortality rate, reduced necrotic and necrotic process in the parenchyma and stroma of pancreas. PFC emulsions improve the reparative regeneration of epithelial and connective tissue structure, restoration of microcirculatory blood vessels and lymphatic flow.

**Conclusion:** The experiment demonstrates that PFC emulsions are suitable for the treatment of ANP.

## OP 141

**Consequences of Lost Gallstones in the Abdominal Cavity after Laparoscopic Colectomy-Randomized Experimental Animal Study**

Bernadett Lévy<sup>1</sup>, Györgyi Szabó<sup>2</sup>, Viktor Nagy<sup>3</sup>, Csaba Nyakas<sup>2</sup>, Mária Sasváry<sup>2</sup>, Attila Szijartó<sup>2</sup>, Gamal E. Mohamed<sup>4</sup>

<sup>1</sup> National Institute of Oncology, Budapest, Hungary

<sup>2</sup> Semmelweis University, Budapest, Hungary

<sup>3</sup> Military Hospital, Budapest, Hungary

<sup>4</sup> Budaörs Health Center, Budaörs, Hungary

**Background:** LC became the standard technique for the removal of the gallbladder containing stones. During surgery mechanical perforation of the gallbladder can occur, which results in the loss of some of the gallstones in the abdominal cavity. The aim of this study is to detect the behavior of the different types of the lost gallstones and to examine the effect of topically applied antibiotic lavage.

**Material and Methods:** 75 Wistar rats were used. Following median laparotomy human sterile, contaminated gallstones and artificial cholesterol pills were placed in each rat in different regions in the abdominal cavity. In one group antibiotic lavage was applied. On the 42th postoperative day, specimens were taken from the surrounding tissues of each gallstone for histology followed by extermination. The inflammations in the samples were classified into three groups by the help of inflammatory cells and reactions occurring in the tissue sections: gentle, moderate, serious.

**Result:** To compare the experimental groups: inflammation depended on the type of the gallstones. Sterile, artificial cholesterol pills did not cause any complications. Human gallstones caused serious inflammation, abscess formation independently of their contamination. Contaminated gallstones with antibiotic lavage decreased the inflammation reaction in the surrounding tissues. In the sterile cholesterol inserted group and in the antibiotic lavage applied group only gentle and moderate inflammation could be observed.

**Conclusion:** Human gallstones proved to have the effect of massive inflammation and abscess-formation. This effect significantly decreased with the use of antibiotic lavage. The best solution is to remove lost gallstones from the abdominal cavity.

## OP 142

**Efficacy of Absorbable Embolization Materials for Portal Vein Embolization to Induce Liver Regeneration in A Rabbit Model**

F. Huisman, K.P. Van Lienden, J. Verheij, T.M. Van Gulik

Academic Medical Center, Amsterdam, Amsterdam, Netherlands

**Background:** Reversible PVE is of interest when generating sufficient hypertrophy while preserving the embolized liver lobe. The aim of this study is to modulate lysis time of a fibrin-glue based embolization material by using different concentrations of Aprotinin.

**Material and Methods:** PVE of the cranial liver lobes (80% of total liver volume) was performed in twenty-four rabbits using fibrin glue (FG) with different quantities of Aprotinin (resp. 1000/700/500/300/0 KIU (Kallikrein Inactivator Unit)).

CT volumetry of non-embolized lobe (NELVol) and (non-embolized) liver-to-body weight ratio were evaluated. Data were compared with a previous series using a permanent embolization material, i.e. polyvinyl alcohol + coils (PVAc).

**Result:** FG-0KIU-Aprot was completely absorbed in 7 days without hypertrophy of the NEL. At sacrifice (day 7), the embolized portal veins in all animals of the FG1000KIU group were still occluded. The FG700KIU group survived 14 days and in two of five rabbits, the embolized portal vein was recanalized at sacrifice. In the FG500KIU and 300KIU group, 7 out of 10 (70%) showed recanalization of the cranial portal branches. The later groups survived longer (49 days) to evaluate the effect of portal recanalization and atrophy of the embolized lobe. All groups showed a hypertrophy response comparable with the PVAc group. CT volumetry data were supported by liver-to-body weight ratio.

**Conclusion:** Fibrin glue with the concentrations 300KIU and 500KIU Aprotinin resulted in 70% reversible embolization with a hypertrophy response comparable to the PVAc group.

## OP 143

**Surgical Treatment of Patients with Pancreatic Pseudocysts Unformed**

Alexander Masocha<sup>1</sup>, Sergey Katorkin<sup>2</sup>

<sup>1</sup> Samara City Clinical Hospital № 8, Samara, Russian Federation

<sup>2</sup> Samara State Medical University, Samara, Russian Federation

**Background:** Puncture, catheter intervention under ultrasound is widely used in the immature pancreatic pseudocysts. At the same time there is no clear algorithm for the management of patients with this condition, depending on the type of cyst, its size and develop complications.

**Material and Methods:** Observed 110 patients with pancreatic pseudocysts unformed. 56 patients have been performed by percutaneous intervention. According to the classification A.D'Egidio, M.Shein (1991): the first type was 34 (60.7%), the second type - 15 (26.85%), the third type - 7 (12.45%) cases.

Percutaneous intervention performed under ultrasound guidance using the ultrasound diagnostic apparatus gray scale and in real time. In this case we used the puncture sensors, equipped with nozzles for punctures and convex probe.

**Result:** All surgical procedures under the supervision of an ultrasound scan performed by us under local anesthesia. Used a specially designed device to puncture and drainage of abdominal structures. Pseudocyst drainage was carried out in three ways: by Seldinger, stiletto-catheter drainage, drainage through the inner lumen of the trocar. Observed 56 patients underwent a total of 114 different minimally invasive interventions under ultrasound. Found that the best results in patients with puncture-catheter interventions were obtained at 1 and 2 type of cysts of the pancreas with a volume of 50 ml.

**Conclusion:** Thus, the use of minimally invasive catheter interventions puncture-controlled ultrasound in patients with immature pancreatic pseudocysts is a method of choice to avoid surgical trauma and improve the quality of life for patients.

#### OP 144

##### Cholecystectomy for Gallstone Pancreatitis: A Service Evaluation Audit

*Nehemiah Samuel, Farooq Dar, Shahid Roomi, Suhail Anwar, Muhammad Hanif Shiwani*

Barnsley District General Hospital, Barnsley, United Kingdom

**Background:** To evaluate compliance of early laparoscopic cholecystectomy(LC) service provision for gallstone pancreatitis in a district general hospital(DGH).

**Material and Methods:** Patient's information coded as gallstone pancreatitis in discharge summaries were collected retrospectively for year 2013. Timescale to surgery following index event, pre-operative readmission rates, serious complications and further investigations were recorded.

**Result:** 50(n=50) case-notes were randomly selected for audit purposes. 38(76%) were women, mean age(SD) 45.7(17.1); 46(92%) delayed LCs were performed with median(i.q.r.) wait of 115(72.5-165.5)days, 1(2%) early LC within 2 weeks; 3(6%) were awaiting surgery. 38(76%) patients required MRCP and 9(18%) ERCPs pre-op; median time from MRCP/ERCP to surgery was 96.5(61.2-138)days. There were 60 episodes of readmissions equating to 120% risk of readmission per person. 1(2%) patient was readmitted with severe necrotising pancreatitis requiring extended ITU admission.

**Conclusion:** Delayed operative strategy for gallstone pancreatitis increases morbidity for patients and places an

economic strain on the health care system with recurrent admissions. To reduce such occurrences patients have to be counselled for surgery during index admission and infrastructure created to operate on 'hot' gallbladders.

#### OP 145

##### The Use of Transarterial Chemoembolization and Percutaneous Radiofrequency Ablation for the Management of Patients with Hepatobiliary Malignancies at an Advanced Stage

*Andreas Tooulias, Antonios Fandakis, Antonios Fillipidis, Apostolos Blaxodimos, Basileios Papagiannis, Dimitrios Xatzisaak, Georgios N. Marakis, Georgios Tsoulfas*

Aristotle University of Thessaloniki, Greece, Thessaloniki, Greece

**Background:** Objectives: To evaluate the management of advanced primary hepatocellular carcinoma (HCC) and hepatic metastatic disease with a protocol of combined transarterial chemoembolization (TACE) and percutaneous radiofrequency ablation (RFA) at a hepatobiliary center.

**Material and Methods:** Between 2010-2013, patients with advanced HCC (stage IV) and cirrhosis, and with unresectable hepatic metastatic disease, were managed with a protocol of combined TACE and RFA, with several sessions. Demographic data, etiology and staging, as well as survival and RECIST criteria were examined. A total of 14 patients were treated. Nine with TACE, 3 with RFA and 2 with a combined approach.

**Result:** There were 10 male and 4 female patients, between 49 and 79 years old, divided in three subgroups <65 (2), 65-75 (6), 75-85 (6). Three of the patients have HCC due to Alcoholic cirrhosis, 6 due to HBV (1 along with cirrhosis), 1 due to HCV, 1 patient with intrahepatic cholangiocarcinoma, and 4 with metastatic hepatic disease. All of the patients, except one who passed away after 2 years of treatment, are alive.

Patients were categorized in subgroups; according to MELD system: under 9 (9), between 10-19 (5), by Barcelona Clinic Liver Cancer staging system A1 (3), A4 (2), B (6), on follow up (3) and RECIST: No Response; (2), Partial Response (PR); (4), Progressive disease (PD); (2), Complete Response (CR); (2), on follow up (3) and unknown (2).

**Conclusion:** Through a combined approach using several sessions of TACE and RFA, respectable results are possible in patients with advanced hepatobiliary malignancies.

## OP 146

**Do the Drug Transporters Have an Impact on Prognosis and Chemosensitivity of Pancreatic Adenocarcinoma?**

Matej Kocik<sup>1</sup>, Beatrice Mohelnikova-Duchonova<sup>2</sup>, Marie Ehrlichova<sup>2</sup>, Veronika Brynychova<sup>2</sup>, Eva Honsova<sup>3</sup>, Jan Mazanec<sup>4</sup>, Zdenek Kala<sup>5</sup>, Ivan Gut<sup>2</sup>, Martin Oliverius<sup>1</sup>, Pavel Soucek<sup>2</sup>

<sup>1</sup> Transplant Surgery Department, Institute for Clinical and Experimental Medicine, Prague, Czech Republic

<sup>2</sup> Toxicogenomics Unit, National Institute of Public Health, Prague, Czech Republic

<sup>3</sup> Department of Clinical and Transplantation Pathology, Institute for Clinical and Experimental Medicine, Prague, Czech Republic

<sup>4</sup> Department of Pathology, Masaryk University Hospital and Faculty of Medicine, Brno, Czech Republic

<sup>5</sup> Department of Surgery, Masaryk University Hospital and Faculty of Medicine, Brno, Czech Republic

**Background:** Expression profile of drug transporters may contribute to the low response rate to systemic chemotherapy in patients with pancreatic ductal adenocarcinoma (PDAC). The aim of our study was evaluate prognostic significance of multidrug resistance-associated ATP-binding cassette (ABC) and solute carrier (SLC) transporters in patients who underwent pancreas resection for PDAC.

**Material and Methods:** Transcript profile of 15 drug efflux ABC and 13 drug influx SLC transporter genes was measured by real-time PCR in tumors and adjacent non-neoplastic pancreatic tissues in 32 patients. Associations of expressions of individual genes, gene combinations and overall survival (OS) of patients were evaluated.

**Result:** Seven ABC transporters were significantly overexpressed in tumors compared to non-neoplastic tissues and 5 of 10 SLC transporters were downregulated in tumors. High level of ABCC1 was significantly associated with longer OS. In contrast, high levels of ABCC2, ABCC4, SLC22A1 or SLC28A1 were associated with shorter OS. In a subgroup of chemotherapy-treated patients (n=19), high levels of ABCB4, ABCC1, ABCG2, SLC22A3 or SLC29A3 were associated with longer OS. Patients with combination of low expression of SLC22A3 and high expression of ABCC2 had significantly shorter OS compared to the rest of chemotherapy-treated patients (P<0.001).

**Conclusion:** Our study shows that expression of ABC and SLC transporters has an influence on survival of patients with PDAC. Intratumoral downregulation of multiple drug influx SLC and overexpression of drug efflux ABC transporters supports the concept that drug transporters are at least in part responsible for low chemosensitivity of patients with PDAC.

## OP 147

**Open Preperitoneal Versus Anterior Approach for Recurrent Inguinal Hernia**

Aly Saber<sup>1</sup>, Gouda M Ellabban<sup>2</sup>, Mohammad A Gad<sup>2</sup>, Karam Elsayem<sup>2</sup>

<sup>1</sup> Port-Fouad General Hospital, Port-Fouad, Port-Said, Egypt, Port-Said, Egypt

<sup>2</sup> Faculty of medicine, Suez Canal University, Ismailia, Egypt, Ismailia, Egypt

**Background:** Introduction: Repair of the resulting recurrent hernia is a daunting task because of already weakened tissues and obscured and distorted anatomy. The aim of this study is to compare the posterior preperitoneal versus anterior tension-free approach for repair of unilateral recurrent inguinal hernia regarding complications and early recurrence.

**Material and Methods:** Patients & Methods: 64 Patients were divided into 2 main groups; Group A patients were subjected to posterior preperitoneal approach and group B were subjected to conventional anterior tension-free repair. Primary end point was recurrence and secondary end points were time off from work, postoperative pain, scrotal swelling and wound infections .

**Result:** The mean hospital stay was 1.2 days and 4.7 , the mean time to return work was 8.2 and 11.2 . days and the mean time off from work was 9.4 and 15.9 days in group A and B respectively. The final pain score per patient and the overall complication rate were higher.

**Conclusion:** The open preperitoneal repair offers the advantages of low recurrence rate and allows covering all potential defects with one piece of mesh and is far superior to the anterior approach.

## OP 148

**Laparoscopic TAPP for Recurrent Inguinal Hernia: A Randomized Trial**

Aly Saber<sup>1</sup>, Emad Hokkam<sup>2</sup>, Gouda M Ellabban<sup>2</sup>

<sup>1</sup> Port-Fouad General Hospital, Port-Fouad, Port-Said, Egypt, Port-Said, Egypt

<sup>2</sup> Department of Surgery, Suez Canal University, Ismailia, Egypt, Ismailia, Egypt

**Background:** Laparoscopic transabdominal preperitoneal (TAPP) inguinal hernia repair is an evolving technique associated with advantages of a minimally invasive approach. The present work aimed at comparing these three approaches for repair of recurrent inguinal hernia regarding complications and early recurrence.

**Material and Methods:** A total of 180 patients were divided into three groups: A, B, and C. Group A patients were subjected to open posterior preperitoneal approach , those of group B were subjected to transinguinal anterior tension-free



repair and group C patients were subjected to TAPP.

**Result:** The mean hospital stay, the mean time to return to work and the mean time off from work were less in group C than A and B. Chronic postoperative pain was observed in eight patients in group A (13.33%), in 18 patients in group B (30%) and six patients in group C (10%). The overall complication rate was 19.7% in both groups A and C and 34.36% in group B.

**Conclusion:** In recurrent inguinal hernia, the laparoscopic and open posterior approaches are equally effective in term of operative outcome. The open preperitoneal hernia repair is inexpensive, has a low recurrence rate. Postoperative recovery is short and postoperative pain is minimal. This approach gives results far superior to those of the commonly used anterior approach. However, while laparoscopic hernia repair requires a lengthy learning curve and is difficult to learn and perform, it has advantages of less post-operative pain, early recovery with minimal hospital stay, low post-operative complications and recurrence.

#### OP 149

##### Comprasion of Method in Inguinal Hernia: Lichtenstein and Plug Mesh

Vahit Onur Gul<sup>1</sup>, Mehmet Ince<sup>2</sup>, Serhat Ozer<sup>3</sup>

<sup>1</sup> Edremit Military Hospital General Surgery Department, Balıkesir, Turkey

<sup>2</sup> GMMMA Emergency Department, Ankara, Turkey

<sup>3</sup> Konya Military Hospital General Surgery Department, Konya, Turkey

**Background:** Purpose of this study is to determine the advantageous one in the inguinal hernia surgery, by comparing Lichtenstein and Plug Mesh repair methods in terms of criteria such as; postoperative patient comfort, complications and recurrence.

**Material and Methods:** This study, Plug Mesh was performed for 104 of them, Lichtenstein was performed for 98 of them. The two groups were compared in terms of, type of hernia, operative time, hospitalization period, early and late postoperative pain periods, hematoma seroma, paresthesia, urinary retention, testicular problems, wound complications, period to return to daily activities and recurrence.

**Result:** Complications were observed in 17 (8.3%) cases, and these often were seroma, scrotal edema, and wound infection. Hernia recurrence were seen in 2 (1.9%) cases with Plug Mesh and in 3 (3%) cases with Lichtenstein. There were no statistically significant differences between the statistical groups and recurrence. When surgery period, postoperative pain values were analyzed, average surgery period in Lichtenstein group was significantly higher than mesh plug group's average surgery periods, and postoperative early and late period average pain levels were significantly higher than mesh plug group's average pain levels. When compared in terms of complications statistically significant differences

were not observed.

**Conclusion:** This study with its low recurrence Plug Mesh method, compared with Lichtenstein, despite being similar in terms of complications, considering postoperative pain levels and shorter surgery period, it has been evaluated to be more superior in the direction of longer term studies and increasing the number of cases it was concluded that the Plug Mesh can be used confidently.

#### OP 150

##### Outcome of Sublay Mesh Repair in Non Complicated Umbilical Hernia with Live

Ahmed Mohamed Abdelaziz Hassan,  
Magdy Mohamed Elsebae, Hussam Hamdy

General Surgery Department, Theodor Bilharz Research  
Institute, Cairo, Egypt

**Background:** Early elective repair of umbilical hernias in patients with liver cirrhosis and ascites is safe. The objective of this study is to evaluate the feasibility, safety, complications and technical aspects of sublay mesh repair of umbilical hernia in cirrhotic patients with ascites.

**Material and Methods:** 70 patients with non complicated umbilical hernia, liver cirrhosis and ascites were enrolled in this study. All patients underwent open sublay mesh repair. Demographic data, preoperative variables, postoperative course, and postoperative complications were recorded and analyzed.

**Result:** The mean operative time was 67.45 minutes and the average hospital stay was 3.8 days. 2 patients had wound infection, 3 patients developed seroma and 1 patient had an ascitic fistula. Recurrence occurred in one patient (1.4%).

**Conclusion:** Elective sublay umbilical hernia mesh repair is a safe approach and feasible technique in selected non complicated cirrhotic patients with ascites.

#### OP 151

##### TAPP Versus TEP: A Retrospective Analysis

Burak Kavlakoglu

Veni Vidi Private Hospital, Ankara, Turkey

**Background:** The 1-year results after laparoscopic repair of inguinal hernias with the TAPP and TEP techniques were analyzed.

**Material and Methods:** A group of 50 patients were included in the study (TAPP: 20, TEP: 30). All patients were examined after inguinal repair with the TAPP or TEP technique for the treatment of inguinal hernia from January 2013 to January 2014. The follow-up included a clinical examination, a questionnaire, and an ultrasound examination of the inguinal area.

**Result:** The follow-up rate was 90% after TAPP and 91% after TEP with a median follow-up of 6 postoperative months.

With a total complication rate of almost 8% both methods did not differ. The recurrence rate after TAPP was 0% and 3% after TEP.

**Conclusion:** TAPP and TEP are both safe and efficient but in the present study, TEP had an advantage over TAPP for significantly reduced postoperative pain up to 3 months, which resulted in a better patient satisfaction score.

#### OP 152

### Anterior Abdominal Wall 'Peritoneal Recess': Rare Cause of Recurrent Bowel Obstruction Due to Pseudo Herniation

Khurram Siddique<sup>1</sup>, Ajai Samad<sup>2</sup>

<sup>1</sup> Barnsley Hospital, Rotherham, United Kingdom

<sup>2</sup> Whiston Hospital, Liverpool, United Kingdom

**Background:** No clear guidelines exist about management of chronic abdominal pain. We present here a new potential space named as 'Peritoneal Recess' inside the abdomen which was found during diagnostic laparoscopy performed to look for the cause of recurrent abdominal pain.

**Material and Methods:** A middle aged patient presented with intermittent chronic abdominal pain without any obvious cause. All her investigations including small bowel studies were normal; however a recent CT scan raised the suspicion of an intra-abdominal hernia. A diagnostic laparoscopy was performed to repair the CT detected hernia; though there was no obvious lump on examination.

**Result:** Laparoscopy revealed a left sided unilateral 'Peritoneal Recess' formed by a fold of peritoneum lying medial to linea-semilunaris and conforming to the curve of arcuate line for approximately 2.5 cm ending up in a blind recess (Pics taken). No extra-peritoneal sac or defect was noted neither in the rectus sheath nor any contents were present in the recess at the time of laparoscopy. It seemed like the bowel was getting intermittently trapped inside the recess leading to partial kinking causing recurrent abdominal pain. By definition this is not a true hernia and we have named it as "Samad-Siddique's pseudo-hernia". The 'Peritoneal Recess' was closed with laparoscopic tackers to prevent bowel from further entering the 'Recess' which helped resolving the patient symptoms.

**Conclusion:** The 'Peritoneal Recess' may cause pseudo-herniation of small bowel resulting in chronic abdominal pain. We recommend diagnostic laparoscopy for confirmation followed by endoscopic fixation.

#### OP 153

### Laparoscopic Ventral Hernioplasty in Consecutive Unselected Group

Nikolay Matveev<sup>1</sup>, Andrey Protasov<sup>2</sup>, Anatoly Ukhanov<sup>3</sup>

<sup>1</sup> Moscow State University of Medicine and Dentistry, Moscow, Russian Federation

<sup>2</sup> Russian University Of Peoples Friendship, Medicine Department, Moscow, Russian Federation

<sup>3</sup> Lyubertsy Community Hospital, Lyubertsy, Russian Federation

**Background:** Laparoscopic surgery for ventral/incisional hernia becomes more and more popular, but the most of studies were done in selected groups of patients.

**Material and Methods:** The report is based on the analysis of all patients with primary and postoperative abdominal hernias from one General surgery department, operated in 2012-2013. There were 50 patients (15 men, 35 women), mean age 53.1±9.8 years, average BMI 36.3±6.5 kg/m<sup>2</sup>. Fourteen hernias were primary (defect area 29±14 cm<sup>2</sup>), and 36 - postoperative (defect area 176±88 cm<sup>2</sup>). In all patients laparoscopic IPOM hernioplasty was attempted. The netted polyester prostheses, covered with porcine collagen were used. The prostheses were fixed by titanium tacks and transabdominal ligatures.

**Result:** The average duration of endoscopic operation was 63±24 min. There were seven simultaneous operations. In two cases, conversion was required (4%). There was one inadvertent enterotomy (2%), SSI after laparoscopy developed in 2 cases (4%), and also in 2 cases after conversion. Late complications were: 3 persistent seromas (6%), and chronic pain in 2 cases (4%). We found no relapses after average follow-up of 13 months.

**Conclusion:** Laparoscopic IPOM hernioplasty is successful technique for treatment of primary and incisional hernias. No special selection of patients is needed. In unselected population conversion rate is low, with acceptable number of early and late complications, and relapses.

#### OP 154

### Multi-Staged Repair of Contaminated Recurrent Giant Incisional Herniae in the Same Hospital Admission

Khurram Siddique, Ashish Shrestha, Sanjoy Basu

East Kent Hospitals NHS Foundation Trust, Ashford, United Kingdom

**Background:** Repair of giant incisional herniae is extremely challenging and more so in the face of surgical field contamination.

**Material and Methods:** This is a prospective cohort study of seven patients that were successfully treated

through a multi-staged approach but in the same hospital admission, not described before, for the repair of primary & recurrent contaminated incisional herniae at a DGH between 2009 and 2013. Patient demographics, previous operations, complications & follow up were collected. The first stage involved the eradication of contamination and the second stage was the definitive hernia repair.

**Result:** Of the seven patients, five were men & two women with a mean age of 54 (34-74) years. Two patients had grade 4 while the remaining had grade 3 hernia as per the Hernia Grading System with a mean BMI of 35(30-46). All patients required extensive adhesiolysis, bowel resection and anastomosis and wash out. Hernial defect was measured as 204\*(105-440) cm<sup>2</sup>, size of mesh implant was 568\*(375-930) cm<sup>2</sup> and the total duration of operation(1st + 2nd Stage) was 348\*(270-540) minutes. Duration of hospital stay was 11\*(7-19) days with a follow up of 24\*(6-48) months.

\* Median.

**Conclusion:** Our multi-staged approach in the same hospital admission, for the repair of contaminated primary and recurrent giant incisional herniae, minimises the disadvantages of a true multi-staged approach and simultaneously minimises the risks & complications associated with a single-staged repair; can be adopted for these challenging patients for a successful outcome.

#### OP 155

### Outcomes of Component Separation Technique with Polypropylene Mesh or Without Mesh in Complex Incisional Hernia

*Tolga Olmez, Tahsin Colak*

Mersin University Medical Faculty Dept. of General Surgery, Mersin, Turkey

**Background:** Incisional hernia repair is a common surgical procedure in surgical practice. In this study, we aimed to present our outcomes of Component Separation Technique (CST) repair in patients with giant incisional hernia and compare the results of CST with polypropylene mesh (CS-M) or without mesh (CS).

**Material and Methods:** A comprehensive retrospective medical record review was performed on all patients who underwent the CST for incisional hernia at Mersin University Medical Faculty, Mersin, Turkey, between 2007 and 2013. 69 consecutive patients were included. Patient characteristics including demographic variables, postoperative complications, recurrence.

**Result:** A total of 69 patients were evaluated in this study, with 34 (49.3%) men and 35 (50.7%) women. There were no significant differences between the two groups in terms of BMI (CS vs. CS-M, 27.70 [21.30-31.20] vs. 25.51 [20.00-31.20], p=0.61), ASA score (2 [1-4] vs. 2 [1-3], p=0.55), and hernia defect size (314.00 [235.00-706.00] vs. 290.00 [62.00-940.00], p=0.10). The mean operating time was longer in CS group when compared with CS-M group (143.33 ± 38.19

vs. 115.57 ± 20.83, p=0.001). A total of two patients (11.1%) had recurrence hernia in CS group vs. four (7.8%) patients in CS-M group (p<0,05).

**Conclusion:** Component separation technique is a successful method for complex incisional hernia treatment. CS-M reduces recurrence rates.

#### OP 156

### Evaluation of Cost-Effectiveness of Laparoscopic Ventral/Incisional Hernia Repair Service in a District General Hospital

*Nehemiah Samuel, Fayyaz Mazari, Victoria Proctor, Khurram Siddique, Luke Wheldon, Muhammad Shiwani*

Barnsley District General Hospital, Barnsley, United Kingdom

**Background:** To assess our experience in laparoscopic repair of ventral and incisional hernias(LRVIH) and the cost effectiveness of providing this service in a NHS district general hospital.

**Material and Methods:** Prospective single centre study of consecutive LRVIHs performed by one Consultant Surgeon over last 3 years. Patient demographics and periprocedural details were recorded in standard proforma. Hernias were classified according to EHS classification. Costs were calculated from NHS payment by result(PBR) tariffs.

**Result:** 85 patients with mean(SD) age 56.5(14.2) years and BMI of 31.8(6.1)kg/m<sup>2</sup> underwent repairs for 19(22.3%) primary ventral hernias, 48(56.4%) incisional hernias and 18(21.1%) recurrent incisional hernias. The median(i.q.r.) defect size was 25(16-111)cm<sup>2</sup>; operating time 65(55-110) minutes; length of hospital stay 1(0.5-1)bed-days; 16 patients had complications: 8(9.4%)seromas, 1(1.1%)haematoma, 4(4.7%)respiratory complications; 3(3.5%)conversions to open procedures and 1(1.1%)re-operation for small bowel obstruction. There were 5(5.8%)recurrences. Median cost of repair was £1318(1079-1702) and hospital income per procedure was £1747(1163-2534), resulting in a median profit of £280(-28to800)per procedure. Repairing hernias with total width >10cm or total surface area >25cm<sup>2</sup> was significantly higher than smaller defects (P<0.001).

**Conclusion:** LRVIH is safe and cost-effective especially for smaller hernias. Current PBR tariffs for larger hernias may need renegotiating to make such repairs more cost-effective.

## OP 157

**Biocompatible Poly(Vinyl Alcohol) Nanomatrix for Hernia Repair**

D. Fehér<sup>1</sup>, T. Dankó<sup>1</sup>, K. Molnár<sup>2</sup>, A. Ferencz<sup>1</sup>, Gy. Szabó<sup>1</sup>,  
D. Csukás<sup>1</sup>, L. Seres<sup>1</sup>, O. S. Bata<sup>1</sup>, I. Bulyovszky<sup>1</sup>,  
A. Jedlovszki-Hajdú<sup>2</sup>, M. Zrínyi<sup>2</sup>, Gy. Wéber<sup>1</sup>

<sup>1</sup> Department of Surgical Research and Techniques,  
Semmelweis University, Budapest, Hungary

<sup>2</sup> Nanochemistry Research Group, Semmelweis University,  
Budapest, Hungary

**Background:** Non-absorbable synthetic mesh for the correction of a hernia has high risk of medical problems. An ideal mesh should be compatible with the human body. This study focusing on these aspects indicate that the poly(vinyl alcohol) nanomatrixes may reduce postoperative complications.

**Material and Methods:** To study the interaction and cellular adhesion, poly(vinyl alcohol) solution, poly(vinyl alcohol) hydrogel, poly(vinyl alcohol) mesh and A549 human lung epithelial cell line (passage:15-25) were used. The cells were seeded at a density of 3x10<sup>4</sup> cells/well in a 24-well plate and were incubated with the media for 24h, 48h, 72h, 96h,168h. Control group contained A549cells and medium without nanomaterials. The disinfection of the samples were solved with ClO<sub>2</sub> that we added to the cell-culture in different doses.

**Result:** The results show that the cells with the PVA solution and PVA hydrogel could proliferate. The PVA meshes and the degraded parts of the material did not cause any toxic effect for the cells. A549 cells have shown normal morphology, but the cells did not adhere to the surface of the mesh. ClO<sub>2</sub> did not cause any adverse effect in the cell-culture.

**Conclusion:** In vitro tests suggest that the PVA nanomatrixes are biocompatible, allowing the proliferation, and growth of cells, but adhesion character should be clarified.

## OP 158

**Crosslinked Poly(Vinyl Alcohol) Based Nanofiber Mesh for Tissue Replacement**

Leila Seres<sup>1</sup>, Kristóf Molnár<sup>2</sup>, Györgyi Szabó<sup>1</sup>,  
Daniella Fehér<sup>1</sup>, Domokos Csukás<sup>1</sup>, László Fonyad<sup>3</sup>,  
Angela Jedlovszky-Hajdú<sup>2</sup>, Miklós Zrínyi<sup>2</sup>, György Wéber<sup>1</sup>

<sup>1</sup> Semmelweis University, Department of Surgical  
Research and Techniques, Budapest, Hungary

<sup>2</sup> Semmelweis University, Department of Biophysics  
and Radiation Biology, Nanochemistry Research Group,  
Budapest, Hungary

<sup>3</sup> Semmelweis University, 1st Department of Pathology  
and Experimental Cancer Research, Budapest, Hungary

**Background:** Surgical mesh devices composed of synthetic materials used for ventral hernia repair often cause

complications of fibrosis and patient discomfort.

Our goal is to develop biocompatible and biodegradable mesh which means the matrix after fulfilling its duty should degrade into nontoxic fragments and be incorporated into the body.

Electrospinning has emerged as one of the most promising techniques for creating nanofiber scaffolds for tissue engineering. These networks consisting of fibers with the diameter of less than 100 nanometers hold the potency of mimicking the structure of the native environment of the cells the extracellular matrix.

A novel nanofiber mesh with good mechanical properties from high molecular weight poly(vinyl alcohol) (PVA) developed by our research group was used in rat hernia model for in vivo experiments.

**Material and Methods:** Wistar rats (n=12) in Group I. (n=4) received PVA mesh (2.5cm in Diameter D) to repair abdominal wall defects (D = 2cm). In Group II. (n=4) the PVA mesh was implanted by laparotomy. In the control group (n=4) only skin incision was made. Rats in each group were dissected after 27 days of the operation and implants were evaluated macroscopically and histologically.

**Result:** All rats were survived. The mesh has held its strength and formation. In Group I. slightly adhesion formation occurred compared to Group II. Histological response to PVA meshes was giant cell foreign body reaction, which was similar to surgical threads.

**Conclusion:** PVA nanofiber mesh may provide an alternative option as biocompatible material for future treatment of abdominal wall defects.

## OP 159

**Coagulation Profiles of Maastricht Category 2 DCD Donors Do Not Indicate a Role for Exogenous Fibrinolysis**

M Vendrell, Aj Hessheimer, A Ruiz, D Paredes,  
C Rodriguez, Jc García-Valdecasas, C Fondevila, P Taurá

Hospital Clinic, University of Barcelona, Barcelona, Spain

**Background:** It has been suggested that vascular stasis in donors after circulatory death (DCDs) leads to formation of microvascular thrombi, and that their organ viability – in particular in uncontrolled donors – may be improved through the application of fibrinolytic therapy.

We aim to study the coagulation profiles of Maastricht-2 DCDs in order to determine the presence of abnormalities that could potentially benefit from fibrinolytic therapy.

**Material and Methods:** Whole blood from potential DCDs was sampled, and thromboelastometry (ROTEM®) performed. Blood was extrinsically activated (EXTEM®). Hyperfibrinolysis was defined as maximum clot lysis >15%, while fulminant fibrinolysis was defined as clot dissolution within 30min.

**Result:** Between August 2012 and November 2013, 30 potential DCDs were analyzed. Twenty eight (93%) were men. Mean age was 53±8 years. Mean time from

arrest to death declaration was 76±16min. All patients demonstrated hyperfibrinolysis. Fibrinolysis was fulminant in 21 cases (70%). Interestingly, there was a significant inverse relationship between clot lysis at 30 min and hepatic transaminase levels ( $r = -0.553$ ,  $P=0.014$ ). Five livers were transplanted: two from donors that demonstrated fulminant fibrinolysis, both of which developed significant postoperative complications requiring early retransplantation, and three from donors without fulminant fibrinolysis, all of which demonstrated excellent postoperative function.

**Conclusion:** Endogenous fibrinolysis was observed in all potential DCDs and was, in most cases, fulminant. There does not appear to be any role for additional fibrinolytic therapy in this setting.

Thromboelastometric data provides important information regarding hepatic viability and may be used as an additional tool to select DCD grafts suitable for transplantation.

#### OP 160

##### Pre-Arrest Heparinization Is Better than Post-Arrest Fibrinolysis in DCD Liver Transplantation

M Vendrell, Aj Hessheimer, J Muñoz, E Flores A Ruiz, S Saavedra, P Taurá, Jc García-Valdecasas, Fondevila, C

Hospital Clinic, University of Barcelona, Barcelona, Spain

**Background:** Blood stasis during circulatory arrest (CA) leads to clot formation in a pig model of liver transplantation from donors after cardiac death (DCD).

We aim to determine the effects of fibrinolytic therapy administered during a post-CA period of normothermic regional perfusion (NRP).

**Material and Methods:** Donor pigs were subjected to 60min CA followed by 60min heparinized NRP; three groups of 9 animals were performed: 1) no pre-CA heparin or tissue plasminogen activator (tPA) given (control); 2) no pre-CA heparin but tPA administration during NRP (tPA group); and 3) pre-CA heparinization, no tPA given (heparin group). Livers were recovered, cold stored 4h, and transplanted. Thromboelastometry (ROTEM) was performed to monitor tPA effect.

**Result:** Three livers had to be discarded in the control and tPA groups each because NRP failed due to massive clotting. No livers had to be discarded in the heparin group. ROTEM demonstrated significant fibrinolytic differences between tPA and control groups: mean LI30 0% (IQR 0-58%) vs. 98% (96-100%),  $P=0.011$ ; ML 100% (100-100%) vs. 14% (12-17%),  $P=0.002$ . No ongoing fibrinolytic effect was detected in any recipient after reperfusion.

When pre-arrest heparinization was performed hepatic flows during NRP and transaminases in the recipients were better than those measured in grafts without pre-CA heparinization, both with and without tPA.

**Conclusion:** Fibrinolytic therapy administered during NRP cannot effectively counter massive clot formation occurring during CA in porcine DCD donors. Pre-arrest

heparinization should be performed whenever possible to prevent the deleterious consequences of intravascular clotting.

#### OP 161

##### ABO Incompatible Liver Transplantation – The Czech Experience

Jiří Froněk, Janoušek, Oliverius, Kučera, Kieslichova, Víklický, Trunečka

Transplant Surgery Department, Institute for Clinical and Experimental Medicine, Prague, Czech Republic

**Background:** The ABO-incompatible liver transplantation (LTx) is alternative method which can be used in some of the fulminant liver failure (FLF) cases, in some countries even for elective transplants. For overcoming the blood group barrier various techniques can be used.

**Material and Methods:** Czech Republic is country with 10 million inhabitants and some 200 deceased donors per year. At our institution we perform over 80 liver transplants every year, we did 87 LTx in 2013, our LTx program counts over 1000 LTx since 1995. To increase the chance for survival, in some of the fulminant liver failure cases we used the ABOi graft. In first 6 cases we used plasma-exchange, in last one non-specific immunoadsorption.

**Result:** In total 7 patients received ABOi liver graft, 2/7 received hemiliver, 2/7 died shortly after the LTx, none due to the the incompatibility-related problems, 1/7 was re-transplanted 16.POD, 5/7 patients are alive with well functioning graft.

year	sex	age	FHF diagnosis	graft size	survival	cause
2008	F	35	Wilson's disease	full	died 8.POD	MOF
2009	M	48	HBV	full	alive	
2009	F	49	HBV	full	alive	
2011	M	22	cryptogenic	left lobe	alive	
2011	F	48	PBC	full	alive	
2011	F	44	autoimmune	full	died 57.POD	
2013	F	35	mushroom poisoning	left lobe	alive	pancreatitis

**Conclusion:** In a small country with limited number of liver grafts per year, the ABOi liver transplantation is justified in FLF setting. Such technique gives reasonable chance for survival, the final outcome depends on severity of the FHF as well as primary diagnosis. Both apheretic as well as plasma-based techniques can be used with success to overcome the ABOi barrier. Both full size and hemiliver grafts can be used for transplant, the last case was full split liver for two adults because two FHF patients occurred at the same time, both these two patients (husband and wife) are alive and well.

## OP 162

**Kidney Transplantation from Controlled DCD Donors – First Czech Experience***Jiří Froněk, Janoušek, Tomas Marada, Viklický*

Transplant surgery department, Institute for Clinical and Experimental Medicine, Prague, Czech Republic

**Background:** Donation after cardiac death (DCD) is important fraction of kidney transplant programs in many countries. According to literature such kidneys seem to have similar allograft and patient survival compared with kidney from DBD donors; however the main problem is delayed graft function (DGF), which occurs in 40-50% compared with some 20-25% in an standard-criteria donor kidney transplants. Controlled DCD donation and kidney transplantation we introduced in Czech Republic in 2013.

**Material and Methods:** In 2013 we performed some 282 kidney transplants (KTx) at our institution, of those 10 were from DCD donors. The retrieval with 5 minutes of no-touch interval we performed in 5 cases, 10 kidneys we transplanted. The donor characteristics were as follows: age 39 (SD 13.6), mean Cr min 80,5 umol/l (SD 48,8), or 0,9 mg/dL (SD 0,55), mean Cr max 93,5 umol/l (SD 51), or 1,05 mg/dL (SD 0,58), average cold ischemic time (CIT) was 9.4 hours (SD 5.8).

**Result:** There was 1 case of delayed graft function (DGF) observed, all the other 9 patients developed prompt kidney graft function. Mean SCr one month after the KTx was 139 umol/l (SD 37), or 1,57 mg/dL (SD 0,42). Mean hospital stay was 13 days (SD 3. 9). The immunosuppression protocol was based on TAC/PRED/MMF and induction with Thymoglobulin.

**Conclusion:** Our initial experience is encouraging as we did not observe any delayed graft function except one case. There is room for expansion of the program in Czech Republic. Short CIT seems to be the key for DGF prevention in our hands.

## OP 163

**Hand-Assisted Extraperitoneoscopic Live-Donor Nephrectomy: Over 10 Years of Single Centre Experience***Jiří Froněk, Libor Janoušek, Jiri Mendl, Tomas Marada, Ondrej Viklicky*

Transplant Surgery Department, Institute for Clinical and Experimental Medicine, Prague, Czech Republic

**Background:** Our study reports last 139 consecutive hand assisted retroperitoneoscopic live donor nephrectomies (HARS) performed at our institution since 6/2011. HARS nephrectomy technique has been introduced by the author in Prague/Czech Republic in January 2003, since June 2011 is being used for all the donors including right sided and complex anatomy cases (multiple vessels and ureters, retroaortic renal vein, renal artery diseases, etc). The main benefit of HARS

approach is increased safety for the donor. Risk of bleeding and intraabdominal injury is low thanks to hand assistance and extraperitoneal approach.

**Material and Methods:** Data were collected prospectively. The operation is performed in the manner described by Wadström et al 2002, with minor modifications. There were all anatomical variations accepted for surgery, including right sided cases when indicated.

**Result:** There was no conversion to open nephrectomy, one donor was re-operated on the first postoperative day for bleeding from paraaortic lymphatics, this donor was also given two units of blood. The median blood loss was zero otherwise, meaning no use of suction or no blood in container. The median post-operative hospital stay was 2 days. We observed few minor complications including one wound infection, one wound seroma and three wound haematomas. There was one case of postoperative bleeding from paraaortic lymphatics mentioned above which required retroperitoneoscopic re-operation, there was one case of incisional hernia which occurred some 8 months after surgery. All donors have life-long follow up. There was one case of delayed graft function due to early rejection observed, all the other patients had immediate graft function.

**Conclusion:** HARS is a safe way of performing living-donor nephrectomy with low risk of severe complications, minimal morbidity and fast recovery. It is safe alternative to the transperitoneal miniinvasive as well as other nephrectomy techniques. It can be used safely for all the anatomical variations as well as right sided cases.

## OP 164

**Impact of IMAC and PMI On Survival in Patients Undergoing LDLT***Yuhei Hamaguchi<sup>1</sup>, Toshimi Kaido<sup>1</sup>, Shinya Okumura<sup>1</sup>, Yasuhiro Fujimoto<sup>1</sup>, Kouhei Ogawa<sup>1</sup>, Akira Mori<sup>1</sup>, Etsuro Hatano<sup>1</sup>, Yumiko Tamai<sup>2</sup>, Nobuya Inagaki<sup>3</sup>, Shinji Uemoto<sup>1</sup>*

<sup>1</sup> Division of Hepato-Biliary-Pancreatic and Transplant Surgery, Department of Surgery, Graduate School of Medicine, Kyoto University, Kyoto, Japan

<sup>2</sup> Department of Metabolism and Clinical Nutrition, Graduate School of Medicine, Kyoto University, Kyoto, Japan

<sup>3</sup> Department of Diabetes, Endocrinology and Nutrition, Graduate School of Medicine, Kyoto University, Kyoto, Japan

**Background:** Skeletal muscle depletion, referred to as sarcopenia, predicts morbidity and mortality in digestive surgery. Recent evidence has shown that intramuscular fat accumulation was linked to the severity of non-alcoholic steatohepatitis. The present study investigated the impact of intramuscular fat accumulation as well as skeletal muscle mass on patients undergoing living donor liver transplantation (LDLT).

**Material and Methods:** This study comprised 200 adult patients undergoing LDLT at our institution between January 2008 and October 2013. The quality and quantity of skeletal muscle were evaluated by intramuscular adipose tissue content (IMAC) and psoas muscle mass index (PMI) at the umbilical level, respectively. The correlations of IMAC or PMI with other factors, the overall survival rate in patients classified according to IMAC or PMI, the risk factors for poor survival, and the sequential changes of IMAC or PMI after LDLT were analyzed.

**Result:** IMAC was significantly correlated with age and PMI in male, age and BCAA-to-tyrosine ratio in female. PMI was significantly correlated with NH3 in male and skeletal muscle mass in both of male and female. The overall survival rate in patients with high IMAC or low PMI was significantly lower than in patients with normal IMAC or PMI ( $p < 0.001$ ). Multivariate analysis showed high IMAC and low PMI were independent risk factors for death after LDLT. IMAC and PMI temporarily got worse until 3-6 months after LDLT, and thereafter gradually recovered.

**Conclusion:** High IMAC and low PMI were closely involved with posttransplant mortality. Long-term postoperative nutritional therapy and rehabilitation are crucial.

#### OP 165

### 'Paired Kidney Exchange' Program – Single Czech Institution Experience with 26 Paired Transplants Since 2011

Jiří Froněk, Janoušek, Tomas Marada, Slavickova, Zamecnikova, Chromy, Viklicky

Transplant Surgery Department, Institute for Clinical and Experimental Medicine, Prague, Czech Republic

**Background:** Kidney paired donation has been at first performed at our institution in 2003. Until 2011 only four 2-way exchanges were performed. Since 2011 the kidney exchange started at our institution as coordinated program. All the incompatible pairs are collected prospectively in the database. The matching run is performed every three months with on average 20 pairs included for matching.

**Material and Methods:** There were in total 34 paired live kidney transplants (KTx) performed in Czech since 2003, of those 26 since 2011, those we assessed. There were eight 2-way, one 4-way, two 5-way and one 6-way domino kidney paired exchanges performed, two altruistic samaritan donors entered the scheme. There were 5 cases of re-transplant, of those four second and one third KTx, some 15% paired KTx. Two surgeons performed all the transplants, one did all the minimally invasive nephrectomies using Hand Assisted Retroperitoneoscopic (HARS) live donor nephrectomy technique.

**Result:** Mean recipient age was 45.7 years (SD 11.9), four patients had their second and one third transplant done, mean SCr on discharge was 126  $\mu\text{mol/l}$  (SD 48.5), equivalent of 1.43 mg/dl (SD 0.55). There was one case of delayed graft

function due to early rejection observed. The program did help some 26 patients so far, the database includes around 40 pairs to the date.

**Conclusion:** Kidney paired donation program can be run with success even at single institution, this limits some of the highly sensitised patients as well as blood group 0 recipients. Also, the bigger is the group for matching, the higher might be the number of transplants. Possible cooperation within European centres would help to treat more patients with the best treatment modality – live donor kidney transplantation.

#### OP 166

### Kidney Paired Donation Program Can Be Run with Success Even at Single Institution, This Limits Some of The Highly Sensitised Patients as Well as Blood Group 0 Recipients. Also, the Bigger Is the Group

Jiří Froněk, Janoušek, Oliverius, Kučera, Trunečka

Transplant Surgery Department, Institute for Clinical and Experimental Medicine, Prague, Czech Republic

**Background:** Split liver transplantation can help with organ shortage and serve some of the small adults and pediatric recipients. There are some 200 DBD donors in Czech every year, very few pediatric ones. The pediatric recipients used to wait for either pediatric graft, only few received reduced graft. For these reasons the pediatric recipients used to wait for over 6 months, within last 5 years for nearly 9 months for transplant, some died while waiting.

**Material and Methods:** Retrospective analysis of 10 split liver procedures performed at our institution. Initial experience with split liver at our institution in 1998 included two classical splits and three transplants, two pediatric recipients died from graft dysfunction early after the transplant, one adult lived for 6 years. One classical split was done in 2009, both recipients are alive. Split liver program has been set up at our unit in 2013.

**Result:** There were 7 split liver procedures performed in 2013, of those 6 classical for child and adult, one full for 2 adults. All split procedures we performed in vivo. All recipients except one child are alive and well, all the 13/14 recipients developed prompt graft function. Some 4 had biliary leak, treated with stent placement in 1 case. In one case we did full split for two fulminant liver failure patients, husband and wife who poisoned themselves by mistake with mushroom *amanita phalloides*. One of the recipients was AB0i on top of that, developed biliary leak, the original choledocho-choledocho anastomosis was converted to hepaticojejunostomy one week after the transplant. During 2013 the average waiting time for pediatric recipients has changed from 271 down to 13 days. There is only one child listed for transplantation nowadays.

**Conclusion:** Split liver transplantation has been introduced as program at our institution quite late. It helped to decrease significantly the waiting time for pediatric transplant,

it may help to avoid deaths on the waiting list as well. Even full split liver for two adults is doable, in case of two fulminant liver failure patients it served both successfully.

#### OP 167

### Stimulative Effect of Allogenic Transplanted Sertoli Cells' Culture on Cryptorchid Testes on Animal Model

Gennady V. Kuzin, Maria V. Kamneva,  
Rajoo Kogula Kumar, Nika N. Nozhina, Dmitry L. Titarov,  
Eleonora D. Smirnova

People's Friendship University of Russia, Moscow, Russian Federation

**Background:** It is known that about half of the cases of infertility in marriages are caused by the male of which about a third is caused by cryptorchidism by frequency [Toppari J, Kaleva M (1999)].

The aim of our research is a study of influence undifferentiated Sertoli cells' culture on a spermatogenesis after their allogenic transplantation into testicular tissue of cryptorchid testes.

**Material and Methods:** The study was carried out on 47 juvenile outbred white male rats at age of 20 days. The animals were divided into 3 groups: 1 (10 rats), 2 (10 rats) and 3 (27 rats). In all groups we performed testes' displacement into abdominal cavity, fixed it to the front abdominal wall and leaved it there in range from 21 days to 90 days depending on the group. Then we made orchiopexy - the operation to descend the testes into the scrotum. A duration of exposition of the rats' testes of group 1 was 21 days, in group 2 - 30 days, in group 3 - 90 days. In subgroup A of group 3 we injected culture of Sertoli cells in Dulbecco modified Eagles medium (DMEM) 1,2 mm cells/100 microliter in each.

**Result:** There was medium-scale restoration of spermatogenesis in convoluted seminiferous tubules in group 1 (50,413% average on 28th day after orchiopexy). We could see a lack of reversibility of degenerative processes in the animals' gonads from group 2 (0%). In group 3 restoration of spermatogenesis to the stage of spermatozoon's was only in subgroup A (32,51%) compare to another subgroups (1,203%±0,311%).

**Conclusion:** Culture of allogenic Sertoli cells cause stimulative effects on restoration of spermatogenesis even in irreversible cases.

#### OP 168

### Transcriptional Profile of C-Kit Positive Cardiac Stem-Progenitor Cells

Thomas Theologou<sup>1</sup>, Mark Field<sup>1</sup>, Aung Oo<sup>1</sup>,  
Manoj Kuduvali<sup>2</sup>, Margarita Perez-Casal<sup>1</sup>,  
Georgina Ellison<sup>2</sup>, Danielle Torella<sup>3</sup>,  
Bernardo Nadal-Ginard<sup>3</sup>

<sup>1</sup> Liverpool Heart and Chest Hospital, Liverpool, United Kingdom

<sup>2</sup> Stem Cell & Molecular Physiology laboratory Research Institute for Sport & Exercise Sciences Liverpool John Moores University, Liverpool L3 3AF, UK, Liverpool, United Kingdom

<sup>3</sup> Stem Cell & Molecular Physiology laboratory Research Institute for Sport & Exercise Sciences Liverpool John Moore University, Liverpool L3 3AF, UK, Liverpool, United Kingdom

**Background:** The human myocardium harbours a population of resident endogenous cardiac stem cells (eCSCs). They express the stem cell factor receptor, c-kit, are distributed throughout the myocardium, are clonogenic, self-renewing and multi-potent. The objective of this study is to determine whether c-kitpos eCSCs isolated from the different cardiac chambers have a distinct transcriptional profile depending on the chamber of origin.

**Material and Methods:** C-kitpos eCSCs were isolated by enzymatic digestion and purified by Magnetic Activated Cell Sorting. mRNA was isolated using Qiagen® microRNA kit, and then reverse transcribed using first strand cDNA synthesis with random hexamers. qRT-PCR was performed using SYBR Green on a MyIQ thermocycler for specific genes representative of the primary and secondary heart field, and their chamber of origin developmental program.

**Result:** From the 15 samples the c-kitpos eCSCs isolated are distributed throughout the myocardium. Transcriptional analysis revealed that all the 4 cardiac chambers host c-kitpos eCSCs. These express most of the genes from the first and secondary heart field. Expression of transcripts for c-kit, Foxh1, Hand1, Hand2, Pitx-2, Tbx-5, Tbx-20, Hrt1, Hrt2, Fgf-8, Fgf-10, and Isl-1 were found at differential levels.

**Conclusion:** This study is the first to show in humans that c-kitpos eCSCs don't appear to have a 'chamber-specific' transcript footprint, and are therefore interchangeable between cardiac chambers. The eCSCs isolated from all the 4 cardiac chambers seems that they have a universal genetical profile despite their chamber of origin.



## OP 169

**Changes in Plasma Amino Acid Levels: A Way to Diagnose Intestinal Rejection**

Yandza Thierry<sup>1</sup>, Neveux Nathalie<sup>2</sup>,  
Saint-Paul Marie Christine<sup>3</sup>, Berdah Stéphane<sup>4</sup>,  
Cynober Luc<sup>2</sup>, Gugenheim Jean<sup>5</sup>, Hébuterne Xavier<sup>6</sup>

<sup>1</sup> Centre Hospitalier Universitaire de Nice, Unité de Greffes Intestinales, Hôpital l'Archet 2, INSERM U576, Faculté de Médecine, Nice, France

<sup>2</sup> Université Paris Descartes, Laboratoire de Biologie de la Nutrition, EA 2498, Faculté de Pharmacie, Service de Biochimie, Hôpitaux Hôtel Dieu et Cochin, AP-HP, Paris, France

<sup>3</sup> Centre Hospitalier Universitaire de Nice, Service d'Anatomo-Pathologie, Hôpital Pasteur, Nice, France

<sup>4</sup> Centre Hospitalier Universitaire de Marseille, Service de Chirurgie Digestive, Hôpital Nord, AP-HM, Marseille, France

<sup>5</sup> Centre Hospitalier Universitaire de Nice, Service de Chirurgie Digestive, Hôpital l'Archet 2, Nice, France

<sup>6</sup> Centre Hospitalier Universitaire de Nice, Service de Gastroentérologie, Hôpital l'Archet 2, INSERM ERI-21/EA 4319, Faculté de Médecine, Nice, France

**Background:** There is to date no reliable biomarker of intestinal acute cellular rejection (ACR). As small intestine is the primary organ responsible for terminal digestion of proteins and absorption of amino acids, our objective was to determine whether plasma amino acids may be used as markers of ACR using a model of allogenic small bowel transplantation (SBT) in pigs.

**Material and Methods:** Pigs were divided into group 1 (n=8; controls; segmental autotransplantation), group 2 (n=8; allotransplantation; non-immunosuppressed recipients), and group 3 (n=8; allotransplantation; immunosuppressed recipients). Intestinal specimens for histological studies were obtained at the end of cold flushing (T0), and on postoperative day 8 (T1). Plasma amino acids levels were measured on samples harvested at T0 and T1.

**Result:** In groups 1 and 3, intestinal histology revealed no significant changes between T0 and T1 specimens. In group 2, graft histology revealed moderate to severe rejection on T1 specimens. Seven plasma amino acids were significantly correlated with the occurrence of acute intestinal rejection: phenylalanine, aspartate, citrulline, taurine, glycine, isoleucine, and tyrosine. For each marker, a cut-off level which would be helpful for clinical use to decide between rejection or not was determined and a score was built. An ACR was found in 100% of cases when the score was equal to 4 (Se=Sp=100%; AUC=1).

**Conclusion:** Our study suggests for the first time that seven plasma amino acid levels may be used in combination as markers of intestinal rejection.

## OP 170

**Lidocaine Preserves the Endothelial Glycocalyx in a Lung Transplant Model**

Lisa Rancan<sup>1</sup>, Sergio D. Paredes<sup>2</sup>, Cruz Garcia<sup>1</sup>,  
Guillermo Sánchez Pedrosa<sup>3</sup>, Gabriel Cusati<sup>3</sup>,  
Ignacio Garutti<sup>3</sup>, Carlos Simón<sup>4</sup>, Elena Vara<sup>1</sup>

<sup>1</sup> Department of Biochemistry and Molecular Biology III, School of Medicine, Complutense University of Madrid, Madrid, Spain

<sup>2</sup> Department of Physiology, School of Medicine, Complutense University of Madrid, Madrid, Spain

<sup>3</sup> Service of Anaesthesiology and Rehabilitation, Gregorio Marañón University General Hospital, Madrid, Spain

<sup>4</sup> Service of Thoracic Surgery, Gregorio Marañón University General Hospital, Madrid, Spain

**Background:** Healthy vascular endothelium is coated by the glycocalyx, important in endothelial functions, but destroyed by ischaemia/reperfusion (I/R). Lidocaine is a local anesthetic which has antiinflammatory activity. The influence of lidocaine on glycocalyx structure has not been investigated. This study aimed to investigate a possible protective effect of lidocaine on lung glycocalyx injury secondary to I/R injury.

**Material and Methods:** Two groups (lidocaine and control) of 6 pigs each were submitted to a left lung autotransplant. All groups received the same anaesthetic induction. In addition animals of lidocaine group received a continuous IV administration of lidocaine during surgery. In order to measure the levels of inflammatory (ICAM-1, VCAM-1, IL-1 $\beta$ , TNF $\alpha$ ), anti-inflammatory (IL10) and glycocalyx degradation (syndecan-1) markers, blood and lung tissue samples were taken: 1) 5 minutes before pulmonary artery clamp (PPn), 2) 5 min before reperfusion (PRp), 3) 30 min post-reperfusion (PR30), 4) 60 min post-reperfusion (PR60).

**Result:** In lung samples, levels of all inflammatory markers were markedly higher (p<0.05) at PR30 timepoint compared to PPn and PRp values. This increase was higher at PR60. I/R decreased IL10 expression. I/R increased syndecan-1 and ICAM concentrations in plasma (p<0.05). Syndecan-1 levels decreased in the lung (p<0.05). These effects were partially blocked by lidocaine.

**Conclusion:** These results suggest that lidocaine prevents I/R-induced glycocalyx injury in a lung autotransplant model through decreases in proinflammatory cytokines and adhesion molecules. This strategy of lidocaine administration might be a prospective management for preventing lung injury secondary to I/R.

## OP 171

**Laparoscopic Appendectomy for Perforated or Gangrenous Appendicitis: Is Intraoperative Irrigation Mandatory?**

Tadao Kubota, Kunihisa Miyazaki, Ken Mizokami, Yukihiro Kanda, Kenji Okumura

Department of General Surgery Tokyo Bay Medical Center, Urayasu, Japan

**Background:** Laparoscopic appendectomy is one of most common surgery. In case of perforated or gangrenous appendicitis, intraoperative irrigation (IOI) has been widely used as a routine manner to prevent post operative intraperitoneal abscess (POIPA). Many surgeons believe it is effective and mandatory. However a recent study revealed there are no difference between IOI group and non-IOI group.

**Material and Methods:** We reviewed our cases of perforated and gangrenous appendicitis which were treated by laparoscopic appendectomy in our institute from April 2012 to March 2013. They were divided into two groups, one is IOI group, the other is non-IOI group. Age, Sex, Time to admission from the onset, Time to surgery from the admission, Operation time, Complications and duration of the hospitalization of the both groups were examined.

**Result:** There were sixty-three cases, twenty were IOI group and forty-three were non-IOI group. There were three POIPA cases in IOI group. On the other hand, no case in non-IOI group. Operation time and duration of the hospitalization were longer in IOI group statistically.

**Conclusion:** In our experience, no benefits were found in IOI group. Although this was small sized retrospective study, our results were consistent with the latest RCT1) result. We think IOI for perforated or gangrenous appendicitis in laparoscopic appendectomy is not effective and we should abandon the method.

1) St Peter SD, Adibe OO, Iqbal CW, et al. Irrigation versus suction alone during laparoscopic appendectomy for perforated appendicitis: a prospective randomized trial. *Ann Surg.* 2012; 256: 581-585

## OP 172

**Predictors of Mortality in Adult Patients with Perforation Peritonitis**

Yovcho Yovtchev<sup>1</sup>, Georgy Minkov<sup>2</sup>, Stoian Nikolov<sup>1</sup>, Maya Gulubova<sup>3</sup>

<sup>1</sup> University Hospital "Prof St Kirkovich", Department of General Surgery, Stara Zagora, Bulgaria

<sup>2</sup> University Hospital "Prof St Kirkovich", Department of General Surgery, Stara Zagora, Bulgaria

<sup>3</sup> Medical faculty, Department of Pathology, Stara Zagora, Bulgaria

**Background:** The objective of our study was to evaluate the predictors of mortality, preoperatively, for risk stratification of the patients and institution of an early goal-directed therapy.

**Material and Methods:** Two hundred and thirty-five consecutive patients presenting with perforation peritonitis, in the age group of 18–82 years scheduled for emergency laparotomy were studied prospectively. The parameters studied were age and sex of the patients, duration of symptoms, delay in initiating surgical intervention, and preoperative biochemical parameters \hemoglobin, random blood sugar, blood urea, serum creatinine, and Mannheim peritonitis index.

**Result:** We encountered a mortality of 14.6% in our study. Multiple linear (enter) regression identified the age, duration of symptoms, preoperative blood sugar levels, blood urea, serum creatinine levels, Mannheim Peritonitis Index, and the delay in instituting surgical intervention as independent predictors of mortality. Hyperlactatemia, acidosis and base excess were not found to be associated with mortality.

**Conclusion:** Routine biochemical investigations, delay in presentation, and surgical intervention are good predictors of mortality. Recognizing such patients early may help the surgeons and anesthesiologists in risk stratification and in providing an early goal-directed therapy.

## OP 173

**One Year Review of Emergency CT Scans Performed in a University Hospital**

Michael E Kelly, Anna Heeney, Des C Winter

St Vincent's University Hospital, Dublin, Ireland

**Background:** The role of computed tomography (CT) in acute abdominal illnesses has increased significantly in recent years. However, there remains a considerable variation in indications for scanning. In addition, the improved quality of CT has resulted in an increased detection of incidental findings. While some have clinical significance, many are trivial with appreciable investigatory cost implications.

**Material and Methods:** We performed a retrospective review of all emergency abdominal CT scans performed at a

tertiary referral university-affiliated hospital from 1st January 2012 to 31st December 2012. Our objective was to evaluate the prevalence of incidental findings detected on CT scans, and the need for further diagnostics to the complete work-up.

**Result:** During the study period, there were 1,274 abdominal CT scans performed in an emergency setting. Main indications for scanning included; 85.9% (n=1,095) had abdominal pain, 22.3% (n=284) had vomiting 16% (n=204) had altered bowel habit, while 11.3% (n=144) had a history of trauma. 20.1% (n=256) had incidental findings detected. (See Table 1. For breakdown of incidental findings). Recommended follow-up diagnostics by radiology department included; 120 targeted CT scans, 32 colonoscopies, 32 targeted magnetic resonance imaging (MRI), 8 targeted ultrasounds, 5 gastroscopies and 4 cystoscopies.

Incidental Finding	Number detected
Colorectal mass	35
Renal lesion	35
Abdominal aortic aneurysm	32
Adrenal lesion	32
Pancreatic lesion	27
Adnexal mass	12
Retroperitoneal mass	10
Liver lesion	10
Suspected lymphoma	10
Pulmonary nodule/mass	10
Bladder mass	6
Common Iliac aneurysm	6
Splenic aneurysm	6
Stomach lesion	5
Ovarian mass	5
Pulmonary embolism	4
Superior mesenteric stenosis	4
Gallbladder mass	4
IVC thrombus	3

**Conclusion:** Routine biochemical investigations, delay in presentation, and surgical intervention are good predictors of mortality. Recognizing such patients early may help the surgeons and anesthesiologists in risk stratification and in providing an early goal-directed therapy.

## OP 174

### The Appropriateness of Abdominal X-Rays in Surgical Emergencies

*Jasmeet Jhaj, Surajit Sinha, Sangram Patil, Mark Puckett*

Torbay Hospital, Devon, Torquay, United Kingdom

**Background:** The abdominal x-ray (AXR) is commonly ordered in the investigation of the acute abdomen. In most cases it produces limited clinical information and rarely alters management when used alone, but still it is requested sometimes routinely. The unnecessary use of AXRs has a significant financial implication and more importantly unnecessary radiation exposure to the patient (The AXR has 50 times more radiation than a CXR).

**Material and Methods:** The case notes, x-ray request cards and abdominal radiographs were retrospectively analysed for all patients admitted to the acute surgical take at a district general hospital over a four week period. The clinical diagnosis in the patient's notes was compared to that stated on the AXR request card to determine the validity of the request according to the Royal College of Radiologists guidelines. A local guideline was developed following the audit and a re-audit was carried out to assess the degree of adherence to the local guideline.

**Result:** Before the local guideline introduction 127 AXRs were requested, whereas after the guideline was introduced this number decreased to 114. The number of initial diagnoses that did not meet the AXR guideline criteria decreased from 58% before the local guideline was introduced to 37% after. The proportion of negative AXRs also decreased from 79% to 57%.

**Conclusion:** Implementing a specifically designed local guideline for the request of AXRs in surgical emergencies reduces the number of requests and the rate of inappropriate requests; leading to reduced costs for the hospital and reduced radiation exposure for the patients.

## OP 175

### How Does Alcohol Affect Admissions to a Major Trauma Centre?

*Jasmeet Jhaj, Wendy Teo, Gregoris Kambouroglou*

John Radcliffe Hospital, Trauma Unit, Oxford, United Kingdom

**Background:** In the UK trauma is the leading cause of death in young adults. There are 20,000 major trauma incidents in England each year, resulting in 5,400 deaths. Alcohol is known to be a major factor affecting the incidence of traumatic injury.

**Material and Methods:** We retrospectively analysed all acute trauma admissions to our trauma unit over a six month period. Patients from the ages of 16-65 inclusive were

included.

**Result:** 406 patients were identified. 12% had consumed alcohol prior to the trauma taking place and 88% had no record of alcohol consumption. The mean length of stay was higher in the alcohol group at 8.4 days and 8 days in the no alcohol group. The most common site of fracture was the ankle in the alcohol group with 29% compared with 14% in the no alcohol group. The mean age was similar in both groups with 43 years in the alcohol group and 41 years in the no alcohol group. More interestingly 15% of patients had previous hospital admissions for alcohol related injury.

**Conclusion:** Over six months 15% of our admissions had at least one previous admission for alcohol related trauma. A study done in another A&E department of a major trauma centre has shown a reduction in the number of alcohol related re-admissions when using a proforma to identify at risk patients and referring them to an alcohol nurse specialist. This similar approach could be adopted in our trauma centre to help reduce alcohol related re-admission rates.

#### OP 176

### Limberg Flap Versus Bascom Cleft Lift Techniques For Pilonidal Sinus

Burak Kavlakoglu

Veni Vidi Private Hospital, Ankara, Turkey

**Background:** Pilonidal disease is very common and is most often seen in young men in Turkey. Although too many methods are described for surgical treatment, recurrence rates are high. Recurrence rates may be reduced after lifting the natal cleft. This retrospective study was designed to compare the postoperative healing and recurrence rates between Limberg flap and Bascom cleft lift techniques.

**Material and Methods:** A group of 50 patients were included in the study. Retrospective data were recorded, including early postoperative complications, quality of life and pain scores, length of time for healing and primary healing rate, length of hospital stay, early recurrences and excised tissue weight.

**Result:** Patients in the Bascom cleft lift group had shorter operation time, less excised tissue weight, better pain score, and less limitation of activity on postoperative day 7. There was no difference between groups for the other criteria statistically.

**Conclusion:** Both techniques provided good results. However Bascom cleft lift technique is more effective and reliable. It is applicable to all pilonidal sinus cases with low complication rates and high satisfaction scores because of rapid and excellent recovery.

#### OP 177

### Comparing Three Repair Method for the Treatment of Ingrown Nail

Ergin Etkin, Vahit Onur Gul, Serkan Ahioglu

Edremit Military Hospital, Balikesir, Turkey

**Background:** Ingrowing toenail is a common problem affecting mainly adolescents and young adults, with a male predominance of 3:1. Patients commonly present with pain in the affected nail but with progression, drainage, infection, and difficulty walking occur. There are various surgical treatment modalities for ingrowing nail. Retrospective analyses was performed on 146 ingrown tail patients treated with surgically between 2008 and 2011.

**Material and Methods:** Retrospective analyses was performed of 146 ingrown tail patients treated with surgically between 2008 and 2011. Over a 2-year period 3 various surgical method were carried out on 280 patients. The aim of our study was to compare the surgical methods for treatment of ingrowing toe nail. The patients were divided into three groups. Group 1 (n=56) were treated with wedge resection and curettage, group 2 (n=31) were treated with wedge resection and with chemical matricectomy (segmental phenolisation) and group 3 (n=33) were treated with wedge resection and cauterization.

**Result:** There were significantly lower recurrence were in Group 2 (n=1, %3,2) according the Group 1 (n=3, %5,4) and Group 3 (n=3, %9) (p<0.001). The technique is easy to perform and is associated with little morbidity. We conclude that phenol cauterization is an excellent surgical method for the treatment of ingrowing toe nail because of its simplicity, low morbidity and high success rate.

**Conclusion:** We conclude that wedge resection with chemical matricectomy with 80 per cent phenol should replace surgical ablation in the treatment of ingrown toenails.

#### OP 178

### Analysis of Service Provision for Patients with Nail Bed Injuries

Zita M Jessop, Matthew Gardiner, Sonya Gardiner, Neil Toft

Royal Free Hospital, London, United Kingdom

**Background:** Although viewed as minor procedures, nail bed repairs take up a significant amount of time and resources. Our aim was to assess service delivery from referral to discharge.

**Material and Methods:** This was a retrospective review of patients with nail bed injuries identified by hospital episode statistics. Data was collected on delays in treatment, financial performance, and patient reported outcomes via a telephone questionnaire.

**Result:** Over one month 62 of 310 hand trauma cases

underwent nail bed repair. Patients were seen in trauma clinic one day after referral, waited two days (0-4 days) for an operation and 6 days for a follow up clinic (0-12 days), attending 2.6 appointments. We had a 32% questionnaire response rate; 11% of appointments were not attended, most common reason being inability to get time off work and main suggestion was reducing waiting time for an operation. Two cases were performed in clinic and 11 were coded wrongly resulting in a lower tariff estimated to cost the department £36,000 per year.

**Conclusion:** The data formed the basis of a business case for introducing an outpatient minor operating theatre which will streamline service provision and increase available theatre time.

#### OP 179

### Evidence-Based Management of Sacrococcygeal Pilonidal Sinus

Aly Saber

Port-Fouad General Hospital, Port-Fouad, Port-Said, Port-Said, Egypt

**Background:** A best evidence topic was arranged according to the previously accepted structured protocol. The question addressed here was if flap construction after excision of pilonidal sinus tracks showed difference in functional outcome compared to simple closure.

**Material and Methods:** A total of 118 papers were found using the reported search, six represented the best evidence to answer the clinical question. The authors, journal, date and country of publication, patient group, study type, outcomes and key results of these papers are tabulated.

**Result:** Of these six studies, one was one was systematic review of prospective randomized controlled trials and the other five were prospective randomized controlled studies. Four studies showed that flap construction was not superior to simple primary closure techniques in terms of outcome and patient satisfaction. The other two reported that excision and flap construction was better than excision and primary repair in treatment of pilonidal disease.

**Conclusion:** Although different surgical approaches have been used to manage sacrococcygeal pilonidal sinus, none of these approaches eliminate the postoperative morbidity and there is no agreement on the gold standard surgical treatment. Any procedure should stress well on other parameters than postoperative morbidity and recurrence such as technical simplicity, hospitalization period required, and off work period. Comparative studies of the various procedures are being increasingly published for documenting the relative superiority of one over the other. For simple non-recurrent pilonidal sinus, less invasive surgery with limited excision and primary closure could be enough.

#### OP 180

### Minimal Invasive Surgery for Pilonidal Sinus; Comprasion of Two Methods

Vahit Onur Gul<sup>1</sup>, Mehmet Ince<sup>2</sup>, Serhat Ozer<sup>3</sup>, Serkan Ahiloglu<sup>1</sup>, Ergin Etkin<sup>1</sup>

<sup>1</sup> Edremit Military Hospital General Surgery Department, Balikesir, Turkey

<sup>2</sup> GMMA Emergency Department, Ankara, Turkey

<sup>3</sup> Konya Military Hospital General Surgery Department, Konya, Turkey

**Background:** Pilonidal Sinus has a high incidence in the community, is especially seen among young males. In the surgical treatment of pilonidal sinus disease many surgical procedures have been described. In this study, our aim is, to compare recurrence rates, recovery and return back to work periods and complication rates of patients who underwent Sinusectomy and Limberg Flap method with minimal excision of Pilonidal sinus tract.

**Material and Methods:** In this study, between 2008–2013 years, 246 Pilonidal sinus diagnosed. sinusectomy method was applied to 127 patients (Group 1), and Limberg flap method was applied to 119 patients (Group 2). Groups were compared according to gender and age, postoperative abscess, seroma development, wound dehiscence, flap necrosis, dressing time, early and late recurrence, time to start to work again, and hospitalization period. Recurrence cases and complicated pilonidal sinus cases were excluded from the study.

**Result:** Early and late recurrence rates of groups were observed as 2.36% in group 1, and 3.36% in group 2. There was no statistically significant difference between the technique used and recurrence. Also there was no statistically significant difference in terms of complications ( $p>0,05$ ). However, the hospitalization time, dressing time, time to start to work again for group 1 was observed statistically significantly better than group 2.

**Conclusion:** This study lead us limited excision of pilonidal sinus tract should have considered priority in pilonidal sinus treatment which ensures, early recovery, low recurrence rate and fast return to normal activity.

## OP 181

**The Role of Ryanodine Receptors in Wound Healing**

Döníz Degovics<sup>1</sup>, Petra Hartmann<sup>2</sup>, István Balázs Németh<sup>1</sup>, Noémi Árva-Nagy<sup>1</sup>, Lajos Kemény<sup>1</sup>, Gábor Erős<sup>3</sup>

<sup>1</sup> Department of Dermatology and Allergology, University of Szeged, Szeged, Hungary

<sup>2</sup> Institute of Surgical Research, University of Szeged, Szeged, Hungary

<sup>3</sup> Department of Dermatology and Allergology, University of Szeged, Department of Oral Biology and Experimental Dental Research, University of Szeged, Szeged, Hungary

**Background:** Ryanodine receptors are calcium channels mediating calcium-induced calcium release. It is known that ryanodine receptors influence keratinocyte differentiation and barrier homeostasis. Our goal was to examine the in vivo role of ryanodine receptors in the healing of full-thickness dermal wounds.

**Material and Methods:** The experiments were performed on 60 male SKH-1 hairless mice using skin fold chambers in the dorsal region. A standardized (4 mm diameter) circular wound was made on one side of the skin fold. Photographs were taken for the determination of wound closure rate during the 20-days observation period. In control group 1 (n=20) the wound was treated with sterile saline, the animals in group 2 (n=20) received ryanodine receptor agonist 4-chloro-m-cresol topically (2.5 mM), while in group 3 (n=20) dantrolene, an antagonist of ryanodine receptors was applied topically (100µM). Different parameters of microcirculation were monitored by means of intravital videomicroscopy. Tissue biopsies were taken for routine histology after days 4, 12 and 20, respectively.

**Result:** Treatment with 4-chloro-m-cresol did not influence the studied parameters, but dantrolene accelerated the wound closure rate and improved both epidermal and dermal regeneration. The antagonism of ryanodine receptors increased the vessel diameters during the process of healing and increased the blood flow in the capillaries at all times of measurement. Moreover, application of dantrolene decreased leukocyte-endothelial cell interactions during the inflammatory phase.

**Conclusion:** Inhibition of ryanodine receptor-mediated effects positively influences skin healing. Thus, dantrolene may be of therapeutic potential in the treatment of wounds. (The study was supported by TÁMOP-4.2.2.A-11/1/KONV-2012-0035.)

## OP 182

**Evaluation of Early Wound Healing in Gastrojejunostomies and Colocolostomies Formed Using a Novel Three Row Variable Height Circular Stapler in Canines**

Marisha L. Godek, Elizabeth Contini, Andrew Miesse, Patrick Mozdziej, Michael Soltz, Dwight G. Bronson

Covidien Surgical Solutions, North Haven, United States

**Background:** This investigation evaluated a novel three row variable height circular surgical stapler in sites with similar (colocolonic) and non-similar (gastrojejunal) thicknesses of apposed tissue, allowing interrogation of early anastomotic healing events.

**Material and Methods:** One gastrojejunostomy and two colocolostomies were made per subject utilizing a novel three row variable height circular stapler or a control DST Series™ EEA™; evaluations occurred at post-operative days 3, 10, 21 and 28 using select complementary interrogative methods including radiography, endoscopy, gross observations, tissue imaging/measurement and histopathology. Each anastomotic site was excised and anastomotic index was calculated; staple formation was also analyzed. Subject weight loss was also tracked.

**Result:** All animals survived the surgeries with no adverse events, and post-operative percent weight loss ranged from 0-13.8%. Radiography provided insight to the location and number of staples per staple line. Fluoroscopy was beneficial when used in combination with the endoscope, allowing stoma visualization, verification of stoma patency and real time assessment of tissue health and healing. Anastomotic index calculations revealed similar results for both devices; notably, the novel device showed less relative contraction in the staple lines placed in the colon by Day 28. Histopathology results indicated adequate to excellent healing responses over the same time frame.

**Conclusion:** Based on the series of in vivo and post-mortem evaluation criteria presented here, the novel three row variable height yielded results comparable to the "gold standard" DST Series™ EEA™ device in this model, which assessed tissue apposition at anastomoses with equivalent and non-equivalent tissue thicknesses.

## OP 183

**A Novel Method of Retraction in Minimal Access Surgery Using Bioadhesive Films**

Saud Khalid Aldeghaither<sup>1</sup>, Benjie Tang<sup>2</sup>, Donald Mclean<sup>3</sup>, Emma Wright<sup>4</sup>, Afshin Alijani<sup>2</sup>, Ian Tait<sup>2</sup>, Sir Alfred Cuschieri<sup>3</sup>

<sup>1</sup> King Khalid University Hospital, Riyadh, Saudi Arabia

<sup>2</sup> Cuschieri Skills Centre, University of Dundee, Dundee, United Kingdom

<sup>3</sup> Institute of Medical Science and Technology, University of Dundee, Dundee, United Kingdom

<sup>4</sup> University of St Andrews, St Andrews, United Kingdom

**Background:** Conventional laparoscopic instruments that are used for liver retraction are not suitable for tissue retraction in Lapro-endoscopic single site (LESS) and natural orifice trans-luminal surgery (NOTES) technologies. Bioadhesive retraction systems may overcome the ergonomic difficulties associated with LESS and NOTES soft tissue and solid organ retraction.

**Material and Methods:** Studies were performed in an ex-vivo porcine liver model where the liver was placed in a scaffold designed to simulate the anatomy of the human liver in the supine position. Body temperature and moisture simulation was achieved by placing the scaffold in a water-bath at 37°C. Optimal liver retraction and gallbladder exposure were defined by fixing three coloured labels to the gallbladder fundus, infundibulum and biliary tree.

The C3 polymer was reinforced by a plastic disk, then placed over the liver surface. The retraction forces were applied and measured by the Instron connected to the C3 polymer disks by a surgical thread. In all experiments a retraction acceleration force of 1N/sec was applied, to determine the biological tissue adhesion and retraction properties of the C3 polymer.

**Result:** The mean force required to provide optimal surgical exposure was 4.85N (SD 0.63); and the average duration of polymer adhesion with good liver retraction was 130 minutes (range 17-240 minutes). Optimal C3 polymer adhesion to the liver was reached after a 30s tissue application time.

**Conclusion:** The adhesion and retraction properties of C3 polymers are encouraging. Bioadhesive films may provide a novel method of organ and tissue retraction in minimal access surgery.

## OP 184

**Effect of Dimetindene Maleate in a Single and a Continuous Manner of Administration in the Prevention of Postoperative Adhesion Formation. An Experimental Study**

Gregory Christodoulidis<sup>1</sup>, Michael Spyridakis<sup>1</sup>, Efhimia Asproдини<sup>2</sup>, Evangelos Kouvaras<sup>2</sup>, Konstantinos Tepetes<sup>1</sup>

<sup>1</sup> General Surgery Department, University Hospital of Larisa, Larisa, Greece

<sup>2</sup> Pharmacology Department, University Hospital of Larisa, Larisa, Greece

**Background:** To date, no single method has been used successfully in eliminating peritoneal adhesion formation after major abdominal surgery. This study evaluated the individual and continuous administrative effect of an antihistamine drug, dimetindene maleate, in the prevention of adhesion development following surgical trauma

**Material and Methods:** De novo experimental adhesions were induced by standardized trauma of the peritoneum and large bowel in 36 New Zealand White rabbits. The animals were randomized into three groups receiving intraperitoneal saline, intravenous dimetindene maleate (0.1 mg/kg) and dimetindene maleate in a continuous administration manner the 1st, 3rd, 5th and 7th postoperative days. Ten days later, adhesion scores and incidence were assessed by two independent surgeons, and surface area by computer-aided planimetry.

**Result:** Treatment with either dimetindene maleate in a single dose or dimetindene maleate in a continuous administrative manner significantly reduced adhesion scores and increased the incidence of adhesion-free animals in an equipotent manner. The effect of treatment on 1st, 3rd, 5th and 7th day with dimetindene maleate, upon severity, incidence and surface area of adhesions was more pronounced than that of a single dose.

**Conclusion:** Dimetindene maleate may be used safely and efficaciously to prevent surgically induced adhesions.

## OP 185

**A Possible Approach to Meet Sils Technical Demands: A New Laparo-Endoscopic Device and Camera System**

László Csiky<sup>1</sup>, László Bihari<sup>2</sup>, Zoltán Tomcsik<sup>3</sup>, György Wéber<sup>4</sup>

<sup>1</sup> Istenhegyi Private Clinic, Budapest, Hungary

<sup>2</sup> Semmelweis University, Department of Transplantation and Surgery, Budapest, Hungary

<sup>3</sup> Jósza András Teaching County Hospital, Department of General Surgery, Nyíregyháza, Hungary

<sup>4</sup> Semmelweis University, Department of Surgical Research and Techniques, Budapest, Hungary

**Background:** Single Port Laparoscopic Surgery (SILS) as an already accepted field of MIS still fights with unsolved basic technical issues: limited triangulation, limited manoeuvrability, lack of sufficient strength. We present our Laparo-Endoscopic System (LES) prototype specially constructed for SILS procedures with the aim to answer these challenges. The basic concepts of the LES and similar surgical instruments of other major centers are compared and discussed.

**Material and Methods:** After a brief review of the existing new technical solutions (EOS, DDES, EndoSamurai, Anubiscope, RealHand HD instruments, etc.), we demonstrate the features and abilities of the LES through dry and animal lab tests. Unlike the recent trends, the LES utilizes a sideward-approach to the operative field, which consecutively necessitates the development of novel instrumentation. By evaluating the features of this system, we intend to estimate its possible role among the new MIS techniques.

**Result:** According to our preliminary findings, the LES is able to improve triangulation through the arbitrarily adjustable triangulation distances between the LES-instruments, and to replicate the movements of the conventional laparoscopic technique. For all these the learning curve is relatively short, and the handling of the instruments are fairly simple.

**Conclusion:** We believe that the sideward-approach concept combined with the adjustable triangulation ability and the laparoscopy-like motion patterns are well worth to proceed with our developmental work.

## OP 186

**Electrospun, Cross-Linked Poly(Succinimide) Based Biopolymer for Biomedical Application**

Titanilla Dankó<sup>1</sup>, Kristóf Molnár<sup>2</sup>, László Ragó<sup>2</sup>, Orsolya Sára Bata<sup>1</sup>, Györgyi Szabó<sup>1</sup>, István Buljovszky<sup>1</sup>, Daniella Fehér<sup>1</sup>, Leila Mészárosné Seres<sup>1</sup>, Gézőné Csorba<sup>3</sup>, Angéla Jedlovszky-Hajdú<sup>2</sup>, György Wéber<sup>1</sup>, Miklós Zrínyi<sup>4</sup>

<sup>1</sup> Semmelweis University, Department of Surgical Research and Techniques Semmelweis University, Department of Biophysics and Radiation Biology, Nanochemistry Research Group, Budapest, Hungary

<sup>2</sup> Semmelweis University, Department of Biophysics and Radiation Biology, Nanochemistry Research Group, Budapest, Hungary

<sup>3</sup> Semmelweis University, 1st Department of Pathology and Experimental Cancer Research, Budapest, Hungary

<sup>4</sup> Semmelweis University, Department of Biophysics and Radiation Biology, Nanochemistry Research Group, Budapest, Hungary

**Background:** Tissue replacement is one of the most important areas of novel biomedical researches.

Implanting artificial meshes into living organisms, to provide adequate surface for tissue regeneration, makes great demands on the material and structure of the biopolymer itself. The main requirements for applying artificial polymer matrices are to be biocompatible and biodegradable, as well.

**Material and Methods:** Electrospinning technique was used for producing polymer fibers to evolve an artificial ECM (extracellular matrix)-like scaffold. In order to avoid rapid dissolution of the fibrous polymer in biological fluids, PSI (poly(succinimide)), which is the anhydrous form of poly(aspartic acid), was cross-linked.

For testing biocompatibility HT-1080 (human fibrosarcoma) and HDFa (human dermal fibroblast, adult form) cell lines were studied for 72h in vitro. In parallel, four-week period in vivo experiments were also performed on albino rabbits.

**Result:** According to our short-termed observations, biocompatibility and biodegradability of poly(succinimide) were suggested. The poly(succinimide) meshes were completely disappeared within 72h in vitro and eleven days in vivo.

**Conclusion:** Due to biological, chemical, mechanical properties of poly(succinimide) based polymers, poly(succinimide) could be a promising biomaterial for widespread biomedical application.



## OP 187

**Near-Infrared Indocyanine Green Fluorescence Imaging for Perfusion Assessment of Colorectal Anastomoses***Mehmet Fatih Can*

Gulhane School of Medicine, Department of Surgery,  
Ankara, Turkey

**Background:** Recent years have witnessed marked increase in the implementation of near-infrared (NIR) technology with fluorescent dyes to assess vascular perfusion in microsurgery. Whether it is of also clinical importance in forming well perfused anastomoses is unclear. The aim of this study was to review clinical value of NIR indocyanine green imaging (NIR-ICG) for colorectal anastomotic safety.

**Material and Methods:** A Pubmed® search was undertaken using keywords “near-infrared”, “indocyanine green”, “anastomosis” and “anastomotic” in February 2014. Studies retrieved were then manually checked to assess their eligibility for inclusion. Papers clinically examining colorectal anastomotic perfusion using NIR-ICG were reviewed. For testing biocompatibility HT-1080 (human fibrosarcoma) and HDFa (human dermal fibroblast, adult form) cell lines were studied for 72h in vitro. In parallel, four-week period in vivo experiments were also performed on albino rabbits.

**Result:** The first search retrieved 38 articles, of which three investigated NIR-ICG in patients undergoing low anterior resection and hence included in the study. Of these, one was a feasibility study. Another study assessed perfusion of colonic and rectal bowel segments to determine the transection lines before the anastomosis was done. In three patients colonic transection line moved proximally after assessment by NIR-ICG. No changes of the rectal transection line occurred. The third study examined anastomotic perfusion after formation of anastomosis. Four patients were found to have unsatisfactory anastomotic perfusion, of whom two developed perianastomotic collection as detected by CT scan. Both patients were managed conservatively. There were no studies investigating perfusion of colocolic/ileocolic anastomosis using NIR-ICG.

**Conclusion:** NIR-ICG shows promise for the assessment of colorectal anastomotic safety in the future. However, published data on this issue is scarce and needs to be strengthened to make a clearer conclusion.

## OP 188

**Modified Billroth II with Jejujejunostomy for Evaluation of Surgical Staple Lines and Reinforcement Materials***Michael Soltz, Tim D. Ebner, Gerald Hodgkinson,  
Elizabeth Contini, Marisha L. Godek, Dwight G. Bronson,  
Clayton Ramey*

Covidien Surgical Solutions, North Haven, United States

**Background:** A model for assessing GI healing following surgical stapling with and without staple line reinforcement materials (SLR) used in conjunction with Tri-Staple™ technology was developed; this model was established to score tissue abrasion and/or adhesion(s) at the wound site for comparative evaluation.

**Material and Methods:** The surgical procedure comprising a modified Billroth II with jejujejunostomy, was performed in eighteen subjects. On Day 14 or 15 animals were euthanized and staple lines were evaluated grossly and according to grading scales for the extent, length and maturity of adhesion(s) present, and for tissue abrasion length and depth. Comparative analyses of the samples' scores were performed using statistical analyses and overall change in subject weight was tracked.

**Result:** The pilot study demonstrated some differences in adhesion extent between reinforced and non-reinforced staple lines; most adhesions were graded as “mature”, requiring sharp dissection for removal. For the pivotal study the adhesion extent between reinforcement materials was equivalent. No abrasions to adjacent tissues were caused by either the control Tri-Staple™ lines or the materials tested. Weight loss ranged from 4-14.3% through Day 14 or 15.

**Conclusion:** The modified Billroth II with jejujejunostomy procedure was well tolerated by all subjects, with limited weight loss. The model was suitable for evaluating and comparing post-operative adhesions to staple lines with and without reinforcement materials. The model was less effective for meaningfully evaluating abrasions since staple line placement sites were in areas considered to be fairly immobile, limiting relative motion of staple lines against adjacent tissues.

## OP 189

**Esophageal Replacement by a Tissue Engineered Substitute in a Porcine Model**

Tigran Poghosyan<sup>1</sup>, Rony Sfeir<sup>2</sup>, Laurent Michaud<sup>3</sup>, Patrick Bruneval<sup>4</sup>, Minh Luong-Nguyen<sup>1</sup>, Thomas Domet<sup>1</sup>, Valerie Vanneaux<sup>1</sup>, Sebastien Gaujoux<sup>1</sup>, Jérôme Larghero<sup>1</sup>, Frédéric Gottrand<sup>3</sup>, Pierre Cattan<sup>1</sup>

<sup>1</sup> Cell Therapy Unit, Inserm UMR 940 and Department of Digestive, General and Endocrine Surgery, Hôpital Saint Louis and University Paris 7, Paris, France

<sup>2</sup> Département de Pédiatrie Chirurgie, Jeanne de Flandre Hospital and University Lille 2, Lille, France

<sup>3</sup> Department of Pediatric Gastro-Enterology, Hepatology and Nutrition, Inserm U995, Jeanne de Flandre Hospital and University Lille 2, Lille, France

<sup>4</sup> Department of Pathology, European Hospital Georges Pompidou, AP-HP, Paris, France

**Background:** Oesophageal replacement by the colon or the stomach for malignant and benign oesophageal diseases exposes to significant morbidity and mortality. In that setting, tissue engineering appears a seductive alternative.

**Material and Methods:** In a porcine model, the success of the 5 cm-long circumferential replacement of the cervical oesophagus by a substitute made of an acellular matrix (SIS) seeded with autologous skeletal myoblast coupled with a human amniotic membrane seeded with autologous oral epithelial cells was assessed. The substitute was matured 3 weeks in the great omentum before esophageal replacement. Eighteen minipigs, group A (substitute with esophageal endoprosthesis, n=6), group B (substitute alone, n=6), group C (endoprosthesis alone, n=6) were used. The esophageal endoprosthesis was removed endoscopically at 6 months. Animals were sacrificed sequentially over a 12 month-period. Clinical, endoscopic, radiological and histological outcomes were analysed.

**Result:** All animals of group B and C died during the first two months because of refractory esophageal stenosis or endoprosthesis extrusion. Nutritional autonomy without endoprosthesis was observed in all animals of group A surviving more than 6 months (n=3). A phenotype similar to native esophagus, consisting in a mature epithelium, submucosal glands and a circular muscular layer, was observed after 9 months.

**Conclusion:** In this model, the circumferential replacement of the cervical esophagus by a hybrid substitute composed of two different matrix and cellular cell types allowed, under the temporary cover of an esophageal endoprosthesis, the recovering of nutritional autonomy and tissue remodeling toward an esophageal phenotype.

## OP 190

**Current Systems of Navigated Liver Surgery**

Arash Saffari, Mohammadreza Hafezi, Arianeb Mehrabi

Department of General, Visceral and Transplantation Surgery, Heidelberg, Germany

**Background:** In spite of all recent advances in liver surgery as the best treatment of tumors, the morbidity rate is still high. There is a great hope on image guided and navigated surgery in order to approach R0 resection and preserve higher liver remnant volume. The purpose of this review is to determine the current status of navigated systems in liver surgery.

**Material and Methods:** A Medline search was run between 1997 and 2013 using terms "Navigation system in liver surgery" and "computer assisted surgery (CAS)".

**Result:** Navigation is led by the registration of preoperative and intra-operative data to optimize the accuracy of surgical procedure. The advent of multi-detector CT and high resonance MRI and 3D reconstruction have led to a better topologic understanding of tumor position. It has been introduced three different methods of navigation based on tracking systems. The most common type is Optical based navigated (OBN) system adjacent to the surgical field to present computer-generated 3D virtual liver resection proposals that can be transferred on the real liver. Acoustic based navigation (ABN) as well as Electromagnetic based navigation (EBN) are also introduced as new alternative or supplementary methods.

**Conclusion:** A critical limitation in navigated liver surgery is the fact that the position of the lesion can shift. Despite of a great deal of fundamental findings, we still need further developments and optimization of intra-operative navigation in liver surgery. The future improvements could be focused on continuous registration, tracking of movements and deformation.

## OP 191

**Hydrogen Sulfide (H<sub>2</sub>S)-Induced Hibernation Is a Result of Hypoxia Rather than H<sub>2</sub>S-Related Pharmacology**

Sebastiaan D. Hemelrijk, Marcel C. Dirkes, Michal Heger, Thomas M. Van Gulik

Academic Medical Center, Amsterdam, Netherlands

**Background:** Hibernation is a defense mechanism of some species to cope with stress. Hibernation induction involves hypothermia, which leads to hypometabolism and suspended animation, although the exact mechanisms are elusive. A 2005 Science paper showed that mice exposed to H<sub>2</sub>S drop their body temperature (T<sub>b</sub>), resulting in a hypometabolic state as evidenced by a decreased CO<sub>2</sub> production and O<sub>2</sub> consumption. As hypoxia seems to have

similar hypothermic effects in mice, the hypometabolic potential of hypoxia was compared to that of H<sub>2</sub>S.

**Material and Methods:** Female C57BL/6 mice (n=36) were exposed to H<sub>2</sub>S (80ppm, n=12), hypoxic (5%O<sub>2</sub>, n=12), or normoxic atmosphere (21%O<sub>2</sub>, n=12), respectively, for 6h. From 1h before until 3h after exposure, Tb was hourly determined for 10min by thermal camera. The mean±SEM maximum superficial Tb was calculated per time point per group. Based on homoscedasticity either a one-way ANOVA or KruskalWallis test was performed to compare outcomes. Data were normalized to normoxia (control).

**Result:** Experiments were performed at a mean±SD ambient temperature of 21.3±0.7°C. After 1h of exposure, hypoxia-exposed animals exhibited a decreased Tb compared to H<sub>2</sub>S- and normoxia-exposed mice (Fig1), which persisted during the entire hypoxic period (p<0.0001). After 1h of recovery, the mean Tb of hypoxia-exposed animals returned to baseline, i.e., to levels of H<sub>2</sub>S- and normoxia-exposed animals. The mean Tb of H<sub>2</sub>S-exposed animals did not decrease significantly compared to normoxia.

**Conclusion:** Hypoxia and not H<sub>2</sub>S is responsible for the hypothermic and therefore most likely the hypometabolic signaling in mice exposed to H<sub>2</sub>S.

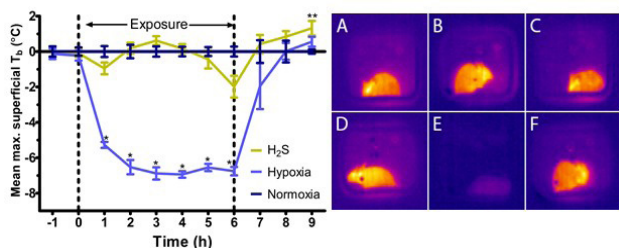


Fig.1. Mouse Tb (normalized to normoxia) plotted as a function of time before exposure to H<sub>2</sub>S or 5% oxygen (up to 0h), during exposure (0-6h), and after exposure (6-9h). Means±SEM are plotted for n=12/group up to 6h and n=6/group from 7 to 9h. \* indicates statistically significant intergroup differences for hypoxia vs. H<sub>2</sub>S or normoxia (p<0.0001), as does \*\* indicate for H<sub>2</sub>S vs. normoxia (p<0.05). Thermal images of animals in the H<sub>2</sub>S and hypoxia group before (A and D, respectively), during (B and E, respectively), and after (C and F) exposure. Yellow indicates high Tb, blue indicates low Tb.

## OP 192

### Comparison of Different Intestinal Resection Lengths to Induce a Short Bowel Syndrome in A Porcine Model – How Much Is Too Much?

Frongia Giovanni<sup>1</sup>, Nickkholgh Arash<sup>2</sup>, Hafezi Mohammadreza<sup>2</sup>, Arvin Jalal<sup>2</sup>, Saffari Arash<sup>2</sup>, Golriz Mohammad<sup>2</sup>, Aydin Esvad<sup>2</sup>, Weih Sandra<sup>1</sup>, Kessler Markus<sup>1</sup>, Ghazi-Moghadam Koosha<sup>2</sup>, Emami Golnaz<sup>2</sup>, Garoussi Camelia<sup>2</sup>, Okun Jürgen<sup>3</sup>, Schmidt Kathrin<sup>3</sup>, Wieczorek Kathrin<sup>4</sup>, Günther Patrick<sup>1</sup>, Holland-Cunz Stefan<sup>5</sup>, Mehrabi Arianeb<sup>2</sup>

<sup>1</sup> Section of Pediatric Surgery - Department of General, Visceral and Transplantation Surgery - University Hospital of Heidelberg, Heidelberg, Germany

<sup>2</sup> Department of General, Visceral and Transplantation Surgery - University Hospital of Heidelberg, Heidelberg, Germany

<sup>3</sup> Department of Pediatrics - University Hospital of Heidelberg, Heidelberg, Germany

<sup>4</sup> Department of Pathology - University Hospital of Heidelberg, Heidelberg, Germany

<sup>5</sup> Section of Pediatric Surgery - Department of General, Visceral and Transplantation Surgery - University Hospital of Heidelberg, Heidelberg, Germany

**Background:** The swine model is a well-characterized large animal model suitable for experimental studies on short bowel syndrome (SBS). In the literature the extent of intestinal resection to induce SBS in pigs ranges from 75% to 100%. No comparative data is available on the most suitable extent of resection. This study aimed to determine the impact of range of resection of the three main SBS models published on outcome parameters.

**Material and Methods:** A 75%-90%-100% mid-intestinal resection was performed in n=5 pigs each. Clinical, biochemical, functional and histological parameters were determined. The observation period was 2 weeks.

**Result:** Persistent weight loss and diarrhea were present only in the 100% group. Electrolytes levels remained physiological, serum albumin and cholesterol decreased and total protein and triglyceride values increased in all groups (p>0.05). Citrulline values settled at different levels (p<0.05), while D-xylose resorption increased in all groups (p>0.05). Mean intestinal villus-length decreased during observation time (p<0.05 for 100% and 75% group). Levels were higher and changes more prominent in the 75%, followed by 90% and 100% group.

**Conclusion:** The 75% model is less suitable as SBS model in swine, as animals tend to normalize parameters remarkably. We suggest to resect at least 90% to induce more prominent changes. The 90% is suitable for longer term studies, as partial compensation occurred, and animals might therefore survive longer. Due to severe nutritional, biochemical and physiological derangements, the 100% model can be used toward more acute experiments and those immediately followed by small bowel transplantation.

## OP 193

**Critical Role of the Common Limb for Meal Sugar Uptake, and Insulin and GLP-1 Secretion after a Roux-En-Y Gastric Bypass in the Minipig***Mohammed Ghunaim, Gregory Baud, Francois Pattou*

Endocrine surgery, INSERM UMR-859 Biotherapies for diabetes, European Genetic Institute for Diabetes (EGID), University of Lille, France, lille, France

**Background:** Roux-en-Y Gastric bypass (GBP) often leads to diabetes resolution, even before weight loss, for reasons that are unclear. Experimental studies in relevant large animal model are needed to explore the responsible mechanisms. Here we explored in the minipig the respective role of the alimentary and common intestinal limbs of GBP on uptake of ingested sugars, and insulin and GLP-1 secretion.

**Material and Methods:** Fourteen minipigs were submitted to GBP. Alternatively, a normal GBP (150 cm alimentary limb, n=7) or a long GBP (150 cm common limb, n=7) were constructed. Metabolic assessment was performed at baseline, 10 days and one month after surgery. In the N-GBP group, a laparotomy at one month and a clamp placed at distal part of the alimentary limb.

**Result:** L-GBP significantly increased weight loss in comparison with N-GBP at one month after the surgery. Insulin and GLP-1 secretions were increased at 10 days and 1 month after N-GBP. For L-GBP group the post prandial glucose and insulin excursion were lower than N-GBP group. D-xylose uptake after MM was significantly inferior in the L-GBP group than with the N-GBP group. During the clamp test, glucose, insulin and GLP-1 did not increase through the alimentary limb, and increased immediately after clamp removal, when meal reached common limb.

**Conclusion:** Meal sugar uptake occurred only in the common limb, where it stimulated insulin and GLP-1 secretion. The length of the common limb is critical for sugar uptake glucose.

## OP 194

**Poly a RT-PCR Measurement of Indicator Genes in Pancreatic Juice in Pancreatic Cancer***Sudip Sanyal, Ajith Siriwardena, Richard Byers*

Manchester Royal Infirmary, Manchester, United Kingdom

**Background:** Recent advances in global gene profiling have enabled a greater understanding of the pathogenesis of pancreas cancer and identified putative diagnostic molecular markers. However, we need to transform these advances into clinical practice to modify the outcome of the disease.

**Aim:** To explore the feasibility of gene expression profiling from RNA isolated from pancreatic ductal juice and test the hypothesis that the detection of gene signatures, measured by

globally amplified poly(A) cDNA in ductal juice will provide a high degree of correlation with the same genes from matched intra-operative tumour samples, from patients with pancreatic cancer.

**Material and Methods:** Intraoperative sampling of pancreatic juice and collection of matched tissue samples was undertaken in patients undergoing pancreaticoduodenectomy for pancreas cancer. RNA was isolated and Poly(A) PCR was used to globally amplify the RNA. RT-PCR was used to measure expression levels of 18 genes (selected from microarray studies). Spearman's rank correlation test was used to examine the relationship of gene expression between pancreatic juice and tissue.

**Result:** Only one gene out of eighteen, MSLN, showed significant correlation in the expression levels between paired pancreatic juice and tissue samples in pancreas cancer. MSLN is a gene that plays a role in cell adhesion and has been demonstrated to be over-expressed in pancreas cancer.

**Conclusion:** RNA analysis of pancreatic juice is feasible using the Poly(A) cDNA technique and correlation of gene expression is shown to exist, albeit with low sensitivity, indicating its potential use in clinical practice with small tissue and juice samples.

## OP 195

**Activated Systemic Inflammatory Response at Diagnosis Reduces Lymph Node Count in Colonic Carcinoma***Brenda Murphy, Rory Kennelly, Hamad Yousef, Paul McCormick, Brian Mehigan*

St. James' Hospital, Dublin, Dublin, Ireland

**Background:** Prognosis following resection for colon cancer improves with higher lymph node yields. To date, this has been attributed to superior surgical technique and excellence in pathology. However, in an era of standardisation and sub-specialty training the wide variance in lymph node yields cannot be fully explained thus. Pre-operative elevated markers of systemic inflammation also affect prognosis, a finding largely explained by an immunogenic response to cancer. We hypothesise that lymph node count and systemic inflammatory response are linked.

**Material and Methods:** A prospectively maintained database was interrogated. All patients undergoing curative colonic resection were included. Neutrophil lymphocyte ratio (NLR) and albumin were used as markers of systemic inflammatory response (SIR). In keeping with previously studies, NLR  $\geq 4$ , Albumin  $<35$  was used as cut off points for SIR. Statistical analysis was performed using 2 sample t-test and chi square tests where appropriate.

**Result:** 302 patients were included for analysis. 195 patients had nlr  $<4$  and 107 had nlr  $\geq 4$ . There was no difference in age, sex or disease stage between groups. Patients with NLR of  $\geq 4$  had lower mean lymph node yields than patients with NLR  $<4$  (17.6  $\pm$  7.1 vs. 19.2  $\pm$  7.9 (P=0.036)).

Patients with hypoalbuminaemia at diagnosis tended towards lower lymph node yields.

**Conclusion:** Prognosis in colon cancer is intimately linked to the patient's immune response. Assuming standardised surgical technique and sub specialty pathology, lymph node count is reduced when systemic inflammatory response is activated.

#### OP 196

### Effectiveness of Oral Everolimus and Capecitabine Treatment on Peritoneal Carcinomatosis of Colorectal Origin

Mehmet Eren Yukse<sup>1</sup>, Osman Yukse<sup>1</sup>, Emin Umit Bagriacik<sup>2</sup>, Ozgur Ekinci<sup>3</sup>, Tuncay Delibas<sup>4</sup>, Serhat Ozgermen<sup>5</sup>, Basak Ozgermen<sup>5</sup>

<sup>1</sup> Gazi University School of Medicine Department of General Surgery, Ankara, Turkey

<sup>2</sup> Gazi University School of Medicine Department of Immunology, Ankara, Turkey

<sup>3</sup> Gazi University School of Medicine Department of Pathology, Ankara, Turkey

<sup>4</sup> Diskapi Yildirim Beyazit Training and Research Hospital Department of Endocrinology and Metabolic Diseases, Ankara, Turkey

<sup>5</sup> Diskapi Yildirim Beyazit Training and Research Hospital Laboratory Animal Facility, Ankara, Turkey

**Background:** The mTOR inhibitor rapamycin has antitumor activity in colorectal cancer. Tumor suppression can further be enhanced when rapamycin is combined with intravenous 5-fluorouracil. Everolimus is a derivative of rapamycin with improved oral bioavailability. Capecitabine is as effective as intravenous 5-fluorouracil, and can be administered orally. The purpose of this study is to administer everolimus alone, and in conjunction with capecitabine in experimental nude mouse model to examine the effect on peritoneal carcinomatosis of colorectal origin.

**Material and Methods:** A model of peritoneal carcinomatosis of colorectal origin was established by transplanting Caco-2 colon adenocarcinoma cells in BALB/cOlaHsd-Foxn1nu mice. Mice were randomized into four groups (everolimus, everolimus+capecitabine, capecitabine, and control), with two mice in each group. 7,5 mg/kg everolimus, and 2,1 mmol/kg capecitabine were orally administered. Excised tumors were weighed, and measured. Peritoneal lavage fluid, peritoneum, and intraabdominal organs were pathologically examined.

**Result:** Compared to control group, tumor size in mice receiving oral everolimus and/or capecitabine was approximately 20 times smaller. Comparing the tumor weight, there was no statistically significant difference within four groups ( $p=0.227$ ). No malignant cells were detected in peritoneal lavage cytology. Despite the inhibition of tumor growth, pathological examination revealed tumor cells in mesenteric and perisplenic lymph nodes. Liver examination

revealed no toxicity.

**Conclusion:** The oral mTOR inhibitor everolimus alone, and in combination with capecitabine suppressed tumor growth in peritoneal carcinomatosis of colorectal origin. However, sample size should be increased in order to reach statistically significant data.

#### OP 197

### Differences in Mortality Between Arterial, Venous and Non-Occlusive Mesenteric Infarction. A Systematic Review and Meta-Analysis of Observational Studies

F. Adaba, A. Askari, A. Patel, S. Gabe, C. Vaizey, J. Nightingale, O. Faiz, J. Warusavitarne

St. Mark's Hospital, London, United Kingdom

**Background:** Acute mesenteric infarction is a rare but lethal event. The causal pathology can be arterial, venous or non-occlusive mechanism. Mortality from acute mesenteric infarction may vary with aetiology. The aim of this study is to determine whether there are differences in mortality between arterial, venous and non-occlusive mesenteric infarction.

**Material and Methods:** A literature search was performed via PubMed, Ovid and Google Scholar. Studies that had reported comparative mortality between arterial, venous and Non-occlusive mesenteric infarction (NOMI) were included, regardless of whether they underwent surgery or not. Odds ratios of mortality were calculated using a Mantel-Haenszel, random effect model.

**Result:** A total of 1,207 articles were screened. Of which, 20 were suitable for data synthesis for arterial vs. venous infarction, 16 for NOMI vs. venous infarction and 15 for Arterial vs. NOMI. When compared with venous infarction, patients who had arterial infarction were significantly more likely to die during primary hospital admission (OR 3.47, CI 2.43-4.96,  $p<0.001$ ). Similarly, patients with NOMI were over three times more likely to die during hospital admission compared with those with venous infarction (OR 3.2, CI 1.83-5.6,  $p<0.001$ ). There was no difference in mortality rates between arterial infarction and NOMI (OR 1.08, CI 0.57-2.03,  $p=0.82$ ).

**Conclusion:** Patients who present with arterial infarction or those with NOMI are over three times more likely to die from mesenteric infarction during primary hospital admission.

## OP 198

**The Research of the Effects of Lycopene in Mesenteric Ischemia Reperfusion Injury**

Nurettin Kahramansoy<sup>1</sup>, Hayri Erkol<sup>1</sup>, Özgür İkiz<sup>1</sup>, Esra Kocoglu<sup>2</sup>, Tülin Firat<sup>3</sup>, Mehmet Tosun<sup>4</sup>

<sup>1</sup> Abant İzzet Baysal University Medical Faculty General Surgery Department, Bolu, Turkey

<sup>2</sup> Abant İzzet Baysal University Medical Faculty Microbiology Department, Bolu, Turkey

<sup>3</sup> Abant İzzet Baysal University Medical Faculty Histology and Embryology Department, Bolu, Turkey

<sup>4</sup> Abant İzzet Baysal University Medical Faculty Biochemistry Department, Bolu, Turkey

**Background:** In this study inhibitory and reductant effect of antioxidant lycopene was investigated on mesenteric ischemia reperfusion injury.

**Material and Methods:** Twentyeight female Wistar albino rats were used. Rats were divided into four groups; sham group, control group (the only group of mesenteric ischemia) and the groups of lycopene given before ischemia, lycopene given after ischemia. Twelve hours after the mesenteric ischemia; blood, tissue and culture samples were taken from rats.

**Result:** LDH, CK, histological injury score, IgA and bacterial translocation levels of the lycopene given before mesenteric ischemia group were observed, similar to the sham group. Ischemic tissue damage in lycopene given before mesenteric ischemia group was less than the control group. Also average values of CK and LDH which are used as supportive biochemical parameters to show tissue damage; were significantly low in the lycopene given before ischemia group than the control group. Mucosal IgA levels are less in control group the than sham group, whereas are high in lycopene given before mesenteric ischemia group than the control group. Increased bacterial growth was found in the control group rather than the sham group at both mesenteric lymph node culture and blood culture. Lycopene given before mesenteric ischemia group, had same influence with, the sham group on bacterial growth.

**Conclusion:** In conclusion, it has shown that giving lycopene before mesenteric ischemia decreases tissue damage, reduces loss of mucosal IgA, prevents the loss of intestinal barrier effects of and decreases bacterial translocation by reducing inflammation. Lycopene reduces ischemic reperfusion damage in the intestine.

## OP 199

**Rat Model of Mesenteric Ischemia-Reperfusion: In Search of the Optimal Postconditioning Algorithm**

Tibor Kovács<sup>1</sup>, Olivér Rosero<sup>1</sup>, Rita Stangl<sup>1</sup>, Peter Onody<sup>1</sup>, Dávid Garbaisz<sup>1</sup>, Zsolt Turóczy<sup>1</sup>, András Fülöp<sup>1</sup>, Gábor Lotz<sup>2</sup>, László Harsányi<sup>1</sup>, Attila Szijártó<sup>1</sup>

<sup>1</sup> First Department of Surgery, Semmelweis University, Budapest, Hungary

<sup>2</sup> Second Department of Pathology, Semmelweis University, Budapest, Hungary

**Background:** Acute mesenteric ischemia is a life-threatening surgical condition, which presents a great challenge to clinicians due to its difficult diagnosis and high mortality. It is associated with intestinal ischemia-reperfusion (IR) injury, which may be ameliorated by postconditioning. Aim of the current study was to investigate the optimal postconditioning algorithm in a rat model of intestinal IR.

**Material and Methods:** Male Wistar rats were randomized into five groups (n=10): 1) sham-operated 2) IR and three differently chosen protocols of postconditioning: 3) PC10 4) PC30 5) PC60. Postconditioning was performed following 60 minutes of mesenteric ischemia at the very onset of 60 minutes of reperfusion. Arterial blood pressure and mucosal microcirculatory flow were registered throughout the whole experiment, whereas portal venous pH was measured at the early stages of reperfusion. Finalizing reperfusion, blood and tissue samples were taken for further histopathological, and laboratory measures involving serum lactate-dehydrogenase, -creatinine-kinase, -TNF- $\alpha$ , -IL-6, and a detailed mucosal redox panel.

**Result:** The two shorter and more dynamic postconditioning algorithms led to improved microcirculatory flow, and a delayed decay of portal venous acidosis. In comparison with the IR group, histopathological alterations, serum necroenzyme- and proinflammatory cytokine levels were significantly attenuated, whereas the mucosal redox panel was significantly enhanced in the two postconditioned groups, respectively. Apart from similar tendentious characteristics, the third, longer interval postconditioning algorithm led to no significant changes.

**Conclusion:** Following mesenteric IR, the shorter-, and intermediate-interval postconditioning algorithms conferred significant protective effects, which was not observed when applying the long-interval algorithm.

## OP 200

**Impaired Intestinal Mucosal Barrier Integrity Upon Ischemia-Reperfusion: Patching Holes in The Shield with a Simple Surgical Method**

Olivér Rosero<sup>1</sup>, Peter Onody<sup>1</sup>, Tibor Kovács<sup>1</sup>, David Molnar<sup>2</sup>, Szilárd Tóth<sup>3</sup>, Zsolt Turóczy<sup>1</sup>, Dávid Garbaisz<sup>1</sup>, András Fülöp<sup>1</sup>, László Harsányi<sup>1</sup>, Attila Szijártó<sup>1</sup>

<sup>1</sup> Semmelweis University, 1st. Department of Surgery, Budapest, Hungary

<sup>2</sup> Semmelweis University, Department of Human Morphology and Developmental Biology, Budapest, Hungary

<sup>3</sup> National Center for Epidemiology, Department of Bacteriology, Budapest, Hungary

**Background:** Intestinal ischemia/reperfusion (IR) is associated with disruption of gut barrier function and concomitant bacterial translocation into the circulatory system, thus enhancing septic complications. Postconditioning may be a suitable method for reducing intestinal IR injury. We aimed to characterize the effects of postconditioning on changes of intestinal tight junction protein expression, bacterial translocation rates and inflammatory responses caused by intestinal IR injury.

**Material and Methods:** 12 hours prior operation male Wistar rat were gavaged with 1mL 1010CFU/mL GFP-expresser E.coli suspension and were randomized into three groups (n=15), sham operated, IR- and PC-groups. Animals underwent 60 minutes of superior mesenteric artery occlusion, followed by 6 hours of reperfusion. Postconditioning was performed at the onset of reperfusion by 6 alternating cycles of 10/10 seconds reperfusion/reocclusion. Blood and tissue samples were taken at the end of reperfusion, for histological, bacteriological and serum analysis.

**Result:** Postconditioning significantly ameliorated mucosal free radical stress compared with the IR-group. The PC-group presented a more favorable claudin-2,-3 and zonula occludens-1 expression pattern compared with the IR-group. The rates of bacterial translocation to distant organs significantly decreased with the use of postconditioning. The histopathological lesions of the jejunum and ileum and the serum-IL6,-TNF $\alpha$  levels were significantly higher in the IR-group compared with the PC-group.

**Conclusion:** The use of postconditioning at the onset of reperfusion was able to improve the intestinal mucosal barrier integrity upon mesenteric IR, and thus reduced the incidence of bacterial translocation and the development of a systemic inflammatory response.

## OP 201

**Melatonin Treatment Protects Steatotic Liver after Ischemia/Reperfusion**

Roman Kireev<sup>1</sup>, Samuel Bitoun<sup>2</sup>, Elena Vara<sup>3</sup>, Enrique Moreno<sup>4</sup>, Jesus Af Tresguerres<sup>5</sup>

<sup>1</sup> Instituto de Investigación Biomédica de Vigo, SERGAS, Vigo, Spain

<sup>2</sup> Department Physiology, University Complutense of Madrid, Madrid, Spain

<sup>3</sup> Department Biochemistry and Molecular Biology, University Complutense of Madrid, Madrid, Spain

<sup>4</sup> Department of Abdominal surgery, Hospital 12 Octubre, Madrid, Spain

<sup>5</sup> Department Physiology; University Complutense of Madrid, Madrid, Spain

**Background:** Fatty livers occur in up to 20% of potential liver donors and show an increase in cellular injury during the ischemia/reperfusion phase, so any intervention that could enable a better outcome of grafts for liver transplantation would be very useful.

**Material and Methods:** Forty fa/fa Zucker rats were divided in 4 groups. 3 groups were subjected to 35 min of warm hepatic ischemia and 36 h of reperfusion. One experimental group remained untreated and two were given 10 mg/kg melatonin intraperitoneally or orally. Another group was sham-operated. Plasma and hepatic metabolites were determined. The levels of cytokines were analysed in liver by ELISA. The expression of genes were determined by RT-PCR.

**Result:** Hepatoprotective effects against warm I/R injury were clearly demonstrated by normalizing the TG content in the liver, ALT, AST levels and by decreasing the amount of coagulation necrosis after melatonin administration. Melatonin helped improving the ability of the steatotic hepatocyte to produce ATP. Oral administration of melatonin decreased gene expressions and tissue levels of TNF $\alpha$  and IL1 $\beta$  and significantly enhanced the level of IL10. mRNA expression of NFkB1/2, PCNA, SERB 1c, ACAC were increased during I/R and melatonin diminished mRNA of all these parameters.

**Conclusion:** We conclude that melatonin improved liver function, as well as markers of pro/antioxidant status and apoptosis following ischemia/reperfusion in obese rats with fatty liver. These data suggest that this substance could improve outcome in patients undergoing liver transplantation who receive a fatty liver implant and suggest the need of clinical trials with it in liver transplantation.

## OP 202

**Microarray Analysis after Different Preoperative Dietary Interventions**

F. Jongbloed<sup>1</sup>, T.C. Saat<sup>1</sup>, M.E.T. Dollé<sup>2</sup>, H. Van Steeg<sup>2</sup>, J.H.J. Hoeijmakers<sup>3</sup>, C.E. Payan Gomez<sup>3</sup>, L.J.W. Van Der Laan<sup>1</sup>, J.N.M. Ijzermans<sup>1</sup>, R.W.F. De Bruin<sup>1</sup>

<sup>1</sup> Erasmus University Medical Center, Department of Surgery, Laboratory for Experimental Transplantation and Intestinal Surgery (LETIS), Rotterdam, Netherlands

<sup>2</sup> National Institute of Public Health and the Environment, Laboratory of Health Protection Research, Bilthoven, Netherlands

<sup>3</sup> Erasmus University Medical Center, Department of Genetics, Rotterdam, Netherlands

**Background:** Ischemia-reperfusion injury (IRI) is inevitable during transplantation leading to oxidative stress. We previously reported that preoperative dietary restriction (DR), 3-day fasting and protein-free diets protect against IRI while a fat-free or carbohydrate-free (CHO-free) diet do not. To understand underlying mechanisms, we performed microarray analysis and compared gene expressions of (non)-protective diets in search for involved pathways.

**Material and Methods:** Male C57BL/6 mice were randomized to preoperative normal food or: 2 weeks 30%DR or a 3-day fasting, protein-free, CHO-free or fat-free diet. Gene expressions of kidneys after each diet were analysed by Affymetrix/Ingenuity. Cut-off for significance was set on fold change  $\geq 1.5$  and  $p$ -value  $< 0.05$ .

**Result:** Two weeks 30%DR resulted in 492 differentially expressed genes (DEG), 3-day fasting to 2604 and protein-free to 391 DEG. The fat-free diet resulted in zero and CHO-free in 1717 DEG. Seventy DEG overlapped in all protective diets, with 30 genes overlap in CHO-free. Ingenuity revealed metabolic processes like retinol biosynthesis and stress responses like Nrf2-pathway. Preliminary analysis shows differences between the protective diets and CHO-free, with txnip and mrp1 possibly playing a central role.

**Conclusion:** This microarray dataset of different dietary interventions points to involvement of pathways related to stress resistance and retinol in the beneficial effects against IRI. Further exploration of the (non)-protective diets is needed. Collectively, these data suggest a combination of metabolic and stress pathways resulting in protection against IRI given by preoperative dietary interventions.

## OP 203

**Involvement Of ROR $\gamma$ +  $\Gamma\delta$  T Cells in Protection Against Ischemia Reperfusion Injury by Dietary Restriction**

S.Shushimita<sup>1</sup>, E. Eggenhofer<sup>2</sup>, R.W.F. De Bruin<sup>1</sup>, A. Kroemer<sup>2</sup>, J.N.M. Ijzermans<sup>1</sup>, F.J.M.F. Dor<sup>1</sup>

<sup>1</sup> Erasmus University Medical Center, Rotterdam, Netherlands

<sup>2</sup> University Medical Center Regensburg, Regensburg, Germany

**Background:** Fasting (FA) or dietary restriction (DR) offer robust protection against renal ischemia-reperfusion injury (IRI) in mice. However, the mechanism remains unclear. The adaptive immune system, which plays an important role during IRI, is affected by dietary restriction. IL-17 producing ROR $\gamma$ +  $\gamma\delta$  T cells are early effectors in IRI. We investigated the impact of FA and DR on  $\gamma\delta$  T cells during IRI.

**Material and Methods:** Male C57BL/6 mice were fed ad libitum or underwent 72hrs fasting or 2 weeks 30% DR (n=6/group), but no IRI. Other mice were subjected to the three dietary regimens followed by induction of renal IRI. Kidneys were harvested for immunohistochemistry and rtPCR before (no IRI), and, 6 and 24hrs after IRI.

**Result:** After DR and FA, IRI was ameliorated, as reflected by reduced renal TNF- $\alpha$  expression compared to AL. Also, significantly reduced CD3+ T cell numbers were seen at 6hrs compared to AL. In FA mice  $\gamma\delta$  T cells were significantly increased at 0hrs, while they decreased at later time points. In AL, the  $\gamma\delta$  T cells were upregulated at 6hrs. ROR $\gamma$  expression levels were found to be higher in FA at 0hrs and DR at 6hrs.

**Conclusion:** Dietary restriction induces pre-activation of antigen unspecific, first linear responder CD3+ ROR $\gamma$ +  $\gamma\delta$  T cells, important in the protection against renal IRI.

## OP 204

**Laparoscopic Management of Giant Incisional Hernia Relapsing 3 Times after Subsequently Anterior Herniorrhaphy Due to Appendectomy Incision**

Rahman Senocak, Elgun Samadov, Sahin Kaymak, Mehmet Fatih Can, Yusuf Peker

Gulhane School of Medicine, Department of General Surgery, Ankara, Turkey

**Background:** In hernia surgery, recurrent incisional hernias consist of a group which their treatment can be difficult and complicated. In this video presentation, experience of a patient with giant incisional hernia managed by laparoscopic repair will be shared. The patient had incisional hernia developed soon after an appendectomy operation in 2006 and thus during one year interval subsequently anterior



herniorrhaphy was performed 3 times a year due to relapsing recurrences.

**Material and Methods:** In a 29 year old patient having abdominal pain and swelling at times in former incision site, incisional hernia with 14x22 cm diameter extending from right flanks area to right lower abdominal quadrant was detected on physical examination. Laparoscopic repair was determined. Total 3 trocars were inserted through umbilicus and left upper and lower quadrant. Adhesions associated hernia defect were removed without disturbing the blood circulation of skin and thus parciel peritoneal dissection was achieved. Dual prosthetic mesh with 20x30cm diameter was placed in abdominal cavity. 9 skin incisions, each one 1cm sized were made around the defect. . Fixation was reinforced by means of laparoscopic tacker. Operation was accomplished with covering prosthetic mesh with dissected peritoneal fold.

**Result:** On postoperative 1.day, the patient began oral feeding without any developing complication. On postoperative 5.day patient never required analgesic drugs and was discharged following day. The patient has been following for 5 months without any recurrences.

**Conclusion:** Our case showed that laparoscopic approaches could be a good option representing the advantages of minimal invasive surgery for hernias relapsing and also attaining giant dimension.

## OP 205

### Surgical Treatment of Constrictive Pericarditis: Video Presentation

*Mustafa Cikirikcioglu, Jalal Jolou, Sanjay Cherian,  
Hajo Muller, Jean-Paul Vallee, Kamran Ahmadov,  
Patrick Myers, Afksendiyos Kalangos*

University Hostpital of Geneva, Geneva, Switzerland

**Background:** Constrictive pericarditis is the end stage of a chronic inflammatory and non-inflammatory process that results in a thick, fibrotic, constricting, and sometimes calcific, pericardium. Early pericardiectomy has been advocated once the diagnosis has been confirmed. We report in this video presentation, a didactic case elaborating surgical techniques, with pre-and post-operative imaging.

**Material and Methods:** A 63-year old male was hospitalised for severe anasarctic oedema of 2 weeks duration. He had NYHA Class IV symptoms and severe pre-tibial oedema, gross ascites, and bilateral pleural effusion. There was a history of NSTEMI 12 months earlier, without any complications. Trans-thoracic echocardiography and MRI demonstrated severe diastolic dysfunction, and increased pericardial thickness.

**Result:** Surgical pericardiectomy was performed via median sternotomy. The anterior pericardium was first removed, and rest of the operation is completed on beating heart under cardiopulmonary bypass, instituted by femoro-femoral cannulation. Complete pericardial resection was undertaken, except posterior to the left atrium, with special

attention paid in order to preserve the phrenic nerves. Post-operative recovery was event free, except for extended pleural drainage. Pericardial biopsy demonstrated inflammation with a suspicion of a previous haemorrhage. Post-operative follow-up at 3 months confirmed complete clinical and cardiac recovery, as documented by echocardiography and MRI.

**Conclusion:** Complete investigation using non-invasive and invasive imaging help confirm the diagnosis of constrictive pericarditis and exclude restrictive cardiomyopathy. Once the diagnosis is confirmed, pericardiectomy, with complete decortication (if technically feasible) is the treatment of choice for constrictive pericarditis, and it provides good symptomatic relief.

## OP 206

### Totally Robotic Billroth I Resection For Duodenal Neuroendocrine Tumor

*Graziano Ceccarelli, Alessia Biancafarina, Enrico Andolfi,  
Alberto Bartoli*

Minimally Invasive Surgery Dep. and Robotic Unit,  
Spoleto, Italy

**Background:** Duodenal neuroendocrine neoplasm (d-NEN) are rare entities with very different clinical course and biological behavior. Usually asymptomatic, diagnosis often relies on upper GI endoscopy. Rarely neoplasm are functioning, unless in metastatic cases, with ZES and carcinoid syndrome being the most frequent clinical presentation. A careful diagnostic workup is mandatory to plan the best treatment (endoscopy with biopsy, cromogranina A, CT-contrast enhanced abdominal scan, PET-TC-somatostatin receptor scintigraphy).

**Material and Methods:** The case we present is peculiar for the treatment option, using completely robotic technology, at our knowledge the first one presented in literature. A female, 78 years old patient presented to the emergency department with a massive gastrointestinal bleeding.

**Result:** Operative time was 185 min., blood loss negligible. Postoperative course was uneventful. An oral contrast x-ray, in PO day 5, showed a regular transit with no signs of leaks. Patient was discharged in 7th PO day. Histopathology report showed a 2,5 cm x 1,5 cm, KI 67 10% NET, with submucosal involvement and angioinvasion, 3 metastatic lymph nodes, classified as a NET G2, T2N1, stage IIIB. Surgical margins were clear.

**Conclusion:** This technique was used in only three cases in our experience as the indications for Billroth I technique are rare, laparoscopic-assisted technique is described in literature, but we consider robotic technology, when available very useful and more precise. Comparative studies are necessary to demonstrate robotic advantages.

## OP 207

**Robotic Lymphadenectomy For Gastric Cancer***Graziano Ceccarelli, Alessia Biancafarina, Enrico Andolfi, Alberto Patriti, Alessandro Spaziani*Minimally Invasive Surgery Dep. and Robotic Unit,  
Spoleto, Italy

**Background:** Lymphnode involvement has been recognised to be the most significant prognostic factor after curative gastric resection for adenocarcinoma. The nodal stage based on their sites are important prognostic determinants. According to recent meta-analysis laparoscopic D2 dissection showed a longer duration but it reduces blood loss, less pain, faster bowel function recovery, and shorter hospital stay, with a similar number of harvested lymph nodes as well as a similar overall survival rate in comparison with open dissection. Robotic surgery allows a better view and precision, giving it easier and safer.

**Material and Methods:** We have performed in a period interval 2006-2013, 174 gastric resections for gastric tumors (early cancer, advanced and GIST), 71 with Video-Robotic approach (40,8%).

**Result:** The conversion rate in minimally invasive series was of 5 cases (7%). In the robotic group a D2 lymphadenectomy was performed in 41 cases, 23 D1-D1+ dissection and in the other cases a simple nodes sampling was required or none (GIST). Associated splenectomy was performed in 2 cases, liver resection (metastasectomies) in 1 case. When a multi-organ resection (colon, pancreas, etc.) was required, we converted in open surgery. The nodes number for D2 technique (mean 28, range 18 – 54), operative time, morbidity and oncologic outcomes, were analyzed and compared with our previous open experience.

**Conclusion:** The video shows a series of different cases of gastric resections for tumors (adenocarcinomas and 1 neuroendocrine tumor) where D2-D1 dissections were performed using robotic technique. The node stations are indicated with numbers overlay.

## OP 208

**Laparoscopic Treatment for Liver Hydatid Disease: Analysis of Technical Steps***Mehmet Fatih Can, Rahman Senocak, Elgun Samadov, Sahin Kaymak, Emin Lapsekili*Gulhane School of Medicine, Department of Surgery,  
Ankara, Turkey

**Background:** Laparoscopic treatment for liver hydatid disease has been criticized by some authors who believe spillage of protoscolices is unavoidable during surgery. Here we aim to and discuss our method of laparoscopic management for liver hydatid disease.

**Material and Methods:** Patient charts and operation

videos recorded during laparoscopic liver surgery were reviewed. Surgical steps we adopt during surgery were determined and some labeled as parts of our routine stepwise procedure. An illustration-enhanced video prototype was rendered.

**Result:** With the patient placed in the modified lithotomy semi-Fowler position, the procedure begins after inserting four ports in the right upper quadrant. Wet gauzes soaked in a 20% of saline solution are used to cover perihepatic area against any accidental spillage. With two suction tips positioned over the pericyst, the cyst is entered with laparoscopic dissector. After unroofing of the pericyst, all cyst content including germinative membrane and free vesicles are taken out into an endobag. Its our policy to fill in the cyst cavity with hypertonic saline solution, allowing for all potential viable cystic content to interact with the scolicidal agent. Next, an extended pericystectomy is performed and the retained cyst wall is checked for any biliary leak. The operation ends after drain placement.

**Conclusion:** Our results suggest that laparoscopic treatment of liver hydatid disease is safe and feasible. Preoperative planning, adequate instrumentation, meticulous surgical technique and implementation of preventive measures are key to performing this procedure safely.

## OP 209

**Laparoscopic Assisted Liver Right Posterior Sectionectomy: A Feasible Method for Resection of a Difficult-to-Access Liver Lesion***Emin Lapsekili, Mehmet Fatih Can, Elgun Samadov, Sahin Kaymak, Ismail Hakki Ozerhan, Yusuf Peker*

GATA Dept. of Surgery, Ankara, Turkey

**Background:** Liver resection performed through minimally invasive methods has gained popularity in recent years. However, laparoscopic isolated resection of difficult-to-access segments of the liver is done at experienced institutes only and allows a parenchyma sparing surgery.

**Material and Methods:** We present here our method of laparoscopic assisted liver right posterior sectionectomy that can be adopted during transition to a pure laparoscopic liver surgery. A 38-year-old lady presented with a mass 6 cm in diameter and located in segment 7 neighboring the right hepatic vein. The patient was placed in lithotomy position. After insertion of trocars and creation of pneumoperitoneum, a hand-port was placed through a 7-cm incision in the right upper quadrant. The right triangular ligament was divided hand-assisted laparoscopically until the right hepatic vein is exposed and taped. The left triangular ligament was also divided. Next, the trocars and port were removed and the hand-port incision was extended 2.5 cm at both ends for hilar dissection and parenchymal transection to be undertaken.

**Result:** The operation time was 240 min; blood loss was approximately 200 ml. No postoperative complications occurred, and the patient discharged home on postoperative day 4.

**Conclusion:** Laparoscopic assisted liver surgery is feasible and safe for selected patients with lesions in difficult-to-access posterior segments. We believe this method made it possible to perform hilar dissection and parenchymal transection through a small incision resulting in a quicker recovery.

## OP 210

### Laparoscopic Vesicovaginal Fistula Repair after Laparoscopic Hysterectomy

Adel Fathi

Department of Surgical Oncology, Oncology Center (OCMU), Faculty of Medicine, Mansoura University, Mansoura, Egypt

**Background:** Introduction of laparoscopy in repair of vesicovaginal fistula (VVF) is a good achievement but there are a limited number of studies up till now.

**Material and Methods:** Synopsis of video: It demonstrate transvesical repair of vesicovaginal fistula after laparoscopic abdominal hysterectomy for abnormal uterine bleeding after failure of conservation for 6 weeks.

Laparoscopy started by 4 ports, adhesiolysis, cystostomy, separation of bladder wall from the vagina, excision of the track and repair

**Result:** Patients discharged after 3 days, cystography was done after 10 days with no evidence of fistula and the catheter is removed

**Conclusion:** VVF can be repaired safely with laparoscopy provided that meticulous dissection could be achieved; however, this approach needs further evaluation

## OP 211

### Monitoring of Systemic and Hepatic Hemodynamic Parameters in Mice

Chichi Xie<sup>1</sup>, Weiwei<sup>2</sup>, Tao Zhang<sup>1</sup>, Olaf Dirsch<sup>2</sup>, Uta Dahmen<sup>1</sup>

<sup>1</sup> Department of General, Visceral and Vascular Surgery, Jena University Hospital, Jena, Germany

<sup>2</sup> Institute of Pathology, Jena University Hospital, Jena, Germany

**Background:** The use of mouse models in the experimental research field is of enormous importance for the study of hepatic physiology and pathophysiological disturbances.

**Material and Methods:** 1. Material: 6-0 silk, 6-0 Prolene, 7-0 Prolene, 10-0 Prolene. Micro-forceps, needle holder, clamp and scissors.

2. Method

2.1 Neck part: Dissect the jugular vein and the carotid artery and measure the blood flow artery using flow probe. Insert the millar catheter into the carotid artery for measuring the

mean arterial pressure. Insert the fluid-filled catheter for measuring the central venous pressure.

2.2 Abdominal part: Measure the flow rate of common hepatic artery and portal vein using flow probe. Insert Millar catheter into a chosen mesenteric vein which has few branches and advance to the portal vein to obtain the PVP.

**Result:** Portal blood flow in normal mice ranged between 1.6 to 2.3ml/min; Flow in the hepatic artery ranged from 0.10 to 0.35 ml/min. Portal pressure was in the range from 4.4 to 11.2 cmH2O.

Portal pressure before and immediately after 70%PH was 6.87±2.39 and 11.41±2.94 cmH2O.

Clamping of the right lobe(20%) resulted in an increase of about 17%. Further clamping of the median and left lateral(90%) lobe caused an increase of at least 2-3 folds compared to the starting portal pressure. Portal pressure returned gradually to the starting point after releasing the clamp.

**Conclusion:** This full intraoperative monitoring procedure is needed to comprehensively understand hepatic physiological processes

## OP 212

### Laparoscopic Total Proctocolectomy: Comparative Video Analysis of Clockwise and Counterclockwise Techniques

Mehmet Fatih Can, Ismail H. Ozerhan, Nail Ersoz, Gokhan Yagci, Sezai Demirbas

Gulhane School of Medicine, Department of Surgery, Ankara, Turkey

**Background:** Laparoscopic total proctocolectomy with ileal pouch anal anastomosis (LPC-IPAA) is considered the most complex procedure amongst all laparoscopic colorectal operations. Controversy exists as to whether clockwise or counterclockwise direction should be adopted for ease of handling and of view during this procedure.

**Material and Methods:** Patient charts and operation videos recorded during eight LPC-IPAA were reviewed. Every important surgical step key to surgical procedure were determined and labeled as part of either clockwise or counterclockwise dissection technique. For comparative analysis, an illustration-enhanced video prototype was rendered.

**Result:** In the clockwise technique, operation begins with dissection of embryologic plane between the caecum and retroperitoneal structures. The dissection is directed towards the hepatic flexure and proceeds along the transverse mesocolon and gastrocolic ligament concomitantly. This technique has two drawbacks: Ligation and division of IMA and IMV may be compromised by floppy splenic flexure and descending colon. The surgical team might also be tired which in turn can result in a lower quality of mesorectal dissection. In the counterclockwise technique, triangulation and viewing problems may be encountered during dissection of the right and middle colic arteries. We modified and combined two

approaches to overcome such problems: We start with the division of IMA and IMV first, continue to mesorectal dissection and switch to clockwise technique at this point. We have been able to save considerable time using this method.

**Conclusion:** The clockwise and counterclockwise techniques each have their own disadvantages during LPC-IPAA procedure. We believe our modified approach markedly facilitates the procedure.

#### OP 213

### Laparoscopic Partial Cystectomy for a Centrally Located Splenic Cyst

*Subutay Peker, Mehmet Fatih Can, Nazif Zeybek*

Gulhane School of Medicine, Department of Surgery,  
Ankara, Turkey

**Background:** Laparoscopic treatment of splenic diseases has been restricted mainly to conditions for which total splenectomy is indicated. Laparoscopic spleen-preserving interventions for lesions located centrally in the spleen are extremely rare. This study aims to demonstrate and discuss our approach in such a patient.

**Material and Methods:** A 35-year-old gentleman presented with left upper quadrant pain. Imaging studies revealed a thick wall, centrally located, perihilar 12 cm splenic cyst. The patient refused having catheter based diagnostic procedure and treatment by interventional radiology and underwent laparoscopic surgery.

**Result:** The patient was placed in the right lateral decubitus position. Three ports – one 10 mm and two 5 mm – were inserted in the left upper quadrant. Omental adhesions on the spleen are divided. Anteromedial tributaries of the splenic artery and vein were sealed and divided to expose as broad cystic outer surface as possible at the hilum. The cyst was entered next followed by suctioning of the cyst fluid. A 6x8 cm portion of the cyst wall was excised and all the inner surface of the remaining cyst de-epithelized using argon laser coagulation. The patient discharged home next day and the drain placed into the cyst cavity was removed POD 4. After 3 months, he is still being followed up without recurrence.

**Conclusion:** Our experience suggests that laparoscopic treatment of centrally located splenic cysts is safe and feasible. Meticulous surgical technique is key to performing this procedure safely using three-port approach

#### OP 214

### Mini-Laparoscopic Appendectomy Using A New Spiral Needle

*Ahmed E Lasheen<sup>1</sup>, Reda Saad<sup>2</sup>*

<sup>1</sup> Zagazig University, Zagazig, Egypt

<sup>2</sup> Ein Shams University, Cairo, Egypt

**Background:** Acute appendicitis is the most frequent abdominal disease and requires urgent surgery. At the present time, laparoscopic appendectomy is a well accepted emergency procedure at most centers. In this study, we used a new spiral needle, to facilitate the procedure, and making it easy, minimal invasive and cost effective

**Material and Methods:** The study included 70 patients of both sexes with acute appendicitis treated by laparoscopic appendectomy using a new spiral needle. These cases were done at the General Surgery Department, Zagazig University, Egypt, in the period from May 2012 to August 2013. In the procedure we used only two ports (one port 10 mm for the camera inserted at direct below the umbilicus and one port 5 mm inserted in left iliac fossa at mid clavicular line). The new spiral needle was used to hold the appendix during the procedure and inserted in the right iliac fossa depending on the site of the appendix.

**Result:** The mean age was 27.3 years, mean operative time was 40 minutes and mean hospital stay was 1.3 days. Ten patients (14 %) had minimal bleeding at the site of needle passage in the mesoappendix. Wound infection at the site of umbilical port occurred in 4 patients (5.7 %) postoperatively.

**Conclusion:** Laparoscopic appendectomy using our a new spiral needle is an easy, minimal invasive and cost effective.

#### OP 215

### Compare the effectiveness the most common in Moscow endoscopic hemostasis methods

*Kamneva M.V., Lebedev N.V.*

People's Friendship University of Russia

**Background:** Acute and chronic ulcers of the stomach and duodenum are the main cause of gastroduodenal bleeding. Besides, in Russia in recent years, the number of patients with gastroduodenal bleeding increased by 40%. While conservative therapy, as well as open surgical operations are not successful and mortality from ulcer bleeding increased from 4% - 7% to 8% - 15%.

**Material and Methods:** : the work is based on a study of the results of treatment of 300 patients who were admitted to the hospital with a diagnosis of gastroduodenal ulcer bleeding during three months. 34 patients died. The distribution between patients with acute and chronic ulcer was 1:1, analyzed the 133 cases of acute ulcer bleeding and 133 cases

with chronic ulcer bleeding. Average age of patients 52,5 years (31-70 years). Male to female was 2:1.

We used three methods of endoscopic hemostasis: radio wave, argon plasma coagulation and combined hemostasis. In difficult cases, we used a combined hemostasis happened with chronic ulcers, we used argon plasma or radiowave methods at the discretion of surgeon.

**Result:** We analyzed the success of hemostasis using a scale Forest and the number of recurrent hemorrhage. In patients with acute ulcer bleeding combined use of hemostasis relapse occurred only 24,4%, and the use of radio wave or argon plasma coagulation rebleeding were more than half the cases (55,5% and 54,5%). While in patients with chronic bleeding from ulcers best was argon plasma coagulation = relapse only in 18,7% cases, combined hemostasis – 20% cases of rebleeding and radiowave coagulation – 33,3% of rebleeding.

**Conclusion:** Thus a comparative analysis of different methods of endoscopic hemostasis showed that for acute gastroduodenal bleeding preferable to use a combined hemostasis. In chronic ulcers you can use any method of endohemostasis, but the best is to use argon plasma coagulation.

## Poster Presentations

### PP 01

#### A Rare Cause of Abdominal Pain: Two Cases of Primary Appendicitis Epiploica

*Ulvi Mehmet Meral, Oguz Hancerliogullari*

Izmir Asker Hatanesi, Izmir, Turkey

**Background:** We shared two patients; diagnosed to appendicitis epiploica which is a rare condition.

**Material and Methods:** CASE 1. 20 year old male patient complaining of abdominal pain was admitted to the emergency department. He had leukocytosis about 11200/mm<sup>3</sup> at CBC. Either other laboratory findings or abdominal ultrasonography(USG) was normal. IV/oral contrast abdominal CT was performed. Tomographic findings were typical for epiploic appendicitis.

CASE 2. 21 year old male patient complaining of abdominal pain of two days duration was admitted to the emergency department. WBC was 14300/mm<sup>3</sup>. There were inflammatory changes at left lower quadrant but diagnosis were not determined by USG. In abdominal CT there were inflammation in the fatty plans beside the sigmoid colon.

**Result:** We gave ciprofloxacin,metronidazole and dextetopfen trometamol. Began to decline at the end of 24 hours, the patient's pain complaints completely disappeared at the end of 3 and 5 days.

**Conclusion:** Appendicitis epiploica is a rare cause of acute abdominal pain. Appendices apiploicas are located on the serosal surface of colon and because of its sliding

structure, torsion and necrosis may also often seen. This table is characterized by focal inflammation and antibiotics and anti-inflammatory drugs are very effective for treatment without surgery. Especially in patients admitted with left side abdominal pain, appendicitis epiploica must come to mind, because it shows similar symptoms with diseases such as acute appendicitis and diverticulitis, which may need surgery for treatment. We believe that the effective usage of radiologic modalities can decrease misdiagnosis and overtreatment of acute abdominal pain.

### PP 02

#### High Ligation of the Inferior Mesenteric Artery In Rectal Cancer Surgery

*Jin-Ichi Hida, Takehito Yoshifuji, Tadao Tokoro, Kazuki Ueda, Koji Daito, Fumiaki Sugiura, Keisuke Inoue, Yasumasa Yoshioka, Akihiro Kogita, Kiyotaka Okuno*

Department of Surgery, Kinki University School of Medicine, Osaka, Japan

**Background:** In surgery for rectal cancer, it is unclear whether the inferior mesenteric artery (IMA) should be ligated at a high or low position. The study contained herein was undertaken to clarify the indications for high ligation of the IMA.

**Material and Methods:** Subjects included 198 patients with rectal cancer who underwent resection with high ligation of the IMA. Nodal metastases were examined by the clearing method.

**Result:** The incidence of metastases to the lymph nodes surrounding the origin of the IMA (root nodes) was 8.6%. IMA root nodal metastases occurred more frequently with pT3 and pT4 cancer. The 5-year survival rate in patients with IMA root nodal metastases was 38.5%; this rate was significantly lower than in those without IMA root nodal metastases (73.4%).

**Conclusion:** Although the prognosis for patients with node metastases at and around the origin of the IMA is poor, the survival rate of patients with rectal cancer may be improved by performing high ligation of the IMA combined with neoadjuvant and adjuvant therapy. Until a definitive answer is available we will continue to perform a high ligation of the IMA, not only in the hope of improved survival but for more accurate staging and as an easier operative procedure.

## PP 03

**Hemorrhoidectomy with Harmonic Scalpel:  
Analysis of 54 Patients***Ulvi Mehmet Meral, Oguz Hancerliogullari*

Izmir Military Hospital Department of General Surgery,  
Izmir, Turkey

**Background:** Hemorrhoidal disease is a significant percentage of our patients. We wanted to introduce our 54 patient who were surgically treated with harmonic scalpel.

**Material and Methods:** 54 patients; who had grade 2 or 3 hemorrhoids and treated with ultrasonic between 2007-2013 were studied retrospectively about hospitalisation, operation time, number of hemorrhoids removed and early postoperative complications

**Result:** The median age was 20,4(18-33). 51 patient(94%) was male, 3(6%) were female. In 31 patients 2 hemorrhoids, in 6 patients 3 hemorrhoids and in 7 patients only one hemorrhoids were removed. Operation time was 22(18-32) minutes. We observed thrombosis in 12 patient. In 2 patients early postoperative bleeding occurred, one of them needed suture with local anesthesia. In 3 patients infection occurred and treated with IV quinolone+metronidazole. Median hospitalisation time was 3,2(1-6) days.

**Conclusion:** There are many alternatives in the treatment of hemorrhoids today. Harmonic scalpel (ultrasonic), is a sealing device, which generate a high frequency ultrasonic energy within the vessel lumen. Lower bleeding amounts and faster surgery are the advantages of this device. It can be used safely for hemorrhoidal disease patients which are treated in peripheral centers like us.

## PP 04

**Acute Abdomen in Drug-Abuse Patients:  
Analyse of 24 Patients***Ulvi Mehmet Meral, Oguz Hancerliogullari*

Izmir Military Hospital Department of General Surgery,  
Izmir, Turkey

**Background:** Acute abdomen is an important disease in surgical practice. We wanted to introduce management of acute abdomen in drug-abuse patients in a peripheral military health center.

**Material and Methods:** Between January 2010 and March 2013; the patients who are complaining with pain in all quadrants of abdomen and also drug-abuse in their stories were studied about hospitalization time, indication of surgery and preoperative Alvorado score.

**Result:** Median age was 21,7(19-24). The patients were have been using the halusinogens for 3,2(2,8-8) years and they were not using these materials in admission for past 11(7-18) days. All patients were hospitalized and Alvorado

scores were evaluated. 4 patients were group 3(>7 score) and they were operated immediately. There were no postoperative complications. 20 patients were observed and in 48(24-72) hours all patients' complaints fell. Pathologic evaluation was reported as lenfoid follicular hyperplasia in 3 and acute suppurative appendicitis in one patient.

**Conclusion:** In patients presenting with abdominal pain, Alvorado score is an algorithm commonly used for the diagnosis of acute appendicitis. Frequently observed in younger age in our country, drug-abuse is a health problem. Withdrawal symptoms can be observed in case of not using these materials for a while. It is in the group of differential diagnosis of acute abdominal pain. Because of the reasons like hospital cost and surgical complications about negative appendectomies; we have to make physical examination carefully and use the imaging studies effectively before deciding surgery in these patients.

## PP 05

**Hyperbilirubinemia after Surgery:  
Postoperative Diagnosed Gilbert's Disease***Oguz Hancerliogullari<sup>1</sup>, Ulvi Mehmet Meral<sup>1</sup>, Halil Genc<sup>2</sup>*

<sup>1</sup> Izmir Military Hospital Department of General Surgery,  
Izmir, Turkey

<sup>2</sup> Izmir Military Hospital Department of Gastroenterology,  
Izmir, Turkey

**Background:** We wanted to share a patient who had hyperbilirubinemia after appendectomy and Meckel's diverticulectomy applied in a second step hospital's surgical department.

**Material and Methods:** 21 year old male patient without any health problems earlier; was admitted to emergency department with right lower quadrant abdominal pain. Bilirubin levels were normal preoperatively. Appendectomy and meckel diverticulectomy was performed. He was followed in ICU and his oral intake was closed for the first 24 hours. By the end of 36th hour; he had evidential jaundice and biochemical levels were found that conjugated bilirubin(CB) was 1,33 mg/dl, Total Bilirubin(TB) was 10,95 mg/dl and Unconjugated bilirubin(UB) was 9,62mg/dl.

**Result:** By the end of 72 hours, TB was 12,56 mg/dl, UB 10,71 mg/dl and DB 1,85 mg/dl and the patient started for oral intake. In hepatobiliary ultrasound it has been seen that; liver size was increased, gallbladder wall thickness was increased, intra/extrahepatic biliary tract was normal. Indirect coombs test was negative. The bilirubin levels were decreased gradually. The patient was discharged in the 11th day postoperatively, with a value of TB 5.1 mg/dl.

**Conclusion:** Gilbert's syndrome, is a common cause of hereditary non-hemolytic jaundice. In these patients; drugs, anesthetics, surgical stress, infection, prolonged fasting and similar events may trigger high bilirubin levels and it also causes clinical jaundice. In Gilbert's disease patients; who were not diagnosed before emergency surgery like

our patient, prolonged fasting and anesthesia with liver metabolized anesthetics may cause acute bilirubin elevation.

#### PP 06

### Outcomes of Cholecystectomies in Ultra Octogenarians

Mohamed Elshaer, Gianpiero Gravante<sup>1</sup>, Sarah Hudson, Hamdi Ebdewi

Kettering General Hospital, Kettering, United Kingdom

**Background:** The aim of this study was to review cholecystectomy results in ultra octogenarians and investigate common risk factors for postoperative morbidity and mortality.

**Material and Methods:** A retrospective analysis was conducted over the last nine years of activity. Included were patients aged 80 years or older. Factors considered potentially influencing the postoperative morbidity or mortality were the modality of operation (emergency vs. elective), type of operation (laparoscopic, laparoscopic converted to open, open cholecystectomy) and the ASA score.

**Result:** 104 patients were analysed. Elective operations were 96 (92.3%) and emergency 8 (7.7%). Most patients underwent LC (n=58; 55.8%), followed by OC (n=30; 28.8%) and LCC (n=16; 15.4%). Hospital stay was 4.8 ± 2.5 days. 18.3% of patients experienced a postoperative complication, 2.9% died. Operations conducted as an emergency, the open or laparoscopic converted to open approaches had a significant higher morbidity and mortality. The ASA score did not seem to influence the postoperative outcomes

**Conclusion:** Cholecystectomies conducted in ultra octogenarians harbor significant increased risks compared to classic literature data. Among them operations conducted as an emergency, OC and LCC had the worst outcomes. These factors should be taken into account for an adequate preoperative counseling and help the surgeon in the decision-making process.

#### PP 07

### Estimation of the Minimum Bowel Length to Resect in High-Risk Operations

Gianpiero Gravante, Rupert Parker, Mohamed Elshaer, Adimabua Christopher Mogeckwu, Nada Humayun, Saleem El-Rabaa

Kettering General Hospital, Kettering, United Kingdom

**Background:** Adequate lymph nodes retrieval is important in colorectal cancer staging for the selection of patients that necessitate adjuvant treatments. The length of bowel resected has been associated with the number of nodes retrieved. We have reviewed our specimens to find out high-risk operations for inadequate nodal sampling and estimate

the minimum length of bowel to resect to achieve this purpose.

**Material and Methods:** Retrospective review of colorectal specimens over 10 years of activity. Data such as location of the tumour, type of operation performed, length of bowel resected and number of lymph nodes retrieved were gathered.

**Result:** Abdominoperineal and Hartmann's resections produced significant lower adequate retrievals compared to other colorectal operations, corresponding to 45.4% and 59.1% of cases respectively. The measured average length of bowel was 30 cm and 25 cm respectively. Increasing the length to 36 cm and 42 cm would increase the adequacy rate to 90%.

**Conclusion:** Abdominoperineal and Hartmann's resections are in our series high-risk operations that frequently do not produce the minimum number of lymph nodes for adequate nodal staging and may require additional manoeuvres such as mobilization of the splenic flexure to achieve the minimum length of bowel to resect.

#### PP 08

### Outcome Of Surgical Treatment For Crohn's Disease

Sho Haneda<sup>1</sup>, Shinobu Ohnuma<sup>1</sup>, Hiroaki Musha<sup>1</sup>, Takanori Morikawa<sup>1</sup>, Munenori Nagao<sup>1</sup>, Tomoya Abe<sup>1</sup>, Naoki Tanaka<sup>1</sup>, Katsuyoshi Kudoh<sup>1</sup>, Hiroyuki Sasaki<sup>1</sup>, Atsushi Kohyama<sup>1</sup>, Takeshi Aoki<sup>1</sup>, Hideaki Karasawa<sup>1</sup>, Megumi Obara<sup>1</sup>, Emiko Kono<sup>1</sup>, Hiroki Hayashi<sup>1</sup>, Kei Nakagawa<sup>1</sup>, Hiroshi Yoshida<sup>1</sup>, Fuyuhiko Motoi<sup>1</sup>, Chikashi Shibata<sup>2</sup>, Yu Katayose<sup>1</sup>, Takeshi Naitoh<sup>1</sup>, Michiaki Unno<sup>1</sup>

<sup>1</sup> Tohoku University, Sendai, Japan

<sup>2</sup> Tohoku Pharmaceutical University Hospital, Sendai, Japan

**Background:** Patients with Crohn's disease (CD) often require several surgeries in their lifetime. Aim of this study was to investigate outcome of surgical treatment.

**Material and Methods:** We reviewed clinical record of patients who underwent initial operation for intestinal lesions of CD between 1968 and 2011.

**Result:** In total, 257 patients (190 men, 67 women) underwent surgery. Median age at the time of surgery, and the duration from onset of CD to operation were 27 (13-73), and 4 (0-33) years. Indication for surgery was stricture in 204 patients (80%), fistula in 74 (29%), perforation in 16 (6%), and others in 32 (12%). Performed procedures were large bowel resection in 174 patients (68%), small bowel resection in 76 (30%), strictureplasty in 73 (24%), stoma in 41 (16%), and others in 6 (2%). Mortality rate was zero, and morbidity rate was 22% (56 patients) in the early postoperative period; wound infection in 32 (12%), ileus in 12 (5%), and others in 15 (6%). Re-operation rate within 1 month after the operation was 2% (5 patients). Cumulative 5 and 10-year re-operation rate were 35% and 60%. Sixteen patients (6%) required home

parenteral nutrition therapy for intestinal failure. Six patients (2%) died of cancer associated with CD at the median age of 41 years.

**Conclusion:** Short-term results of our surgical therapy for CD were considered satisfactory. However, in the long-term results, high rate of recurrence, intestinal failure, and cancer death at young age are the issues we have to solve.

#### PP 09

### Comparison of Stapled and Ligasure Hemorrhoidectomy in Grade 3 Hemorrhoidal Disease

Gokhan Celikkol<sup>1</sup>, Halil Koray Sezer<sup>1</sup>, Inci Celikkol<sup>1</sup>,  
Muharrem Oztas<sup>2</sup>

<sup>1</sup> Balikesir military Hospital, Balikesir, Turkey

<sup>2</sup> Sirtak Military Hospital, Sirtak, Turkey

**Background:** Stapled hemorrhoidectomy (SH) and Ligasure hemorrhoidectomy (LH) are standard for hemorrhoidal disease treatment, but the surgical principle is different. We compared stapled haemorrhoidectomy with Ligasure haemorrhoidectomy in patients with grade 3 hemorrhoidal disease.

**Material and Methods:** This study was carried out between 2009-2010. Prospectively collected records of 39 patients who underwent surgical treatment for with grade 3 hemorrhoidal disease were retrospectively assessed. Patients were divided into two groups SH (n=19) and LH (n=20) groups. Postoperative pain, time to return to normal activity, incidence of complications and recurrence rates were compared between the two groups. The follow-up period was 36 months.

**Result:** The total pain score (sum of all pain scores) was significantly higher in the ligasure group (45 (range, 10-80) vs. 21.05 (range 0-40), P=0.01). Ligasure haemorrhoidectomy technique patients resumed work later (mean 15.8 vs. 12.1 days; P<0.05). Incidence of complications and recurrence rate was higher after SH but not significantly Four patients required further surgery to remove symptomatic external hemorrhoids after stapled hemorrhoidectomy One patients in the stapled group developed new symptoms of fecal urgency and anal pain.

**Conclusion:** Although in early postoperative period stapled haemorrhoidectomy is an effective treatment for grade 3 hemorrhoidal disease with significant advantages for patients compared with ligasure haemorrhoidectomy, such as less pain and earlier return to work, some patients develop new symptoms of fecal urgency and increase recurrence rate in long term follow-up.

#### PP 10

### Evaluation of Laparoscopy-Assisted Colectomy in Patients Over Eighty Years Old

Yasunori Tsuchiya, Shinichi Sekine, Kenichi Tazawa,  
Huminori Yamagishi

Department of Surgery, Itoigawa General Hospital,  
Itoigawa, Japan

**Background:** During these five years, we actively introduced laparoscopy-assisted colectomy (LAC) in elderly patients over eighty years old, and contributed to improve the postoperative course in these patients. On the other hand, the extension of the operative time and the burden on the cardiopulmonary system has been pointed out as a demerit of LAC. In this study, we evaluated the safety and efficacy of LAC in patients over eighty years old.

**Material and Methods:** During these five years, 193 patients underwent operation for colorectal cancer in our hospital. Among them, we analyzed the post-operative courses in the patients over eighty years old who underwent LAC for colorectal cancer.

**Result:** An average age of the patients was 83.5 years old, and the ratio of male patients was 25%. All patients were operated on curatively. Complications occurred in 7 patients and almost complications were mild except one case which was acute myocardial infarction. Three patients suffered from pneumonia and they were operated for right-sided colon cancer, and small upper abdominal midline incision (about 5 cm) was made for all these patients. All patients with cardiovascular complication had been treated with anticoagulant or antiplatelet drugs and their operative time tended to be long. All patients were able to recover original state and survive without recurrence or metastasis.

**Conclusion:** It is suggested that LAC is relatively safe in elderly patients. However we should be careful about pneumonia for patients with upper abdominal midline incision, and about cardiovascular complication for patients treated with anticoagulant or antiplatelet drugs.



## PP 11

**The Value of Procalcitonin as an Inflammatory Marker in Colorectal Cancer**

N. S. Salemis<sup>1</sup>, D. Keramidaris<sup>1</sup>, N. Koronakis<sup>1</sup>,  
G. Karavitis<sup>1</sup>, G. Zografos<sup>2</sup>, A. Manouras<sup>2</sup>, K. Toutouzas<sup>2</sup>,  
E. Lagoudianakis<sup>1</sup>

<sup>1</sup> 2nd Department of Surgery, Army General Hospital, Athens, Greece

<sup>2</sup> 1st Department of Propaedeutic Surgery, Hippocrateion Hospital, Athens Medical School, University of Athens, Athens, Greece

**Background:** Procalcitonin (PCT) is a sensitive inflammatory marker and is most valuable in the differentiation of bacterial infection in severely ill patients. The aim of this study is to evaluate the value of PCT in documenting the inflammatory status of colorectal cancer patients in relation to established markers.

**Material and Methods:** 32 men and 22 women with mean age 71±11.02 years old were prospectively enrolled in this study. The preoperative value of PCT in the serum was determined by immunofluorescence assay which measures the procalcitonin within 18 min. The normal price was set at 0.046 ng / ml and clinically significant values were >0.5 ng / ml. CRP, ESR and white blood cells count were also measured in the same blood sample.

**Result:** Statistical analysis showed a significant positive correlation between the PCT and inflammatory markers (WBC, CRP, ESR), and the tumor marker CEA ( $p < 0.05$ ). Moreover, patients with distant metastases had significantly higher levels of PCT compared to patients without metastases (0.074 vs 0.043 mg / L,  $p < 0.05$ ). The Kaplan-Meier survival curve showed a trend toward shorter overall survival in patients with elevated levels of serum PCT.

**Conclusion:** PCT is a potent marker for the evaluation of inflammatory consequences of colorectal cancer. Whether this proinflammatory effect of advanced colorectal cancer is due to bacterial translocation or due to the chronic inflammation of colorectal mucosa that precedes carcinogenesis remains to be elucidated.

## PP 12

**Geriatric Nutritional Risk Index For Esophageal Cancer**

Ippei Yamana<sup>1</sup>, Shinsuke Takeno<sup>1</sup>, Ryosuke Shibata<sup>1</sup>,  
Hironari Shiwaku<sup>1</sup>, Kenji Maki<sup>1</sup>, Tatsuya Hashimoto<sup>1</sup>,  
Takeshi Shiraishi<sup>2</sup>, Akinori Iwasaki<sup>2</sup>, Yuichi Yamashita<sup>1</sup>

<sup>1</sup> Department of Gastroenterological Surgery, Fukuoka University Faculty of Medicine, Fukuoka, Japan

<sup>2</sup> Department of Thoracic Surgery, Fukuoka University Faculty of Medicine, Fukuoka, Japan

**Background:** The Geriatric Nutritional Risk Index

(GNRI) is a new index recently introduced for predicting risk of nutritional-related complications. Mainly, GNRI has been reported as a simple and accurate tool to assess nutritional status and prognosis of hemodialysis patients. GNRI has never been reported relating to the patients with gastrointestinal cancer. Our object was to examine the association between GNRI and short term outcomes especially postoperative complication in the patients with esophageal cancer performed esophagectomy and gastric tube reconstruction.

**Material and Methods:** The present study enrolled 152 consecutive patients with esophageal cancer performed esophagectomy and gastric tube reconstruction. GNRI on admission was calculated as follows;  $(1.489 \times \text{albumin, g/l}) + (41.7 \times \text{present/ideal body weight})$ . Characteristics and short term outcomes were compared between 4 groups: major nutrition related risk (GNRI: <82), moderate nutrition related risk (GNRI: 82 to <92), low nutrition related risk (GNRI: 92 to <98), and no nutrition-related risk (GNRI:  $\geq 98$ ), respectively.

**Result:** Mean age of the 152 patients was 64.4±9.2 (range: 39-84). Pathological stage, respiratory complication, and open thoracotomy cases were correlated positively to GNRI score, respectively ( $p=0.0051$ ,  $p=0.0051$ ,  $p=0.0083$ ). Multivariate analysis demonstrated that major nutrition related risk (GNRI: <82) was independently significant factors for respiratory complication (Hazard ratio: 2.07, 95% confidence interval : 1.088-21.85,  $p=0.038$ ).

**Conclusion:** The simple method of GNRI is considered to be a clinically useful marker for the assessment of nutritional status and predictor of respiratory complication in the patients with esophageal cancer performed esophagectomy and gastric tube reconstruction.

## PP 13

**Atypical Henoch-Schoenlein Purpura? Consider Polyarteritis Nodosa!**

Sarah Braungart<sup>1</sup>, Alison Campbell<sup>2</sup>, Sanja Besarovic<sup>2</sup>

<sup>1</sup> Yorkshire and Humber Deanery, Leeds, United Kingdom

<sup>2</sup> Hull and East Yorkshire NHS Trust, Hull, United Kingdom

**Background:** Henoch-Schoenlein Purpura (HSP) is the most common systemic vasculitis in children. Abdominal pain is common in children with HSP. It often leads to surgical review to rule out surgical emergencies such as intussusception or bowel infarction. Polyarteritis Nodosa (PAN) - a systemic necrotizing small-vessel-vasculitis - is rare in children. Similar to HSP it can manifest itself with a variety of symptoms, including a wide spectrum of gastrointestinal complications.

**Material and Methods:** We report the case of a boy who initially presented with features suggestive of HSP but dramatic systemic organ involvement. He was finally diagnosed with PAN.

**Result:** Case report: A 12-year-old boy presented with features suggestive of HSP: generalized rash, colicky abdominal pain, fresh rectal bleeding. He developed

dramatic systemic organ involvement shortly after admission including hypertension, proteinuria, pleural effusions. Serial ultrasounds were suggestive of bowel ischaemia. He underwent repeat laparotomy and resection of ischaemic bowel, with slow improvement following the second laparotomy. The severity of systemic involvement with persistent hypertension and proteinuria made the diagnosis of HSP questionable. Immunohistochemistry of skin biopsies was negative for HSP. Polyarteritis Nodosa was finally diagnosed from histopathology of the bowel specimen.

**Conclusion:** With this report we want to raise awareness of the possibility of early PAN mimicking HSP. In cases of severe systemic organ involvement this rare, but potentially fatal systemic vasculitis must be considered as a differential diagnosis which requires a high level of suspicion. Close collaboration between Surgeons and Paediatricians is paramount to instigate appropriate investigations/treatment in a timely fashion.

#### PP 14

##### Mucocele of Appendix Due to Endometriosis Presenting with Acute Appendicitis

Ali Kagan Coskun<sup>1</sup>, Elgun Samadov<sup>1</sup>, Rahman Senocak<sup>1</sup>, Sahin Kaymak<sup>1</sup>, Zafer Kilbas<sup>1</sup>, Armagan Gunal<sup>2</sup>, Oner Mentesh<sup>1</sup>, Semih Gorgulu<sup>1</sup>, Yusuf Peker<sup>1</sup>

<sup>1</sup> GATA Dept. of Surgery, Ankara, Turkey

<sup>2</sup> GATA Dept. of Pathology, Ankara, Turkey

**Background:** Mucocele of the appendix secondary to endometriosis is extremely rare situation.

**Material and Methods:** We would like to report a case of mucocele of the appendix secondary to endometriosis presenting as acute appendicitis. A 41-year-old woman was admitted to the hospital's emergency unit with right lower abdominal pain. She was prediagnosed as acute appendicitis with anamnesis, physical examination and laboratory tests.

**Result:** She had undergone appendectomy. Postoperative period was uneventful. During the histopathological evaluation of the specimen, mucocele of appendix due to endometriosis was diagnosed.

**Conclusion:** A mucocele of the appendix is seen 0.3% of all appendectomies(1) and endometriosis of the appendix is also a rare condition with a rate of 0.8% of all appendectomies(2). Therefore mucocele of the appendix secondary to endometriosis is a very unusual condition.

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2 Berker B, Lashay N, Davarpanah R, Marziali M, Nezhat CH, Nezhat C. Laparoscopic appendectomy in patients with endometriosis. *J Minim Invasive Gynecol* 2005; 12: 206-209

#### PP 15

##### Late Stomal Complication Colostomy Prolapse

Rahman Senocak, Elgun Samadov, Sahin Kaymak, Emin Lapsekili, Zafer Kilbas, Ali Harlak

GATA Dept. of Surgery, Ankara, Turkey

**Background:** Colostomy prolapsus is defined as full thickness protruding of stoma from colonic wall. It occurs with a frequency up to 16%. It is frequently seen in loop colostomy constructed patients with significant additional disease during immediate surgery. The prolapse can be managed by various surgical options and usually one of the options including colopexy, mucoparietal fixation, excision of protruding segments and skin/mucosa resuturation or stoma creation from different area with laparotomy can be preferred.

**Material and Methods:** Case: The patient having performed with permanent loop colostomy due to paraplegia rising after an injury by gunshot wounding 18 years ago was operated because of progressively developing prolapsus (15 cm in length) from distal limb for 10 years. At surgical exploration, it was observed that loop colostomy had been practised from ascending colon and that protruding segment had extended to transverse colon after reduction. It was decided to relocate the stoma to different place and right hemicolectomy + mucus fistula was performed. The patient was discharged without complication on postoperative 7th day.

**Conclusion:** Conclusion Although it is infrequently seen, the colostomy prolapsus is annoying for both the surgeon and patient. The most effective solution for long term is to relocate the stoma.

#### PP 16

##### Improvement of Colorectal Anastomotic Healing by Hyperbaric Oxygen Therapy

G.S.A. Boersema<sup>1</sup>, Z. Wu<sup>2</sup>, S. Vennix<sup>2</sup>, L.F. Kroese<sup>2</sup>, G.J. Kleinrensink<sup>2</sup>, J. Jeekel<sup>2</sup>, J.F. Lange<sup>2</sup>

<sup>1</sup> Department of Surgery, Erasmus Medical Centre Rotterdam, Rotterdam, Netherlands

<sup>2</sup> Erasmus Medical Centre Rotterdam, Rotterdam, Netherlands

**Background:** Hyperbaric oxygen treatment (HBOT) has been found to improve the healing of tissues which are poor in oxygen. This study aims to investigate the influence of HBOT on the healing in ischemic colorectal anastomosis.

**Material and Methods:** We operated 4 groups with 10 Wistar rats each. Group A and B received HBOT for 10 days (7 days before surgery, 3 days after), short term (3 days) and long term (7 days) follow up, respectively. Group C and D did not receive HBOT and had also a follow up period of 3 and 7 days. In all groups a partial colectomy with ischemic cutting edges was performed and proximal and distal ends of the

colon were anastomosed inverted.

**Result:** 5 Rats from HBOT groups and 5 rats from control groups died during follow up. Kidney function (creatinin) of the HBOT groups was significantly better compared to control groups on day 7 ( $p < 0.05$ ). There was no anastomotic leakage in the HBOT groups, comparing with 44.1% and 16.7% detachment in group C and D, respectively. Group A had a significant higher bursting pressure ( $130.9 \pm 17.0$  mmHg) than group C ( $87.8 \pm 43.7$  mmHg;  $p = 0.046$ ). The adhesion severity was significant higher in the control groups than the HBOT groups on day 3 and day 7 ( $p < 0.005$ ).

**Conclusion:** Application of hyperbaric oxygen therapy may facilitate colorectal anastomotic healing and improve the kidney function in patients with ischemic anastomoses.

#### PP 17

##### A Very Rare Cause of Abdominal Pain: Three Lead Shots Within the Appendix Vermiformis

Orhan Veli Ozkan<sup>1</sup>, Vecdi Muderris<sup>2</sup>, Fatih Altintoprak<sup>1</sup>, Orhan Yagmurkaya<sup>2</sup>, Omer Yalkin<sup>1</sup>, Fehmi Celebi<sup>1</sup>

<sup>1</sup> Department of General Surgery, Faculty of Medicine, Sakarya University, Sakarya, Turkey

<sup>2</sup> Department of General Surgery, Research and Educational Hospital, Sakarya University, Sakarya, Turkey

**Background:** Most ingested foreign bodies usually pass out in the feces uneventfully. Complications such as intestinal perforation, bleeding usually occur with sharp, thin, stiff, pointed and long objects. The majority of these objects are radiopaque. In the present case, we describe the management of three lead shots within the appendix vermiformis.

**Material and Methods:** A 45 year-old male was admitted to the polyclinics suffering from abdominal pain with a history of 4 months. A further history from the patient revealed that he had eaten hunted rabbit meat on numerous occasions and three lead shots were ingested unintentionally due to this experience.

**Result:** Plain abdominal films and barium enema demonstrated the foreign body in the right lower abdominal quadrant. Since the lead shots were supposed to have migrated into the extraluminal region, a surgical intervention was made to remove them by laparotomy under scopy guidance. The foreign bodies were found to lie in the appendix vermiformis. Appendectomy was performed. On pathologic examination, three lead shots were embedded in the appendix with signs of intramucosal inflammation.

**Conclusion:** Foreign bodies causing appendicitis are rare. However, if stiff or pointed objects get into the appendiceal lumen they have a high risk of appendicitis, perforation or abdominal pain. Surgery should be carried out to remove ingested foreign bodies within the appendix by appendectomy.

#### PP 18

##### Postoperative Delirium Following Surgery for Colorectal Cancer

Gregory Christodoulidis<sup>1</sup>, Maria Papaliaga<sup>2</sup>, Evangelia Prassa<sup>2</sup>, Dionyssis Dimas<sup>3</sup>, Konstantinos Tepetes<sup>1</sup>

<sup>1</sup> General Surgery Department, University Hospital of Larisa, Larisa, Greece

<sup>2</sup> Psychiatry Department, University Hospital of Larisa, Larisa, Greece

<sup>3</sup> General Surgery Department, ELPIS Hospital of Athens, Athens, Greece

**Background:** Delirium occurs more often in hospitalized patients and during the postoperative course of elderly patients. Postoperative delirium is associated with greater cost, longer hospital stay, postoperative complications, increased morbidity and mortality. The aim of this study was to evaluate the incidence and risk factors for postoperative delirium in patients who were subjected to colorectal cancer surgery.

**Material and Methods:** Pre-operative cognitive function was assessed by the Mini Mental State Examination and Hamilton depression scale. The onset of delirium was diagnosed by the Confusion Assessment Methods administered to the patients every 24h starting from the first postoperative day to the day of discharge. Delirium Rating Scale was used to evaluate severity. Different pre-, intra- and postoperative parameters, were assessed.

**Result:** In a total of 20 patients, 4 developed postoperative delirium. Parameters such as advanced age, alcohol abuse, excessive blood loss, decreased blood albumin levels, increased cortisol levels, increased CRP, increased IL6 levels and hypotension were significantly correlated with the presence of postoperative delirium.

**Conclusion:** Postoperative delirium seems to be a frequent complication in patients operated for colorectal cancer. Several pre-, intra- and postoperative factors indicate the patient's risk for developing postoperative delirium.

#### PP 19

##### New Ways Of Surgical Treatment of Hemorrhoids

Valeriy Totikov<sup>1</sup>, Zaurbek Totikov<sup>1</sup>

North-Ossetian State Medical Academy, Vladikavkaz, Russian Federation

**Background:** The purpose of this study was to develop ways to treat hemorrhoids, allowing reducing postoperative pain syndrome, and reducing the likelihood of strictures of the anal canal and anal sphincter insufficiency.

**Material and Methods:** To solve the goal with the radical treatment of stage III-IV hemorrhoids we have developed a

special mirror, which has improved access to the operating field and to exclude traumatic divulsion of the anal canal. Hemorrhoidectomy with the developed mirror, we performed in three versions: an open, closed and submucosa.

**Result:** Total hemorrhoidectomy using a special anal mirrors we have performed 528 patients. Postoperatively, reflex urinary retention was noted in 11 (2.1%) patients who wore a short-term nature. Pain syndrome, relief demanded a drug was noted in 15 (2.7%) patients, who were arrested for 2-3 days. In 3 (0.5%) patients there was bleeding from a skin wound. Another 2 patients (0.3%) showed submucosal abscess. None of our patients strictures of the anal canal is not revealed.

**Conclusion:** Special anal mirror creates access, allowing no traumatic divulsion not occupying the mucous anal canal to perform an open or closed hemorrhoidectomy without the formation of the stump. As well as creating more favorable conditions for the implementation of submucosal hemorrhoidectomy.

#### PP 20

### Structural Changes in Small Intestine after Resection of Its Proximal Part

I.V. Fedoriv<sup>2</sup>, V.F. Knygynskyy<sup>2</sup>, Y.I. Popovych<sup>1</sup>

Ivano-Frankivsk national medical university, Ivano-Frankivsk, Ukraine

**Background:** We investigated 25 sexually mature white rats. In 10 of them was removed 50% of the small intestine, on 1 cm distal from trigeminal ligament. Intact rats and animals that underwent laparotomy (15) served as control.

**Material and Methods:** Operations and biopsy specimens were performed under general ketaminov anesthesia. 7 days after resection of the bowel morphometric on histological sections which were colored by hema-toxilin-eozine.

**Result:** The thickness of the wall of the small intestine is increased in both departments, but it is more expressed in the ileum (at 20.47%) compared to the jejunum (at 12.09%): and reaches to the jejunum (775,14±4,21) microns and in the ileum to (734,70±8,46) mm, according to (681,41±4,77) m and (584,28±8,51) microns in controls (P<0.001). It is more expressed in the ileum and also it is increased villi height and width of the villi. In the jejunum these figures are 587,19±5,45 m and 77,16±2,18 mm (in control 566,28±8,89 m and 65,09±1,78, P<0.001).

**Conclusion:** So on the 7th day after surgery the prevailing in the small intestine is a violation of hemodynamics and on the 30th day - the compensatory-adaptive changes due to hypertrophic processes.

#### PP 21

### Body Weight Loss One Year after Gastrectomy for Gastric Cancer

Katsuyoshi Kudo<sup>1</sup>, Hiroaki Musha<sup>1</sup>, Naoki Tanaka<sup>1</sup>, Sho Haneda<sup>1</sup>, Shinobu Ohnuma<sup>1</sup>, Tomoya Abe<sup>1</sup>, Munenori Nagao<sup>1</sup>, Emiko Kouno<sup>2</sup>, Megumi Obara<sup>1</sup>, Hideaki Karasawa<sup>1</sup>, Chikashi Shibata<sup>2</sup>, Fuyuhiko Motoi<sup>3</sup>, Yu Katayose<sup>3</sup>, Takeshi Naitoh<sup>1</sup>, Michiaki Unno<sup>4</sup>

<sup>1</sup> Tohoku University Graduate School of Medicine, division of Gastrointestinal Surgery, Sendai, Japan

<sup>2</sup> Tohoku Pharmaceutical University Hospital, Sendai, Japan

<sup>3</sup> Tohoku University Graduate School of Medicine, division of Hepato-Biliary Pancreatic Surgery, Sendai, Japan

<sup>4</sup> Tohoku University Graduate School of Medicine, division of Gastroenterological Surgery, Sendai, Japan

**Background:** The postoperative body weight loss in patients with of gastric cancer is one of the most crucial complications, but the composition of the body weight loss is not yet known. Aim of the present study was to describe postoperative changes of body weight, subcutaneous and visceral fat tissue, and abdominal girth in patients with gastric cancer.

**Material and Methods:** We analyzed eighteen postoperative patients (n=11: distal gastrectomy (DG), n=7: total gastrectomy (TG)) with gastric cancer having no postoperative complications which needed hospital care and chemotherapy. We examined change of postoperative body weight, girth of the abdomen, area of subcutaneous fat and visceral fat by computed tomography one year postoperatively.

**Result:** The average body weight one year after the operation was lower than before operation in DG and TG (DG: 54.4±10.9 vs 60.4±11.4 kg, TG: 53.7±9.1 vs 60±10.6 kg, p<0.05). Computed tomography revealed the postoperative decrease of the abdominal girth compared to preoperative state (DG: 73.4±7.2 vs 81±7.7 cm, TG 68.5±4.2 vs 78.1±8.7cm, p<0.05). Also area of subcutaneous and visceral fat one year after the operation decreased (p<0.01).

**Conclusion:** These results indicate the body weight loss with decrease of subcutaneous and visceral fat one year after the operation in patients with gastric cancer.

## PP 22

**Minimally Invasive Surgical Approach to Complicated Recurrent P. Sinus**

Vahit Onur Gul<sup>1</sup>, Mehmet Ince<sup>2</sup>, Serhat Ozer<sup>3</sup>, Ergin Etkin<sup>1</sup>, Serkan Ahioglu<sup>1</sup>, Vedat Cimin<sup>1</sup>, Deniz Sen<sup>1</sup>

<sup>1</sup> Edremit Military Hospital General Surgery Department, Balikesir, Turkey

<sup>2</sup> GMMA Emergency Department, Balikesir, Turkey

<sup>3</sup> Konya Military Hospital General Surgery Department, Balikesir, Turkey

**Background:** In this case, single stage surgical treatment of Recurrent Pilonidal Sinus Case Fistulized in The Gluteal Region that we have treated with minimal tissue loss and inflammation is described.

**Material and Methods:** 22 years old male patient has undergone Pilonidal Sinus Exicion and Primary Closure operation one year ago. He has applied to our clinic with the complaints of pain and foul smelling discharge onset six months ago. The physical examination, in prone position, a scar tissue related to surgery undergone in intergluteal region, in this scar tissue two pieces of recurrent pilonidal sinus orifices close to anal canal, aproximately in 8 cm distance, from these lesions aproximately at a distance of 15 cm, at 7 o'clock level, two pieces of secondary sinus orifices are observed. We detected that orifices at both side were affiliated with each other.

**Result:** Two separate minimal ellipsoidal incision was performed for the patient who takes primary and secondary sinus orifices separately inside, in a way to lose minimal tissue. Fistula tract, subcutaneously unblock excised together with the tunnel shaped sinus orifices in a way to leave intact tissue between both incisions. After primary closure of both side wounds, Relapse Pilonidal Sinus Excision and Subcutaneous Fistulectomy in tunnel shape was performed. Complication and recurrence did not develop.

**Conclusion:** The result; in pilonidal sinus disease, although application of minimal invasive surgical techniques should be supported with clinical researches, this method can take place between primary methods not only for primary pilonidal sinus disease, but also in complicated and recurrence sinus treatment.

## PP 23

**Three-Port Two-Instrument Complete Thoracoscopic Lobectomy For Lung Cancer**

Yu-Jen Cheng

E-Da Hospital / I-Shou University, Kaohsiung, Taiwan, Province of China

**Background:** Cosmetic factor does matter in the era of minimal invasive surgery. For cosmetic improvement a

complete thoracoscopic lobectomy is accomplished via three-port two-instrument technique (TPTI). The resected specimen is removed without extending the port wounds.

**Material and Methods:** From January 2011 to December 2013, sixty lung cancer patients received lobectomy and complete mediastinal lymph node dissection via a three-port two-instrument thoracoscopic approach without an accessory wound. The first 30 cases and the latest 30 cases were compared to detail the learning curve.

**Result:** There were no differences between these two groups with respect to age, sex, tumor size, location of the lobectomy, mean blood loss, mean post-operative drainage time, and mean hospitalization time ( $p > 0.05$ , respectively). The mean surgical time significantly decreased and the mean number of lymph nodes removed significantly increased in the latest 30 cases ( $p < 0.05$ , respectively). The conversion rate was similar in both groups.

**Conclusion:** Three-port complete thoracoscopic lobectomy with two-instrument technique is feasible for lung cancer treatment. The learning curve in the initial cases is acceptable. This TPTI technique should be popularized.

## PP 24

**Techniques And Complications Of Establishing Pneumoperitoneum**

Luke William Wheldon, Nehemiah Samuel, Muhammad Hanif Shiwani

Barnsley Hospital NHS Foundation Trust, Barnsley, United Kingdom

**Background:** Several techniques are described to establish pneumoperitoneum. Pneumopertoneum was traditionally created using Verres needle often favoured by gynaecologists, until Hasson described his open entry technique favoured by general surgeons. Also widely used is optical port entry. Complications of laparoscopic surgery are rare but many are associated with establishing pneumoperitoneum. We aim to assess current practice of surgeons and evaluate their life times experience including complications.

**Material and Methods:** A single centre observational study was designed. Data was collected anonymously using a validated questionnaire capturing, technique, site, experience, details of complications encountered and severity using Calvin Dindo Classification. All eligible surgeons (general surgeons, gynaecologists, urologists) performing laparoscopic surgery were invited to participate. The data was then analysed using SPSS with further subgroup analysis by speciality and technique.

**Result:** n=19 surgeons (General Surgical n=12 (63%), Gynaecology n=7 (37%)). General surgeons preferred the open technique (n=11) and gynaecologists preferred Verres needle (n=7). The site of entry varied and no site was associated with increased complications.

6 (31.6%) surgeons have experienced complications 4 Gynaecologists all using Verres needle and 2 General surgeons

who used open technique. The most common injury was to the colon (n=4/6). 5 of the 4 complications were grade III, 1 grade IV. There was no associated mortality.

**Conclusion:** This study is limited due to the small numbers but might suggest that Verres needle entry is associated with more complications than open technique. Further study is required to clarify this.

#### PP 25

### The Role of Pre- and Postconditioning to Avoid the Ischaemia-Reperfusion Injury Caused by Pneumoperitoneum

Tünde Gyöngyvér Veres<sup>1</sup>, Katalin Sárvári<sup>1</sup>, Laura Petrovics<sup>1</sup>, Tibor Nagy<sup>1</sup>, Péter Hardi<sup>1</sup>, Ildikó Takács<sup>1</sup>, Ervin Máthé<sup>2</sup>, György Wéber<sup>1</sup>, András Vereczkei<sup>2</sup>, Gábor Jancsó<sup>1</sup>

<sup>1</sup> Department of Surgical Research and Techniques, Pécs, Hungary

<sup>2</sup> Department of Surgery, Kaposvár, Hungary

**Background:** Laparoscopy is more beneficial technique in surgery than conventional open technique, but the used pneumoperitoneum has a lot ischemic side effect. Pneumoperitoneum causes oxidative stress. Aim of our investigation was to compare and evaluate the beneficial effect of pre- and postconditioning.

**Material and Methods:** 70 Wistar rats were used. Animals were divided into 7 groups (n=10): I. group sham (only anesthesia), II. group pneumoperitoneum with 5 mmHg for 60 minutes, III. group preconditioning with 5 mmHg (5 min. insufflation and 5 minutes desufflation), and 60 minutes pneumoperitoneum (5 mmHg), IV. group pneumoperitoneum with 5 mmHg, then postconditioning (5 minutes desufflation, 5 min. insufflation and then desufflation), V. group pneumoperitoneum with 10 mmHg for 60 min., VI. group: preconditioning with 10 mmHg then pneumoperitoneum for 60 min, VII. group pneumoperitoneum with 10 mmHg, then postconditioning (5 minutes desufflation, 5 min. insufflation and desufflation).

Pneumoperitoneum was created by Veres needle. Blood samples were taken 120 minutes after procedure. Oxidative stress markers: superoxide-dismutase (SOD) activity, reduced glutathione (GSH), sulfhydryl groups (SH-) and malondialdehyde (MDA) concentration were measured.

**Result:** GSH concentration decreased, MDA activity increased, and we detected no difference in SH-concentrations in pre- and postconditioned groups comparing to control. In preconditioned 10 mmHg group there was significant elevation in SOD activity compared to 10 mmHg pneumoperitoneum. In VI-VII groups there were significant alterations in postconditioned 10 mmHg groups compared to preconditioned ones.

**Conclusion:** Based on our results as short time pre- and postconditioning can reduce negative effects of pneumoperitoneum. This method has also important clinical implication.

#### PP 26

### Clinical Aspect of 507 Cases of Single Port Laparoscopic Cholecystectomy Experienced by a Single Surgeon

Younghoon Roh<sup>1</sup>, Mee Sook Roh<sup>2</sup>

<sup>1</sup> Department of Surgery, Dong-A University College of Medicine, Busan, Korea, Busan, South Korea

<sup>2</sup> Department of Pathology, Dong-A University College of Medicine, Busan, Korea, Busan, South Korea

**Background:** Single port laparoscopic cholecystectomy (SPLC) is a new advanced technique in laparoscopic surgery. This study aims to present personal experience with SPLC over 500 cases to evaluate the safety and feasibility of this operation.

**Material and Methods:** A retrospective review of 507 cases of SPLC was carried out. All patients had received elective SPLC by a single surgeon from May 2009 to September 2013. Our review suggests patients' character, perioperative data and postoperative outcome.

**Result:** 227 men (44.8%) and 280 women (55.2%) with an average age of 48.3 years had received SPLC. Their mean body mass index (BMI) was 23.75 kg/m<sup>2</sup>. The mean operating time took 51.75 minutes (27~130). 56 cases (11.0%) needed additional port during operation. BMI, age, previous abdominal surgical history did not seem to affect conversion to multi-port surgery. There were 2 cases of open conversion because of bleeding. Mean duration of hospital stay was 2.21 days. Postoperative pathologic finding was 197 cases (38.9%) of cholecystitis with gallstone, 303 cases (59.7%) of gallbladder polyp and 7 cases (1.4%) of gallbladder cancer. We have experienced 32 cases (6.3%) of postoperative complication, which were 6 cases of major one (3 cases of retained CBD stone, 2 cases of cystic duct leakage and 1 case of CBD injury) and 26 cases of minor one. There was no postoperative mortality.

**Conclusion:** SPLC is a safe and practicable technique. With surgical experience, the criteria and area of SPLC can be broadened.

## PP 27

**Prognosis after Percutaneous Endoscopic Gastrostomy in Cerebral Infarction**Kazuhiro Ashikawa<sup>1</sup>, Keizo Hataji<sup>2</sup>, Takehito Otsubo<sup>3</sup><sup>1</sup> Japanese Red Cross Society Susono Hospital, Susono, Japan<sup>2</sup> Japanese Red Cross Society Susono Hospital, Susono, Japan<sup>3</sup> St. Marianna University School of Medicine, Kawasaki, Japan

**Background:** Percutaneous endoscopic gastrostomy (PEG) has been widely acknowledged to be a safer method for enteral feeding in Japan, but its long-term impact on prognosis is not sufficiently understood. The objective of this study was to evaluate the long-term survival and prognosis associated with mortality in PEG treated patients with cerebral infarction.

**Material and Methods:** We retrospectively reviewed the medical records of 263 patients. These patients had swallowing difficulty for which PEG was performed at the Japanese Red Cross Society Susono Hospital (Susono, Japan) between January 1, 2001, and December 31, 2010. Survival curves were analyzed to compare survival based on variables such as cerebral infarction group and the others.

**Result:** The 263 patients were assessed over a mean follow-up period of 717.8 days. The 124 cases (47.1%) were cerebral infarction as a baseline disease. The overall 30-day, 3-month, 6-month, 1-year, and 2-year mortality rates were 4.2%, 10.9%, 24.0%, 41.3%, and 51.1%, respectively. Survival curves comparing cerebral infarction cases (n=139) and other cases (n=124) did not show a statistically significant difference (log-rank test, p=0.507). Cerebral infarction was not significant risk factors for death following PEG.

**Conclusion:** In prognostic terms, the overall mortality rate in PEG-treated patients is poor, but PEG does offer survival benefits by providing nutritional support. PEG is a minimally invasive gastrostomy method with low rates of morbidity and procedure-related mortality, even in cases of cerebral infarction.

## PP 28

**A Rare Complication of Antikoagulant Therapy Simulating Duodenal Tumor**Bekir Sarıçık<sup>1</sup>, Eyup Duran<sup>2</sup>, Ismail Erbas<sup>3</sup>, Yılmaz Polat<sup>1</sup><sup>1</sup> Elazig Medical Park Hospital, Department of General Surgery, Elazig, Turkey<sup>2</sup> Elazig Military Hospital, Department of General Surgery, Elazig, Turkey<sup>3</sup> Elazig Medical Park Hospital, Department of Gastroenterology, Elazig, Turkey

**Background:** We present an interesting case of duodenal hematoma in a male patient who admitted to our hospital with chest pain.

**Material and Methods:** Cardiovascular surgery was planned. In preoperative evaluation anemia was detected. Etiology of anemia was gastrointestinal bleeding. Duodenum was found to be stenotic due to duodenal mass in endoscopy of upper gastrointestinal tract.

**Result:** There was bleeding on the mass, so biopsy wasn't performed. Endoscopy was repeated after gastrointestinal bleeding treatment and there was no mass in duodenum wall. There was no bleeding. Ultrasonography and CT findings revealed normal anatomy of duodenal wall. The diagnosis of mass was duodenal hematoma which was resolved after hemorrhage treatment.

**Conclusion:** Duodenal haematoma developed as a complication of antikoagulant therapy.

## PP 29

**Anti-Adhesive Gel Decreases Intra-Abdominal Adhesions after Laparotomy: An Experimental Prospective Study**V. Mishalov<sup>1</sup>, P. Byck<sup>1</sup>, I. Leshchyshyn<sup>1</sup>, V. Golinko<sup>1</sup>, O. Okhotska<sup>1</sup>, D. Unukovych<sup>2</sup><sup>1</sup> Department of Surgery, National O.Bohomolets Medical University, Kiev, Ukraine<sup>2</sup> Karolinska Institutet, Stockholm, Sweden

**Background:** The aim of this study was to evaluate the effects of anti-adhesive gel on adhesion process and overall complications after bowel resection and abdominal wall repair with polypropylene mesh.

**Material and Methods:** Fifty-two Wistar rats that have been previously operated with laparotomy and ileum resection with end-to-end anastomosis were eligible for the study. All anastomoses were performed with sutures by one surgeon (PB). Approximately one month after the surgery, all rats were reoperated with primary anastomosis resection and new anastomosis formation (Group I, n=16). In Group II (n=19), a PML1 mesh was used for "sublay" abdominal wall repair, and in Group III (n=17) both PML1 mesh and an anti-

adhesive gel was used.

**Result:** Groups were not statistically different at baseline. At the follow-up, adhesive process in abdominal cavity was statistically significant higher in Group II compared to Group I ( $p > 0,001$ ). There was positive correlation between mesh implantation and adhesive process ( $p = 0,489$ ,  $p = 0,003$ ). In Group III there was a statistically lower spread of adhesion than in Group II ( $p > 0,001$ ) as well as lower severity compared to Group I ( $p = 0.038$ ) and Group II ( $p = 0.013$ ). Infections in Group I, II, and III were in 4/16 (25%), 6/19 (31.6%) and 11/17 (64.7%) cases, respectively, indicating statistically worse results ( $p > 0,001$ ) in Group III.

**Conclusion:** Anti-adhesive gel application significantly reduced the spread and severity of intra-abdominal adhesions. However, the rate of infections and mesh non-engraftment in animals with anti-adhesive gel were higher.

### PP 30

#### A New Technique for Laparoscopic Trocar Site Closure: Feasibility Study and Comparison with a Previously Described Method in Pigs

Marco Gandini, Gessica Giusto

Department of Veterinary Sciences, University of Turin, Grugliasco (TO), Italy

**Background:** Laparoscopic trocars create small defects through which the bowel or omentum can herniate. Closure of such small wounds can be difficult and many techniques and devices have been developed for port sites closure.

The aim of this study is to describe a new method for trocar site closure in pigs and to compare it with a previously described technique.

**Material and Methods:** The new technique uses the trocar sheath to guard a curved needle passed transcutaneously with the abdomen inflated. The suture is then retrieved subcutaneously and tied.

The feasibility and effectiveness of the new proposed technique was evaluated and compared with a previously described technique that uses the trocar sheath and retractors to pass a ski-needle in the fascia. Both techniques were evaluated on small (9 kg) and larger dead pigs (40 kg) for the ability in closing abdominal layers.

Healing of 5 mm and 10 mm trocar site wounds closed with both techniques was then compared in 8 live animals (40 kg).

**Result:** Both techniques allowed closure of all layers in small pigs but only the new proposed technique allowed closure of all layers in animals with a thicker abdominal wall. In live animals healing of trocar wounds was complete at 8 days postoperatively, unregarding of trocar size or technique used.

**Conclusion:** Both techniques can be performed without specific instruments and are fast and inexpensive. Only the new proposed technique can be performed with the abdomen inflated and allows closure of all layers in animals with thick

preperitoneal and subcutaneous fat.

### PP 31

#### Lichtenstein Versus Lichtenstein Plus Plug in Open Hernia Repair

Halil Koray Sezer, Gokhan Celikkol

Balikesir military Hospital, Balikesir, Turkey

**Background:** Although the Lichtenstein technique is currently the gold standard of hernia repair for anterior approach with a high level of evidence, Lichtenstein plus plug technique is currently gaining popularity in new treatment trends.

The aim of the study is comparing the outcomes of two surgical procedures (Lichtenstein technique (LT) and Lichtenstein plus plug technique (LPPT)).

**Material and Methods:** Prospectively collected records of fifty two patients who underwent surgical treatment for inguinal hernia from May 2009 to January 2011 were retrospectively assessed. Patients were divided into two groups, LT ( $n = 27$ ) and LPPT ( $n = 25$ ). Operation time, complications (wound infection, collection), scrotal-related complications (edema, orchitis or hydrocele), postoperative pain score, length of hospital stay, time to return to normal activity, time to return to work, recurrence rates, chronic pain were compared between the two groups. All patients were seen and data were collected after 2 weeks, 6 months and 2 years.

**Result:** The median age was 27,59 (20-65). Eight patients had recurrence hernia. Twelve patients had Nyhus type 3A hernia. In our study, operation time was found similar in both of the two groups (LT=45.2 minute, LPPT: 43.6 minute). Also no recurrence was found in both groups for 2 years follow-up and no significant differences between the two groups were determined.

**Conclusion:** In our study results were found similar in both groups. There were no significant differences between the 2 groups concerning early or late complications.

### PP 32

#### Outcomes from Emergency Femoral Hernia Repair

Katherine Guest, Ioannis Nikolopoulos, Ahmed El Gaddal, Dominic Corry

Queen Elizabeth Hospital, London, United Kingdom

**Background:** Femoral hernias (FH) are relatively uncommon, but remain a frequent cause of small bowel obstruction and strangulation, often necessitating emergency surgical intervention. The aim of this study is to investigate the outcomes of emergency femoral hernia repairs.

**Material and Methods:** This is a retrospective analysis



of all patients that underwent an emergency Femoral Hernia repair between 2008 and 2013 at Queen Elizabeth Hospital in London.

**Result:** A total of 37 patients underwent FH repair, with 27 operations (73%) being performed as emergencies (93% female). The median age was 83 years (34 – 93), median operative time was 85 minutes (25–205), median ASA score was 3 and median hospital length of stay was 5 days (1–57). There were 17 right-sided hernias (63%) and one bilateral which required small bowel resection on both sides.

The majority of cases (70%) were performed using the Lockwood infra-inguinal approach, with senior surgical trainees conducting most operations (93%). Adverse intra-operative events were common, with 13 patients (48%) requiring a small bowel resection. Five patients had to be transferred to the Intensive Care Unit with cardiopulmonary complications and one patient (3.7%) died from aspiration pneumonia.

**Conclusion:** Femoral Hernias are associated with high rates of incarceration / strangulation and intestinal resection. Emergency surgery can increase the morbidity and mortality, especially in the elderly.

#### PP 33

### Strangulated Inguinal Hernia of Bladder and Small Bowel

*Mehmet Erikoglu, Serhat Dogan, Hakan Hakki Taskapu*

Necmettin Erbakan University Meram Medical Faculty,  
Konya, Turkey

**Background:** In the inguinal hernia sac, the bladder is very rare. The aim of this study is to present a rare case of strangulated inguinal hernia, including bladder and bowel necrosis.

**Material and Methods:** A male patient, 80 years old, was admitted to our clinic with swelling, abdominal swelling and pain, nausea, vomiting and an inability to defecate. On physical examination, a skin rash, edema, and a painful palpable mass about 6x8cm were detected on the right inguinal region. Abdominal distention, rebound and defense were positive. Laboratory tests showed leukocyte levels were normal, but urea, creatinin, and CRP levels were elevated. Direct abdominal radiography revealed a few air-fluid levels in the small bowel. The patient was operated on for a strangulated inguinal hernia.

**Result:** In the operation, we saw the small bowel and bladder were necrotic, and we found a large perforation in the small bowel. Because of the infected area, the necrotic small bowel was resected and a double barrel ileostomy was performed. A partial cystectomy was performed on the necrotic bladder. The area was then irrigated with serum physiological solution. In the postoperative period, the intubated patient was monitored in the intensive care unit. On the postoperative first day, the patient died because of multiorgan failure.

**Conclusion:** To our knowledge, cases involving both bladder and small bowel necrosis have not been reported in the literature. As a result, when elderly patients are operated on for strangulated hernia, necrosis of the bladder should also be considered.

#### PP 34

### Outcome of Sublay Mesh Repair in Non-Complicated Umbilical Hernia with Liver Cirrhosis and Ascites

*Ahmed Mohamed Abdelaziz Hassan<sup>1</sup>,  
Asaad Fayrouz Salama<sup>2</sup>, Hussam Hamdy<sup>1</sup>,  
Magdy Mohamed Elsebae<sup>2</sup>, Ayman Mohamed Abdelaziz<sup>1</sup>,  
Wessam Abdelrahman Elzayat<sup>2</sup>*

<sup>1</sup> Theodor Bilharz Research Institute, Cairo, Egypt

<sup>2</sup> Faculty of Medicine, Cairo University, Cairo, Egypt

**Background:** Umbilical hernia repair is often accompanied by complications in patients with liver cirrhosis and ascites. It appears that the early elective repair of umbilical hernias in these patients is safer and can be considered for selected patients. The objective of this study is to evaluate the feasibility, safety, complications and technical aspects of sublay mesh repair of umbilical hernia in cirrhotic patients with ascites.

**Material and Methods:** Between October 2010 and April 2013, 70 patients with non-complicated umbilical hernia, liver cirrhosis and ascites were enrolled in this study. All patients underwent sublay mesh repair. Demographic data, preoperative variables, peri-operative course, and postoperative complications were recorded and analyzed.

**Result:** A total of 38 women and 32 men underwent operation at an average age 51.24 years. The patients mean MELD score was 18 (range 12e25). The mean operative time was 67.45 min and the average hospital stay was 3.8 days. 2 patients had wound infection, 3 patients developed seroma and 1 patient had an ascitic fistula. Recurrence occurred in 1 (1.4%) patient and no mortality related to the procedure.

**Conclusion:** Elective sublay umbilical hernia mesh repair is a safe approach and feasible technique in selected non-complicated cirrhotic patients with ascites.

#### PP 35

### Surgical Treatment of Ventral Hernias in Morbid Obesity Patients

*Vladimir A. Samartsev, Liudmila P. Kotelnikova,  
Yuri B. Busirev, Vasily A. Gavrilov*

Perm State Medical Academy named ac. E.A. Vagner,  
Perm, Russian Federation

**Background:** The aim of our studies was to improve the treatment results in patients with morbid obesity with

ventral hernias by developing criteria for choosing the optimal method of hernioplasty and abdominoplasty.

**Material and Methods:** 496 patients with ventral hernias were included into the studying. Morbid obesity 1-4 degree observed in 426(86%) cases. Ptosis of the abdominal wall - in 38(7.7%) cases: 1st degree - 200(52.1%); 2nd degree - 104(27.1%), 3 degree - 67(17.2%); 4 degree - in 14(3.6%) cases. In 172(34.7%) patients were observed pathology of the cardiovascular system. All 54(10.8%) patients with large and giant ventral hernias (W3-W4) conducted a study of compression oscillotometry.

**Result:** All 54 patients with morbid obesity and BMI over 50 kg/m<sup>2</sup> performed bilio-pancreatic diversion. Combined methods of hernioplasty were used in 17(31.5%) patients. The maximum level of intra-abdominal pressure (IAP) was 23.6 mm RT. After the hernioplasty IPA was 21.3±2.3 mm RT. Specific complications observed in 6(9.7%) cases, including seromas 3(5.7%), SSI - 2(2.8%), the marginal necrosis of the skin - 1(1.2%). Non-specific complications were observed in 2(1.6%) people. There were no lethal outcomes.

**Conclusion:** The correction of underlying diseases and differentiated approach to the choice of method for reconstruction of the anterior abdominal wall after bariatric surgery in patients with over obesity and ventral hernias can achieve good aesthetic and functional results of surgical treatment.

#### PP 36

### Results Of Surgical Treatment of Ventral Hernias

Vladimir A. Samartsev, Yuri B. Busirev, Vasily A. Gavrilov, Alexander A. Parshakov

Perm State Medical Academy named ac. E.A. Vagner, Perm, Russian Federation

**Background:** The aim of our research was to analyze the complications of surgical treatment of inguinal and ventral primary and incisional hernias.

**Material and Methods:** We conducted a retrospective analysis of the results of surgical treatment 1196 patients. In 661(55.3%) cases were observed primary ventral hernias, in 376(31.4%) - primary and post-operative ventral hernia and in 159(13.3%) patients - recurrent ventral hernias. There were 138(25.7%) performed tension onlay technology, 263(49.2%) sublay technology, 61(11.4%) - abdominoplasty and bariatric operations, 40(7.5%) - onlay technology and 23(4.3%) - sublay technology. Liechtenstein hernioplasty was performed in 457(83.7%), hernioplasty using PHS - 42(7.7%), hernioplasty the Mayor of 39(7.1%), Stoppa - 8(1.5%).

**Result:** In 103(8.6%) patients were observed: seromas - 53(4.4%), surgical site infection - 14(1.2%), chronic postoperative pain - 42(3.5%), incisional hernias - 34(2.8%). The meshes removed in four cases with SSI. In patients group with inguinal hernia were observed: hydrocele - 2(0.4%),

ischemic orchitis - 4(0.7%) after primary and 7(1.3%) after a recurrent hernia; 5(0.9%) - urination disorders. In 159 cases with large incisional hernia tromboembolia small branches of the pulmonary artery was observed in 2(1.3%); compartment abdominal syndrome 2(1.2%).

**Conclusion:** Despite the introduction of high technologies in modern hernioplasty, improvement of operational equipment and a complex of measures aimed at prevention of SSI, the number and nature of postoperative complications remain without significant changes.

#### PP 37

### Successful Laparoscopic Management of an Incarcerated Obturator Hernia

Np Lynch, M Corrigan, E Andrews, D Kearney

Department of Surgery Cork University Hospital, Cork, Ireland

**Background:** Obturator hernia is a rare pelvic hernia that occurs primarily in multiparous, elderly (>70 years of age), thin females. This case highlights the successful laparoscopic mesh repair of an incarcerated obturator hernia in an octogenarian.

**Material and Methods:** The authors report a case of an incarcerated obturator hernia in an elderly female with subsequent high-grade small bowel and its successful laparoscopic operative management. A review of the relevant literature was also performed following a search on the online literature databases PUBMED and EMBASE.

**Result:** Laparoscopic mesh repair of the incarcerated obturator hernia and an ipsilateral femoral hernia found incidentally was successfully performed. A review of the literature showed a significant burden of morbidity and mortality associated with obturator hernias. Laparoscopic mesh repair has been previously shown to be a safe therapeutic modality.

**Conclusion:** Small bowel obstruction and leg pain in a thin elderly lady should arouse suspicion for an incarcerated obturator hernia. Laparoscopic management of an incarcerated obturator hernia is a feasible and safe therapeutic option.

#### PP 38

### Reducing Invasiveness Using Natural Orifices and Abdominal Wall Defects

Tímea Kakucs<sup>1</sup>, Péter Lukovich<sup>1</sup>, Attila Bokor<sup>2</sup>

<sup>1</sup> 1st Department of Surgery, Semmelweis University, Budapest, Hungary

<sup>2</sup> 1st Department of Gynecology, Budapest, Hungary

**Background:** Laparoscopy has several advantages such as decreasing postoperative pain and the risk of incisional hernia or leaving a more aesthetic skin scar. However, in case of organ

resection, the extraction of the specimen sometimes requires larger abdominal incision. In such cases, natural orifices and pathological abdominal orifices (for example inguinal hernia) are used, when possible, in order to avoid incision-related complications.

**Material and Methods:** There were several cases in our clinical case material where there was indication for natural orifice specimen extraction. A patient with large expansive severe dysplasia of the stomach was operated laparoscopically. Intraoperatively, the lesion was detected, marked with gastroscopic monitoring and finally, after resection, the specimen was extracted through the mouth with an endobag. In several patients suffering from deeply infiltrating endometriosis that involved the rectosigma and the vagina, the specimen was routinely removed through the vagina. In other cases, where the vagina was not infiltrated, the resected bowel segment was extracted through the opened rectum. Besides natural orifices, abdominal wall defects such as inguinal hernia may be used as well, either for specimen extraction (sigmoid colon tumour after laparoscopic resection) or for single-port insertion (cholecystectomy). The operations presented above will be illustrated with videos of cases occurred at our hospital.

**Conclusion:** Natural orifices and abdominal wall defects are both suitable for specimen extraction and should be considered when planning a laparoscopic operation.

#### PP 39

### Analysis of Breast Reconstruction Using Prosthesis after Irradiation

Masatsugu Okishiro<sup>1</sup>, Chiyoami Egawa<sup>1</sup>, Kanae Nitta<sup>1</sup>, Hiroki Kusama<sup>2</sup>, Yuichi Takastuka<sup>1</sup>, Yuji Asada<sup>1</sup>

<sup>1</sup> Kansai Rosai Hospital, Dept. of Breast Surgery, Amagasaki, Japan

<sup>2</sup> Kansai Rosai Hospital, Dept. of Plastic Surgery, Amagasaki, Japan

**Background:** In recent years, breast reconstructions have come to be widely performed. However, there is a lack of evidence for breast reconstruction on patients with a history of chest wall irradiation, and given the post-reconstruction risk of complications, it is essentially not recommended. In this study, we examined breast reconstruction using prostheses following chest wall irradiation.

**Material and Methods:** We examined the complications, reconstruction success rate, and post-reconstructive capsular contracture in 9 patients at our hospital between January 2009 and November 2013 who had undergone reconstructive procedures using prostheses following chest wall irradiation.

**Result:** The median age of the patients was 55 years (range 44–67 years). 7 patients who underwent mastectomy following recurrence within the breast after undergoing breast conservation surgery, 1 patient following a mastectomy with radiotherapy, and 1 patient following breast conservation surgery. Complications included infections

observed in 2 patients, and removal of an expander in 1 patient. The reconstruction success rate was 88.9%. For post-reconstructive capsular contracture, 2 patients were Baker grade I, 6 patients were Baker grade II, and no Baker grade III or IV were observed.

**Conclusion:** Breast reconstruction using expander and implant following chest wall irradiation was relatively safe and was within tolerable ranges for capsular contracture. We consider it an option once the risks have been explained should the patient strongly desire to undergo breast reconstruction.

#### PP 40

### Karydakias Flap Reconstruction Versus Cleft Lift Procedure in Pilonidal Disease

Halil Koray Sezer<sup>1</sup>, Gokhan Celikkol<sup>1</sup>, Inci Celikkol<sup>1</sup>, Muharrem Oztas<sup>2</sup>

<sup>1</sup> Balikesir military Hospital, Balikesir, Turkey

<sup>2</sup> Sirtak Military Hospital, Sirtak, Turkey

**Background:** Pilonidal disease causes discomfort and distress to patients also it prolongs work-off period. Pilonidal sinus is a disease that does not have a standardized surgical treatment method. In this study, we compared the karydakias flap reconstruction (KFR) and Cleft Lift Procedure with excision of pit (CL).

**Material and Methods:** Prospectively collected records of eighty-two patients who underwent surgical treatment for Pilonidal disease from Jan 2009 to May 2011 were retrospectively assessed. Patients were divided into two groups, KFR (n=44) and CL (n=38). Surgical findings, complications (wound infection, collection, minor dehiscence, dehiscence), length of hospital stay, time to return to normal activity, time to return to work, recurrence rates, and degree of satisfaction based on a questionnaire obtained via telephone interview were compared between the two groups

**Result:** Length of hospital stay was found similar in the two groups. There was no significant difference in recurrence rate (KFR group %5,2 cleft group%8) and in terms of complications (KFR group %5, cleft group%9), (p>0.05). Time to return to normal activity and time to return to work were shorter in KFR group. Seventy-two percent of patients in KFR group and seventy-one percent in CL group were completely satisfied with the procedure.

**Conclusion:** Although there was no significant difference in recurrence rate and in terms of complications between two groups, Karydakias flap reconstruction may be preferred in the surgical management of non-acute pilonidal disease because of less time to return to normal activity and time to return to work.

## PP 41

**Late Complications of Lower Limb Augmentation Using Silicone Injections***Zita M Jessop, Matthew Welck, Emily Zinser, Nicholas Garlick*

Royal Free Hospital, London, United Kingdom

**Background:** Complications of dermal fillers, although infrequent, are becoming increasingly recognised. We describe three cases that highlight how complications of silicone injections for lower limb soft tissue augmentation can present.

**Material and Methods:** Presenting symptoms included pain, oedema and erythema at the site of injection following a considerable delay between the last injection and onset of symptoms (2 – 7 years). Data was collected on the biochemistry, hematology, tissue histology, microbiology and imaging.

**Result:** Complications ranged from loosening of primary total hip arthroplasty, sciatica from perineural inflammation, prolonged cellulitis and abscesses. Histology revealed silicone granuloma in all three cases. Patients were reluctant to divulge cosmetic filler use or failed to recognise the significance given time delay in presentation, making diagnosis difficult. Previous antibiotic use and biofilms impacted on expedient microbiological diagnosis.

**Conclusion:** Delayed granulomatous reactions compromise soft tissue healing, lead to aseptic loosening of implants and predispose to resistant, infiltrative infection. Orthopaedic and plastic surgeons should be aware of complications of silicone injections due to increase in use in lower limb soft tissue augmentation.

## PP 42

**Applications of Three Dimensional Printing in Plastic Surgery***Zita M Jessop<sup>1</sup>, Matthew Gardiner<sup>1</sup>, Daniel Thomas<sup>2</sup>, Jos Malda<sup>3</sup>, Iain Whitaker<sup>4</sup>*<sup>1</sup> Royal Free Hospital, London, United Kingdom<sup>2</sup> Institute of Life Science, Swansea University, Swansea, United Kingdom<sup>3</sup> University Medical Centre Utrecht, Utrecht, Netherlands<sup>4</sup> Swansea University & Welsh Centre for Burns and Plastic Surgery, Swansea, United Kingdom

**Background:** Three dimensional (3D) printing creates a physical model from digital data using additive manufacturing techniques. 'Classic' approaches involve thermoplastics, metal alloys and ceramics. More recently bioprinting or biofabrication has evolved which allows production of biological scaffolds containing cells and bioactive molecules. Bioprinting in combination with the rapid advances in tissue engineering has wide applications in plastic and reconstructive surgery.

**Material and Methods:** A literature search of MEDLINE, EMBASE and Cochrane Database of Systematic Reviews was performed. The MESH terms used were variants on "three dimensional printing" and "reconstructive surgery". Two independent reviewers assessed articles published between 1987 and 2013. In combination with bibliographic secondary linkage. Data extraction focused on techniques and applications in plastic and reconstructive surgery.

**Result:** Analysis of the literature revealed that the applications of plastic and reconstructive surgery can be broadly classified into three areas: preoperative planning and education, custom implant manufacture and biofabrication. The latter has been used to create several tissue types including skin, cartilage, blood vessels and bone but there are no clinical trials in existence.

**Conclusion:** With advances in technology and cost reduction, additive manufacturing technology has brought clinical benefit through improved pre-operative planning and custom implant production. Bioprinting is on the cusp of providing composite and durable biological tissues for use in reconstruction. Fundamental obstacles include balancing scaffold properties to optimise resolution, cell migration, proliferation and differentiation. The panacea of composite flap fabrication or organogenesis would ultimately depend on adequate vasculature.

## PP 43

**Thrombotic Complications of Chemotherapy and Breast Reconstruction***Kate Richards<sup>1</sup>, Charles Malata<sup>2</sup>, Parto Forouhi<sup>2</sup>, Andrew Johnston<sup>2</sup>*<sup>1</sup> Buckinghamshire Healthcare NHS Trust, Aylesbury, United Kingdom<sup>2</sup> Cambridge University Hospitals NHS Trust, Cambridge, United Kingdom

**Background:** Thrombotic complications arising during the treatment of breast cancer can impact the breast reconstruction pathway. We set out to review the details of cases of thromboembolism occurring during neoadjuvant chemotherapy and peri-operatively to study the impact of the event and its management on subsequent breast reconstruction.

**Material and Methods:** We retrospectively reviewed the medical records of seven patients who had experienced a thrombotic event during their treatment of breast cancer between 2008 and 2012, who then proceeded to breast reconstruction. We recorded size and grade of tumour, neoadjuvant chemotherapeutic regimen, details of port insertion, planned reconstruction, thrombotic event and its management and the surgery performed and outcome.

**Result:** All patients received chemotherapy via central venous access and went on to present with local symptomatic thrombosis. They were managed with anticoagulant regimens at the time of mastectomy and reconstruction, which were

unique for each patient. The results revealed delays to surgery and modifications to planned reconstruction.

**Conclusion:** An awareness of the effects of thrombotic events in this patient group is important in terms of developing an understanding of its impact on the performance of reconstruction, on the management of anticoagulation peri-operatively and on monitoring for post-operative complications.

#### PP 44

### Necrotising Fasciitis; The Difficulties of Diagnosis in the ICU Setting

Henrietta Creasy<sup>1</sup>, Zita M Jessop<sup>1</sup>, Alexander Woollard<sup>2</sup>, Ash Mosahebi<sup>2</sup>

<sup>1</sup> St Thomas' Hospital, London, United Kingdom

<sup>2</sup> Royal Free Hospital, London, United Kingdom

**Background:** Necrotising fasciitis is a rare, rapidly progressive infection characterised by widespread necrosis of subcutaneous tissue and fascia. The high mortality associated with the infection mandates early recognition and prompt surgical intervention.

**Material and Methods:** We describe the case of a 30-year-old female who initially presented with epistaxis and a painful right wrist. She had a complex medical history which included renal failure secondary to lupus nephritis, coronary bypass and mitral valve replacement. Over the course of her admission she deteriorated and was transferred to the Intensive Care Unit (ICU) following a cardiac arrest. While intubated she developed necrotising fasciitis, however there was a significant delay in diagnosis and subsequent surgical debridement

**Result:** A total of 22 hours passed from her spiking a temperature, and exhibiting cardiovascular instability requiring inotropic support, to surgical debridement. We reflect on the timing of recognition of the source of sepsis and the non-specific early clinical findings associated with the infection. We examine the effect that the intensive care environment had on the detection of these early indicators, notably her altered state of consciousness and concurrent multi-organ support.

**Conclusion:** While the ICU has a prominent role in the management of patients with necrotising fasciitis, this case highlights the difficulty of establishing a diagnosis when it presents in a patient already requiring intensive care. We propose that the skin should be considered as a source when performing a septic screen and that intensivists should have a high index of suspicion due to paucity of specific cutaneous findings.

#### PP 45

### Peritumoral Vascular and Lymphatic Invasion in Breast Cancer

N. S. Salemis<sup>1</sup>, G. Karavitis<sup>1</sup>, N. Koronakis<sup>1</sup>, E. Lagoudianakis<sup>1</sup>, G. Karanikas<sup>2</sup>, A. Papas<sup>2</sup>, A. Manouras<sup>2</sup>, G. Zografos<sup>2</sup>

<sup>1</sup> Breast Unit, 2nd Department of Surgery, Army General Hospital, Athens, Greece

<sup>2</sup> 1st Department of Propaedeutic Surgery, Hippocrateion Hospital, Athens Medical School, University of Athens, Athens, Greece

**Background:** Peritumoral vascular (PVI) and lymphatic invasion (PLI) may signal an increased metastatic potential. The aim of this study was to correlate PVI and PLI of invasive ductal carcinoma with stage and prognosis.

**Material and Methods:** We analysed the medical archives of 236 female patients with invasive breast carcinomas, with a mean age of 60 years old (SD± 15.1 years). Prognosis data were acquired from 93 patients of the cohort.

**Result:** Pathological examination revealed that 22.5% of the patients had vascular vessel infiltration and 37.3% had lymphatic vessel infiltration at the invasive tumor front. Statistical analyses showed that vascular vessel infiltration correlated with advanced TNM stage (p<0.05), higher T stage (p<0.05), higher N stage (p<0.05). In a similar manner lymphatic vessel infiltration correlated with advanced TNM stage (p<0.05), higher T stage (p<0.05) and higher N stage (p<0.05).

The median follow-up of our patients was 30 [22.46] months. During this period of follow-up 13.2% had disease recurrence and 6.5% died.

The statistical analysis did not showed significant correlation between the presence of infiltration of the vascular and the lymphatic bed in the periphery of the tumor and the overall and disease-free survival.

**Conclusion:** The presence of PVI and PLI correlates with advanced stage of the disease but lacks prognostic significance.

#### PP 46

### EGFR Expression Correlates With Advance Stage And Grade In Breast Cancer

N. S. Salemis<sup>1</sup>, G. Karavitis<sup>1</sup>, N. Koronakis<sup>1</sup>, G. Karanikas<sup>2</sup>, A. Papas<sup>2</sup>, A. Manouras<sup>2</sup>, G. Zografos<sup>2</sup>, E. Lagoudianakis<sup>1</sup>

<sup>1</sup> Breast Unit, 2nd Department of Surgery, Army General Hospital, Athens, Greece

<sup>2</sup> 1st Department of Propaedeutic Surgery, Hippocrateion Hospital, Athens Medical School, University of Athens, Athens, Greece

**Background:** EGFR has been associated with unfavourable prognosis in patients with triple-negative breast carcinomas.

The aim of this study was to investigate the expression of EGFR and its correlation with stage, grade and prognosis in an unselected cohort of Greek patients with breast cancer.

**Material and Methods:** We analyzed the medical archives of 306 female patients with invasive breast carcinomas, with a mean age of 56 [45-68] years.

**Result:** Immunohistochemical analysis revealed that 17% of the patients were positive for EGFR expression. Statistical analyses showed that EGFR positive tumors correlated with higher histologic grade ( $p < 0.05$ ) and advanced TNM stage ( $p < 0.05$ ). Marginal statistical association was found between EGFR expression and size ( $p = 0.06$ ) and lymph node metastasis ( $p = 0.08$ )

The median follow-up of patients was 63 [61,66] months. During follow-up of patients 14.8% had disease recurrence and 19.5% died. Adjusting for stage and grade EGFR expression showed statistically significant relationship with survival (Exp (B)=2,05,  $p = 0,03$ ) and disease-free survival (Exp (B)=4,16,  $p = 0,001$ ).

**Conclusion:** These data indicate that EGFR is a prognostic factor of worse clinical outcome and that the EGFR positive phenotype is associated with advance stage in breast cancer patients.

#### PP 47

### Advanced Breast Cancer Is Associated with Negative BCL2 Expression

N. S. Salemis<sup>1</sup>, G. Karanikas<sup>2</sup>, N. Koronakis<sup>1</sup>,  
E. Lagoudianakis<sup>1</sup>, G. Karavitis<sup>1</sup>, A. Papas<sup>2</sup>, K. Filis<sup>2</sup>,  
A. Manouras<sup>2</sup>, G. Zografos<sup>2</sup>

<sup>1</sup> Breast Unit, 2nd Department of Surgery, Army General Hospital, Athens, Greece

<sup>2</sup> 1st Department of Propaedeutic Surgery, Hippocrateion Hospital, Athens Medical School, University of Athens, Athens, Greece

**Background:** The BCL2 protein is a member of a gene family that regulates apoptosis. In many solid organ tumors, including breast cancer, positive BCL2 expression paradoxically appears to exert a tumor suppressor effect resulting in better prognosis. This study investigated the relation of BCL2 to advanced stage, estrogen and progesterone expression and its prognostic value in patients with invasive breast cancer.

**Material and Methods:** This study comprised of 306 cases of breast cancer. Tumor blocks from each specimen were evaluated with immunohistochemical staining for the evaluation of ER, PR and BCL2.

**Result:** The median age of our patients was 56±14,5 years. BCL2 positivity correlated with better histologic grade ( $p < 0.05$ ), positive ER and PR expression ( $p < 0.05$ ) and earlier cancer stage. Also BCL2 positivity correlated with tumor size ( $p < 0,01$ ).

After a median follow up of 63 months BCL2 positive staining was associated with lower local recurrence. On the contrary BCL2 showed no association with all-cause mortality but

when adjusted for stage, BCL2 positivity was associated with better disease free survival.

**Conclusion:** Our results showed that BCL2 is an independent indicator of prognosis. Further work is needed to elucidate the value of BCL2 in the stratification of breast cancer.

#### PP 48

### Clinicopathologic Features of Patients With Above 5-Year Survival after Colorectal Cancer Resection

Eyup Duran<sup>1</sup>, Zafer Kubaş<sup>2</sup>, Mehmet Fatih Can<sup>2</sup>,  
Mustafa Tahir Ozer<sup>2</sup>, Nail Ersöz<sup>2</sup>, Mustafa Tanrıseven<sup>3</sup>,  
Sezai Demirbas<sup>2</sup>

<sup>1</sup> Elazığ Military Hospital, Department of General Surgery, Elazığ, Turkey

<sup>2</sup> Gulhane School of Medicine, Department of General Surgery, Ankara, Turkey

<sup>3</sup> Diyarbakır Military Hospital, Department of General Surgery, Diyarbakır, Turkey

**Background:** The 5-year survival rate for colorectal cancer (CRC) vary by stage. It is between 5 and 90%. The aim of this study is to evaluate clinicopathologic features of patients with above 5-year survival after CRC resection.

**Material and Methods:** Patients undergoing CRC resection from 2000 to 2008 were included. Patient characteristics, type of surgery, pathologic results and recurrences rates were analyzed. Data were reviewed prospectively.

**Result:** A total of 151 patients with above 5-year survival after CRC resection were operated during this study period. The mean age of the patients was 57.2. The ratio of male to female was 100/51. A total of 51 patients were operated on for rectal cancer and 100 patients were operated on for colon cancer. Only 8 patients presented as emergencies. Among 151 patients, 21 were stage I, 67 were stage II, 37 were stage III and 21 were stage IV. 21 patients developed recurrence.

**Conclusion:** This study shows that despite the improved diagnostic techniques colorectal cancer is being diagnosed late

#### PP 49

### PKD Inhibitor Has Therapeutic Possibility of Gastric Cancer

Ken Tsuboi, Yoichi Matsuo, Tomoya Shamoto, Takahiro Shibata, Mamoru Morimoto, Takehiro Wakasugi, Hideyuki Ishiguro, Masahiro Kimura, Hiromitsu Takeyama

Department of Gastroenterological Surgery, Nagoya City University Graduate School of Medical Sciences, Nagoya, Japan

**Background:** Angiogenesis is one of the carcinogenesis factors in gastric cancer. IL-8 and VEGF are reported to promote

tumor angiogenesis. Protein kinase D (PKD) regulates multiple normal and abnormal biological processes, for example, proliferation, inflammation and angiogenesis. We examined the effects of PKD inhibitor in gastric cancer angiogenesis.

**Material and Methods:** We used the gastric cancer cell line, MKN45. MKN45 was cultured with phorbol myristate acetate (PMA) that is the inducer of PKD phosphorylation. CID755673 was reported to act as an inhibitor of PKD. The phosphorylation of PKD was estimated by Western blotting. The mRNA expressions of IL-8 were measured by realtime RT-PCR. The secretion levels of IL-8 were measured by ELISA. The tumor angiogenesis of gastric cancer was examined by in vitro angiogenesis assay kit.

**Result:** In Western blotting, PMA induced PKD phosphorylation on Ser 744 and Ser 916 in MKN45. The induced PKD phosphorylation was decreased by the addition of CID755673. PMA increased mRNA expressions of IL-8 in gastric cancer and CID755673 abrogated the effects. The secretion levels of IL-8 in MKN45 were also increased by PMA and the increased secretion levels were inhibited by CID755673. The tube formation of human umbilical vein endothelial cell (HUVEC) was increased by coculture with MKN45 in vitro angiogenesis assay, and CID755673 decreased the tube formation of HUVEC.

**Conclusion:** CID755673 inhibited the PMA induced PKD phosphorylation and IL-8 secretion levels in MKN45. PKD inhibitor regressed angiogenesis in gastric cancer. Therefore PKD inhibitor may have an anti-tumor property in gastric cancer.

## PP 50

### Is It Just Splenectomy? A Case of Ginormous Splenic Metastasis Treated Surgically

Saima Anwar<sup>1</sup>, Sajid Mehmood<sup>2</sup>, Mir Siraj Ali<sup>1</sup>, Faisal Siddiqui<sup>1</sup>, Rufina Soomro<sup>1</sup>

<sup>1</sup> Liaquat National Postgraduate Medical Centre, Karachi, Pakistan

<sup>2</sup> North Cumbria University Hospitals NHS Trust, Carlisle, United Kingdom

**Background:** Parenchymal splenic metastasis is uncommon and has been reported to pose significant diagnostic and technical challenge. We report a case of ginormous spleen with parenchymal lesions of ovarian origin.

**Material and Methods:** A 32-year-old lady presented with a large mass in the abdomen associated with significant discomfort, breathing difficulties, and impaired quality of life. Some three years ago, she was treated with neoadjuvant chemotherapy, abdominal hysterectomy, bilateral salpingo-oophorectomy, and omentectomy for ovarian adenocarcinoma with omental and para-aortic nodal metastases. Abdominal examination revealed marked distension with a large palpable mass. An elevation in CA-125 levels (233 U/mL) suggested recurrent ovarian cancer and a CT scan revealed a large cystic mass arising from spleen, measuring 25x20 cm, along with

liver lesions.

**Result:** In view of potential resectability of the mass, a palliative resection was offered. At laparotomy, spleen was noted to be transformed into a huge mass occupying all quadrants. The splenic mass was resected intact and the specimen weighed seven kilograms. The histological examination confirmed parenchymal metastasis from ovarian cystadenocarcinoma. The patient recovered well after a prolonged hospital stay.

**Conclusion:** Spleen remains an infrequent site for metastatic disease with up to 0.6% and 7.3% of spleens showing malignant deposits at autopsy and pathological assessments, respectively. Direct peritoneal spread with capsular splenic metastases are not uncommon, however, parenchymal deposits from a rare event and represent hematogenous dissemination. Most splenic metastases originate from solid tumours below the diaphragm and open surgical resection is the mainstay of treatment if deemed operable.

## PP 51

### Retroperitoneal Paraganglioma Presenting Management Dilemmas in a Teenager

Saima Anwar<sup>1</sup>, Sajid Mehmood<sup>2</sup>, Mir Siraj Ali<sup>1</sup>, Faisal Siddiqui<sup>1</sup>, Nadeem Khurshaid<sup>1</sup>

<sup>1</sup> Liaquat National Postgraduate Medical Centre, Karachi, Pakistan

<sup>2</sup> North Cumbria University Hospitals NHS Trust, Carlisle, United Kingdom

**Background:** Paragangliomas are rare tumours arising from extra-adrenal neuroendocrine cells. Most paragangliomas occur in head and neck region and occurrence at other sites including retroperitoneal area is relatively uncommon. Although a familial predisposition has been described, it remains a rare clinical consideration in healthy teenagers. We report a case of retroperitoneal paraganglioma in a teenager and discuss management dilemmas associated with this condition.

**Material and Methods:** A 17-year-old boy presented with one-day-history of severe left upper quadrant pain and a palpable mass. A CT scan revealed a 10x8.5 cm mass in the retroperitoneal area, suggestive of sarcoma. The patient underwent resection of tumour along with involved segment of colon. The histological examination confirmed paraganglioma. A 131I- Metaiodobenzylguanidine (MIBG) scan excluded distant metastasis.

**Result:** Approximately half of abdominal paragangliomas are malignant and once suspected, certain management considerations are pivotal. Urinary and plasma catecholamines along with CT, MRI, and MIBG scanning should be organised to diagnose, localise and characterise these tumours. Surgical excision is the treatment of choice for primary and recurrent tumours. Other treatment options include preoperative debulking with radiotherapy, chemotherapy or ablation

with high dose I-131 MIBG. Unfortunately, no histological criteria for malignancy exist. These tumours are considered malignant if metastasis or recurrence occurs, requiring a lifelong follow-up.

**Conclusion:** Paragangliomas are rare tumours, and extensive biochemical and radiological investigations are usually required prior to surgical intervention. Inexistence of histological criteria for malignancy necessitates a lifelong surveillance in these patients.

## PP 52

### High Level Serum CA125 and Ovarian Fibroma Presenting as Meigs Syndrome Case Report

*Emin Bayramov, Ali Allahverdiyev, Rasim Abdullayev*

Main Clinic Hospital of Armed Forces, Department of Oncology, Baku, Azerbaijan

**Background:** Elevated serum CA125 levels in postmenopausal women with solid adnexal masses, ascites, and pleural effusion are highly suggestive for malignant ovarian tumor. Meigs' syndrome is defined as the triad of benign ovarian tumor with ascites and pleural effusion that resolves after removal of the tumor.

**Material and Methods:** A 52-year old woman was admitted to hospital because of progressive dyspnea, abdominal distention. Blood chemistry was within normal limits except for a serum CA125 level of 1.270 U/ml. CT of the thorax and abdomen confirmed the pericardial and pleural effusions and also revealed ascites and a 20cm left ovarian mass. The chest, abdomen and pelvis were otherwise disease-free.

**Result:** Due to clinical suspicion of malignant ovarian tumor, the patient was submitted to exploratory laparotomy which revealed 5.000 ml of serous ascites. After aspiration of the ascitic fluid, a 13×10×10cm lobulated right adnexal solid mass without excrescences was found. The serum CA125 level on the sixth postoperative day was 22 U/ml. The pleural effusion was resolved completely on repeat chest X-ray. The patient was asymptomatic with a normal serum CA125 level 6 months after the operation.

**Conclusion:** The association of massive abdominal ascites, pleural effusion, and pelvic mass with an elevated serum CA125 level portends a poor prognosis. This case illustrates the importance of appropriate surgery to obtain histopathological confirmation of Meigs' syndrome, as a small percentage of patients will have a benign etiology even in the presence of an elevated serum CA125 level.

## PP 53

### Breast Hamartomas. Diagnostic Evaluation and Management

*N. S. Salemis<sup>1</sup>, I. Koukoutsis<sup>1</sup>, G. Nakos<sup>2</sup>, C. Stoumpos<sup>3</sup>, X. Vakalis<sup>3</sup>, G. Vasilara<sup>3</sup>, E. Lagoudianakis<sup>1</sup>*

<sup>1</sup> Breast Surgery Unit, Army General Hospital, Athens, Greece

<sup>2</sup> Department of Pathology, Army General Hospital, Athens, Greece

<sup>3</sup> Department of Radiology, Army General Hospital, Athens, Greece

**Background:** Breast hamartomas, also known as fibroadenolipomas, are rare benign tumors composed of variable amounts of glandular, adipose and fibrous tissue, surrounded by a pseudocapsule.

**Material and Methods:** We retrospectively reviewed the medical records of all patients older than 14 years who were diagnosed with hamartoma of the breast at the Breast Cancer Surgery Unit of Army General Hospital over a 7-year period. Clinical, sonographic, mammographic and pathological findings were analyzed.

**Result:** Thirteen cases of pathologically proven breast hamartomas were identified during the study period. All patients were female with an average age of 45.4 years (range 36-55 years). Nine (69.2%) of the patients presented with clinically palpable lumps. Eight (61.5%) hamartomas were on the left and five (38.5%) were on the right breast. Mammography and ultrasonography was performed in all cases. Macroscopically, all lesions were solitary with maximum diameters ranging between 2 and 4 cm. On microscopic examination, adipose tissue was found in all cases in variable amounts, while pseudoangiomatous stromal changes and microcalcifications were detected in 23% and 30% of the cases respectively. All but one patient underwent surgical excision. No malignant changes were found, but in one (7.7%) patient a local recurrence occurred five years after primary surgery.

**Conclusion:** Hamartomas of the breast are rare benign tumors. Correlation between clinical and imaging findings is essential. However, the surgical resection is necessary as cases with malignant transformation have been reported in the literature. The recurrence rate is very low.



## PP 54

**Simultaneous Occurrence of Clear Cell Hepatocellular Carcinoma and Clear Cell Renal Carcinoma. Management and Review of The Literature**

I. Koukoutsis, K. Gouzis, I. Matzoukas, A. Trellopoulos 1, G. Karavitis, N. S. Salemis, E. Lagoudianakis

2nd Department of Surgery, Army General Hospital, Athens, Greece

**Background:** The clear cell variant of hepatocellular carcinoma is a rare clinical entity comprising less than 10% of the cases of hepatocellular carcinoma. We present an extremely rare case of simultaneous resection of clear cell hepatocellular carcinoma and clear cell renal carcinoma and review the relevant literature.

**Material and Methods:** A 69 -year- old Caucasian male presented with retractable hiccup. During investigations, the computed tomography (CT) and abdominal MRI revealed a 3cm hypovascularised fatty infiltrated liver lesion in attachment with the right posterior sector portal branch and a right kidney solid hypervascular mass highly suspicious for malignancy.

**Result:** A CT-guided FNB of the liver lesion was performed to exclude the possibility of liver metastasis from the renal tumor. The liver tumor biopsy revealed hepatocellular carcinoma of predominantly clear cell type. At laparotomy, resection of VI, most of VII and part of V hepatic segments was performed along with right nephrectomy. The postoperative period was complicated by ascites (500-700ml/day for ten days-no diuretics used). The final histology report revealed clear cell hepatocellular carcinoma and renal clear cell carcinoma with tumor-free surgical margins. No adjuvant systemic treatment was administered. The patient is well and asymptomatic 2 months after surgery.

**Conclusion:** The simultaneous occurrence of primary clear cell hepatocellular carcinoma and clear cell renal carcinoma is an extremely rare clinical entity. Simultaneous resection can be performed after a thorough preoperative workup. Accurate preoperative evaluation of the liver lesion is mandatory in order to exclude the possibility of a liver metastasis from the renal tumor.

## PP 55

**Three Cases of Hepatic Angiomyolipoma**

Tetsuya Mizumoto, Jota Watanabe, Takaaki Takebayashi, Kei Tamura, Hajime Sato, Eitaro Ito, Shoichi Kageyama, Masahide Hatano, Hitoshi Inoue, Toshio Izumi, Akihiro Takai, Taji Tohyama, Fumiki Kushihata, Yasutsugu Takada

Department of HBP surgery and Transplantation, Ehime university , Toon, Ehime, Japan

**Background:** Angiomyolipomas(AML) is a rare benign tumor derived from perivascular epithelioid cells that develops frequently in the kidney and rarely in the liver. However, patients with hepatic AML increase in number along with improvement of imaging technology. Hepatic AML is benign disease basically, but a malignant report appeared recently, and it is difficult to make differential diagnosis between well differentiated hepatocellularcarcinoma including adipose composition and hepatic AML.

**Material and Methods:** We report three cases of hepatic AML in our unit.

**Result:** Case 1: a 50 years old male with hepatitis B infection was found to have a hepatic mass with abdominal CT scan. It was diagnosed for hepatocellularcarcinoma, but it was difficult to cure by radio frequency ablation. We performed laparoscopic hepatic S8 resection. Case 2: a 76 years old male with alcoholic cirrhosis developed hepatic tumor 3.2cm with an enhancement tendency. We performed hepatic S6 resection. Case 3: a 71 years old female with NASH had hepatic mass, it was followed-up suspected for hepatic AML for five years. However, the tumor increased in volume. We performed hepatic S8 partial excision.

**Conclusion:** Hepatic AML was difficult to establish preoperative decisive diagnosis in our cases. There are a few cases of malignant case, and recurrence and metastasis reports after resection. Therefore for hepatic AML, active abscission is necessary, and we recommend periodical close follow-up after resection.

## PP 56

**Successful Management of Presacral Ganglioneuroma: A Case Report and a Review of the Literature**

Np Lynch<sup>1</sup>, P Neary<sup>1</sup>, J Fitzgibbon<sup>2</sup>, E Andrews<sup>1</sup>

<sup>1</sup> Department of Surgery Cork University Hospital, Cork, Ireland

<sup>2</sup> Department of Histopathology, Cork University Hospital, Cork, Ireland

**Background:** Presacral ganglioneuromas are rare, usually benign lesions. Patients typically present when the mass is very large and becomes symptomatic.

**Material and Methods:** This report describes the case

of a 42 year old lady presenting with back pain who was subsequently diagnosed with a presacral ganglioneuroma based on MR imaging and a CT guided biopsy of the lesion.

**Result:** After counselling regarding nonoperative management, the patient opted for surgical resection. Open resection was performed with preservation of the neurovascular pelvic anatomy and an uneventful postoperative recovery. A review of the relevant literature was also performed using a search strategy in the online literature databases PUBMED and EMBASE

**Conclusion:** Surgical resection of a presacral ganglioneuroma is reasonable given their propensity for local effects and reported potential malignant transformation.

#### PP 57

### Immunohistochemical Expression of Nek6 and Its Predictive Value for Cancer Progression in Endoscopically Resected Early Colorectal Carcinomas

Mee Sook Roh<sup>1</sup>, Seung Yeon Ha<sup>2</sup>, Younghoon Roh<sup>3</sup>

<sup>1</sup> Department of Pathology, Dong-A University College of Medicine, Busan, Korea, Busan, South Korea

<sup>2</sup> Department of Pathology, Gachon University Gil Hospital, Incheon, South Korea

<sup>3</sup> Department of Surgery, Dong-A University College of , Busan, South Korean

**Background:** Endoscopic resection could be a curative treatment for low-risk early colorectal carcinoma. If we can forecast the likelihood of cancer progression of early colorectal carcinoma, we should be able to establish improved indications for appropriate treatment modality for early colorectal carcinoma. Nek6 is a serine-threonine kinase belonging to the Nek (NIMA-related kinase) family, which could promote cell transformation and cancer progression by inhibiting the onset of cellular senescence.

**Material and Methods:** We analyzed 94 lesions of early colorectal carcinoma confined to the mucosa (40 cases) and submucosal invasion (54 cases) to evaluate correlations between immunohistochemical expression of Nek6 and clinicopathological factors.

**Result:** Nek6 immunoreactivity was significantly higher in carcinoma with submucosal invasion (8/54; 14.8%) than in intramucosal carcinoma (1/40; 2.5%) ( $P = 0.049$ ). With respect to depth of submucosal invasion, Nek6 immunoreactivity was significantly higher in carcinomas with submucosal invasion of  $\geq 1000\mu\text{m}$  (6/22; 27.3%) than in carcinomas with submucosal invasion of  $< 1000\mu\text{m}$  (2/32; 6.3%) ( $P = 0.047$ ). Of 54 carcinomas with submucosal invasion, lymph node metastases were found in four cases (7.4%), all of which showed Nek6 immunoreactivity.

**Conclusion:** Surgical resection of a presacral A subset of early colorectal carcinoma revealed Nek6 immunoreactivity, and this was associated with invasion depth and lymph node

metastasis. Our data suggest that Nek6 may play a role in tumor progression of early colorectal carcinomas, therefore, Nek6 expression could be potentially useful predictive marker for estimating cancer progression of early colorectal carcinomas.

#### PP 58

### The Relationship of PTEN and NEDD4-1 in Non-Small Cell Lung Cancer

Seung Yeon Ha<sup>1</sup>, Mee Sook Roh<sup>2</sup>, An Hi Lee<sup>3</sup>

<sup>1</sup> Gachon University Gil Medical center, Incheon, Korea, Republic of

<sup>2</sup> Dong-A University College of Medicine, Busan, Korea, Republic of

<sup>3</sup> Catholic University Incheon St. Mary's Hospital, Incheon, Korea, Republic of

**Background:** Loss of the PTEN gene occurs frequently in non-small cell lung carcinoma (NSCLC). There is a report NEDD4-1 is a PTEN negative regulator. We evaluate the correlation of NEDD4-1 and PTEN in NSCLC.

**Material and Methods:** There were 241 patients diagnosed as NSCLC between 2000 and 2010. We analyzed 201 cases that were classified as adenocarcinoma and squamous cell carcinoma. Immunohistochemical staining for PTEN and NEDD4-1 with clinicopathologic characteristics was performed.

**Result:** Loss of PTEN was under 55 years old (65.5%,  $p < 0.05$ ). In squamous cell carcinoma, loss of PTEN was detected 65.9% and overexpression of that was 34.1%. Overexpression of NEDD4-1 was 70.3%. In adenocarcinoma, 51 cases (46.4%) were weak staining for PTEN and 60 cases (54.5%) were strong expression for NEDD4-1.

**Conclusion:** Overexpression of NEDD4-1 was correlated with loss of PTEN in squamous cell carcinoma. However that was not relationship in adenocarcinoma. In this study, overexpression of NEDD4-1 associated with loss of PTEN could be helpful to make a differential diagnosis.

#### PP 59

### Postoperative Nutritional Status Following Total Pancreatectomy Compared with Pancreaticoduodenectomy

Jota Watanabe, Tetsuya Mizumoto, Takaaki Takebayashi, Kei Tamura, Hajime Sato, Eitaro Ito, Shoichi Kageyama, Masahide Hatano, Hitoshi Inoue, Toshio Izumi, Akihiro Takai, Taji Tohyama, Fumiki Kushihata, Yasutsugu Takada

Department of HBP surgery and Transplantation, Ehime University, Toon, Ehime, Japan

**Background:** Patients after total pancreatectomy (TP) are susceptible to metabolic nutritional disorder such as diarrhea

and diabetes mellitus. However, patient life after TP has been improved by development of postoperative care and new insulin pharmaceutical. We evaluated long-term nutritional status of the patients after TP.

**Material and Methods:** We examined patients underwent total pancreatectomy (TP group) from 2008 to 2013 comparing with patients performed pancreaticoduodenectomy (PD group) in 2011. The observation period was 12 months after operation. We examined body weight change, HbA1c value, serum albumin (Alb) value, serum total cholesterol (T-chol) value, peripheral lymphocyte counts (TLC). In addition, we examined Controlling Nutritional Status (CONUT) value which was scored with serum Alb value, serum T-cho value and TLC.

**Result:** The Patients underwent TP were 7 (pancreatic carcinoma 5 cases, IPMN one case and P-NET one case). Four patients had recurrence, and 2 cases in them died. In the TP group, there was no difference in postoperative body weight change, nutritional status compared with PD group (15 cases). However, HbA1c value in TP group was higher in postoperative 3, 6, 12 months than it in PD group, and the TLC value in TP group was lower in postoperative 12 months than it in PD group. In addition, the CONUT value in TP group was higher than that in PD group in preoperation and postoperative 12 months.

**Conclusion:** Nutritional status after total pancreatectomy was approximately equal to pancreaticoduodenectomy. However, it was suggested that immunocompetence after total pancreatectomy was deteriorated in comparison with pancreaticoduodenectomy.

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## PP 60

### Laparoscopic Cholecystectomy in Cirrhotic Patients

Francesco Lapolla, Vincenzo Neri

General Surgery - University of Foggia, Foggia, Italy

**Background:** Cholelithiasis is twice as prevalent in patients with cirrhosis as compared with the general population.

The aim of this study was to value in a cohort of cirrhotic patients undergoing cholecystectomy, the safety of laparoscopic approach.

**Material and Methods:** In the period 2002-2012 we treated 65 patients with cirrhosis who underwent a cholecystectomy: 28 males, 37 females; mean age 58.4 years (range 27-83 y). we evaluated among cirrhotics the results between laparoscopic, converted to open and open approach using Student t test analysis. The choice of the approach was made on the basis of clinical evaluation of each patient. We also compared the results with a control group of non cirrhotic patients.

**Result:** Sixty-five procedure were performed. Subdivision according Child-Pugh score was: Class A 66.2%; Class B 29.2%; Class C 4.6%. Six patients in the cirrhotic

cohort underwent OC, the remainder LC with 12 converted to OC (conversion rate 20.3%). In cirrhotic group in all were 17 (26.15%) blood or blood products transfusion; none in non cirrhotic group. Postoperative morbidity was 10.8% in cirrhotics, whereas was 2.46% in non cirrhotic group. The changes of LFTs between pre and postoperative control was not statistically significant in cirrhotics. The mean hospital stay with LC was 4.8 days vs 9.1 days in cirrhotics.

**Conclusion:** Cirrhotic patients with symptomatic cholelithiasis have increased hospital stay, operative time and postoperative morbidity with open cholecystectomy versus laparoscopic approach; therefore minimally invasive surgery should be the preferred initial choice.

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## PP 61

### Choledocholithiasis and Hepatitis 30 Days after Laparoscopic Surgery

Ulvi Mehmet Meral, Oguz Hancerliogullari

Izmir Military Hospital Department of General Surgery, Izmir, Turkey

**Background:** We wanted to share a patient who was operated for cholelithiasis 30 days ago and admitted with abdominal pain to our second level hospital.

**Material and Methods:** We wanted to share a patient who was operated for cholelithiasis 30 days ago and admitted with abdominal pain to our second level hospital.

**Result:** We decided to perform ERCP and sent him to third level hospital. ERCP performed and it had seen that there was a 6 mm stone in the common bile duct which was not seen in the US and it was extirpated. No complications observed after procedure and the liver enzyme levels decreased in about 15 days.

**Conclusion:** Common bile duct stone and hepatitis are possible complications after bile system surgery. Hepatitis is also caused by general anesthesia without any bile system complication. ERCP is a convenient solution for this problems. It should be remembered after this type surgical procedures in hospitals with low workload about this patient group.

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## PP 62

### A Rare Cause of Acute Abdomen: Liver Hydatid Cyst Rupture

Ulvi Mehmet Meral, Oguz Hancerliogullari

Izmir Military Hospital Department of General Surgery, Izmir, Turkey

**Background:** We wanted to share our patient with hydatid cyst in the liver; who was in Albendazole treatment and was in operation list for this month, admitted with acute abdomen and anaphylaxia due to spontaneous perforation of cyst.

**Material and Methods:** 21 year old man was admitted to the emergency department with abdominal pain, fatigue, palpitations and breathing difficulties. Examination of the abdomen was widely sensitive, rebound and rigidity was positive. Also hypotension, tachycardia and subfebrile fever was observed. In emergency ultrasound it was seen that there was a cyst at segment 7 of the liver, free fluids in subhepatic and right paracolic space.

**Result:** The patient was evaluated by the surgeon who had planned elective surgery for liver hydatid cyst. After the evaluation, the patient was taken to the operation room. After a midline incision cystotomy+ drainage+ unroofing and wide abdominal irrigation was performed. Patient was discharged without any complication.

**Conclusion:** Echinococcosis is a frequently seen disease in our country and lots of patients are unaware of cysts before it reaches large diameters. Cyst may perforate spontaneously or traumatic because of its increased internal pressure. This situation is a rare cause of acute abdomen and the patients who was admitted to provincial hospital with abdominal pain and allergic reactions must be evaluated about perforated hydatid cyst rupture.

#### PP 63

### HMGB1 Promotes The Expression of Autophagy Signal Beclin1 in Acute Pancreat

Can Yu, Xiao Yu

Third Xiangya Hospital, Central South University, Changsha, China

**Background:** To study the significance of HMGB1 expression in acute pancreatitis with excessive activation of autophagy key molecule Beclin1, explore the mechanism of the occurrence and development of acute pancreatitis, and thus provide a new theoretical basis for its clinical treatment.

**Material and Methods:** SD rats were randomly divided into sham-operated group and the experimental group which were injected with 5% sodium taurocholate into the bili-pancreatic duct retrogradely to produce ANP models, for SO group with equal dose of saline.. Change of the autophagosome in pancreatic acinar cells in acute pancreatitis was observed under electron microscopy. Immunohistochemical method was used to detect the distribution of HMGB1 and Beclin1 in pancreatic tissue. The expression of HMGB1 and Beclin1 in the pancreatic tissue was detected by Western blot and Q-PCR methods.

**Result:** Acute pancreatitis modeling was successful. HMGB1 in the ANP group had no significant change at 0h, 3h and 6h ( $P>0.05$ ), significantly increased at 12h, and continued to rise at 24h with statistical significance ( $P<0.05$ ). For the Beclin1 expression in the pancreatic tissue of ANP group, with the time course and aggravation of inflammation, it continued to increase significantly ( $P<0.05$ )

**Conclusion:** (1) Different from early inflammatory factors, HMGB1 expression increases significantly at late

stages in the development of acute pancreatitis; (2) HMGB1 may play a role in the maintenance and promotion of the expression of autophagy signaling molecule Beclin1 in acute pancreatitis, thus contributing to the progression of acute pancreatitis.

#### PP 64

### Vascularisation Process after RMHV Ligation

Janine Arlt<sup>1</sup>, Hai Huang<sup>2</sup>, Dong Meihong<sup>2</sup>, Maria Thomas<sup>3</sup>, Ronny Feuer<sup>4</sup>, Uta Dahmen<sup>1</sup>, Olaf Dirsch<sup>1</sup>

<sup>1</sup> University Hospital Jena, Jena, Germany

<sup>2</sup> University Hospital Essen, Essen, Germany

<sup>3</sup> Dr. Magarete Fischer-Bosch Institute for Clinical Pharmacology, Stuttgart, Germany

<sup>4</sup> University of Stuttgart, Stuttgart, Germany

**Background:** Previously we described the spontaneous vascularisation process following focal outflow obstruction induced by RHMV-ligation in rats (Dirsch (2008); Huang (2011)). Revascularisation was visualized using 3D-reconstructions of  $\mu$ -CT scans obtained from corrosion casts. The aim of this work was to analyze the role of arterial perfusion for the spontaneous revascularisation process using the "Dynamic Array<sup>TM</sup> integrated fluidic circuits PCR" (Fluidigm).

**Material and Methods:** RMHV-ligation was performed in male Lewis rats. Additional partial hepatectomy and/or treatment with L-Name or molsidomine were performed in rats. Rats were sacrificed at 0h, 24h, 48h and 1week post-op ( $n=6$ ). Samples were taken separately from the obstruction, border and normal zone.

The mRNA expression of 96 genes, with special focus on markers of vascularisation (Laminin, vWF) and genes of different vascularisation processes was analyzed by Fluidigm. The LEM-method (Feuer (in process)) was used to normalize and to calculate the qPCR results.

**Result:** mRNA expression (35-fold increase) of the vascularisation markers Laminin was seen 24h after RMHV-ligation and PH and 48h after RMHV-ligation, PH and L-NAME treated rats in the obstructed zone. Substantially lower levels of vWF mRNA expression (max 7-fold at 48h) were seen in animals subjected to RMHV-ligation and liver resection only. Animals subjected only to RMHV showed a discrete and brief increase in gene expression.

**Conclusion:** Gene expression corresponded to the severity of hepatic arterial hypoperfusion caused by portal hypertension and L-NAME treatment. This finding suggests that laminin expression is related to relative hepatic hypoxia.

## PP 65

**Visual Perception of Biliary Tracts with Isosulphan Blue for Prevention of Injury During Laparoscopic Cholecystectomy: A Cadaveric Study**

Orhan Veli Ozkan<sup>1</sup>, Orhan Yagmurkaya<sup>2</sup>,  
Muhammed Feyzi Sahin<sup>3</sup>, Ahmet Selcuk Gurler<sup>3</sup>,  
Hudaverdi Kucuker<sup>4</sup>, Fatih Altintoprak<sup>1</sup>, Fehmi Celebi<sup>1</sup>

<sup>1</sup> Department of General Surgery, Faculty of Medicine, Sakarya University, Sakarya, Turkey

<sup>2</sup> Department of General Surgery, Research and Educational Hospital, Sakarya University, Sakarya, Turkey

<sup>3</sup> Council of Forensic Medicine, Istanbul, Istanbul, Turkey

<sup>4</sup> Department of Forensic Medicine, Faculty of Medicine, Sakarya University, Istanbul, Turkey

**Background:** Bile duct injury as a complication of laparoscopic cholecystectomy may result in biliary cirrhosis with considerable financial burden and increased mortality. It may necessitate several consecutive operations and invasive procedures leading to surgeon anxiety. The most frequent causative factor is the misidentification of the anatomy, especially at the beginning of learning curve. Direct coloration of the cystic duct, ductus choledochus and gall bladder during the surgery may lead to decreased risk of biliary tract injury.

**Material and Methods:** This study was conducted during the standart autopsies of 10 fresh cadavers at Council of Forensic Medicine in İstanbul. Following the needle puncture of gall bladder fundus and aspiration of the bile content, the same amount of isosulphan blue was injected into the gall bladder in order to colorate the biliary tree. The biliary tract has been visualized coloured by isosulphan blue.

**Result:** A total of 10 fresh cadavers, 3 males and 7 females with a mean age of 43 ranging between 22 and 76 were studied by isosulphan blue injection technique. They were shown to have no gallstones, sludge and other gall bladder pathologies. Successful visualization of the coloured biliary tract including the gall bladder, cystic duct and ductus choledochus was possible in all of the cadavers.

**Conclusion:** The visualization of the coloured biliary tract may provide a much safer dissection of Calot triangle. Surgical bile duct injuries related to anatomic misidentification may be eliminated by using intraoperative isosulphan blue injection technique. Investigation with rigorous scientific design is required for widespread clinical use in future.

## PP 66

**Efficacy of Diffusion-Weighted Magnetic Resonance Imaging in Follow-Up Patients Treated with Open Partial Cystectomy for Liver Hydatid Cysts**

Ekrem Karakas<sup>1</sup>, Ali Uzunköy<sup>2</sup>, Emel Yigit Karakas<sup>3</sup>,  
Mehmet Gundogan<sup>1</sup>, Omer Karakas<sup>1</sup>,  
Fatima Nurefsan Boyaci<sup>1</sup>, Ahmet Seker<sup>2</sup>, Turgay Ulas<sup>3</sup>,  
Hasan Cece<sup>1</sup>, Abdullah Özgömül<sup>2</sup>

<sup>1</sup> Harran University School of Medicine Radiology Department, Sanliurfa, Turkey

<sup>2</sup> Harran University School of Medicine General Surgery Department, Sanliurfa, Turkey

<sup>3</sup> Harran University, School of Medicine, Department of Internal Medicine, Sanliurfa, Turkey

**Background:** The aim of this study was to evaluate the efficacy of diffusion-weighted magnetic resonance imaging in differentiation of patients with residual cavity and type 1 hydatid cyst (HC) in the liver.

**Material and Methods:** Thirty-two patients were included. 12 of these patients had type 1 HC and the remainders (n = 20) had postoperative residual cavities. In all patients, axial T2-weighted and diffusion-weighted magnetic resonance images were obtained. An apparent diffusion coefficient (ADC) map of the images was automatically generated and the ADC values were measured on this map for all patients. Mann-Whitney U test was used for comparison of continuous variables between two groups.

**Result:** Results The mean diameters of type 1 hydatid cyst and residual cavity groups were 83.42 mm, 49.30 mm, respectively (P=0.001). There were no significant differences in gender and age between the groups (both P>0.05). The mean ADC values of type 1 hydatid cyst and residual cavity groups were  $2.58 \pm 0.13 \times 10^{-3}$  s/mm<sup>2</sup>,  $2.58 \pm 0.16 \times 10^{-3}$  s/mm<sup>2</sup>, respectively (P=0.953).

**Conclusion:** Diffusion-weighted magnetic resonance imaging might not be suitable to differentiate the postoperative residual cavity from the type 1 hydatid cyst in the liver due to similarity of ADC values between postoperative residual cavity and type 1 hydatid cyst.

## PP 67

**Comparison of Anatomical and Nonanatomical Hepatic Resection for Solitary Hepatocellular Carcinoma -A Case-Controlled Study with Propensity Score Matching-***Yukiyasu Okamura, Teiichi Sugiura, Takaaki Ito, Katsuhiko Uesaka*

Division of Hepato-Biliary-Pancreatic Surgery, Shizuoka Cancer Center Hospital, Sunto-Nagaizumi, Shizuoka, Japan

**Background:** It remains controversial whether anatomical resection (AR) improve the prognosis for hepatocellular carcinoma (HCC) or not. However, there has been never reported even a well-matched study about this issue. The aim of the present study is to compare the recurrence-free survival of AR versus nonanatomical resection (NAR) for HCC using propensity score matching.

**Material and Methods:** The present study intended for 236 patients with a solitary tumor, and without macroscopic vessel thrombosis. Those patients were divided into AR (n=139) and NAR (n=97) groups. Propensity score matching was performed to minimize the effect of potential confounders.

**Result:** A total of 64 patients from each group were matched. Preoperative confounding factors were well-matched between the two groups. No difference was detected in the recurrence-free survival rates between two groups (P=0.520). There was no significant difference in recurrence pattern between these two groups (P=0.254). Multivariate analysis revealed that AFP>20 ng/mL (Hazard Ratio [HR] 2.73, P<0.001), the presence of microsatellite lesions (HR 2.32, P=0.044), and positive for HCV-Ab (HR 1.84, P=0.029), remained as significant independent predictors for recurrence. Operative procedure was not significant risk factor for recurrence in both of uni- and multivariate analyses.

**Conclusion:** This first case-matching study using propensity score shows that there is no superiority of AR relevant to the recurrence-free survival compared with those of NAR in cases with a single HCC.

## PP 68

**The Management of Cystobiliary Fistulas Is Important Issues in the Treatment of Hepatic Hydatid Cysts***Ali Uzunkoy*

Harran University School of Medicine Department of General Surgery, sanliurfa, Turkey

**Background:** Hydatid disease is still one of the important health problems on the worldwide. Biliary fistula is the most frequent complication of hepatic hydatid cysts. The purpose of this study is to perform a review on demographic features,

clinical findings, diagnostic and therapeutic options to treat communication between hydatid cyst and biliary ducts.

**Material and Methods:** The hospital records of patients underwent surgical treatment for hepatic hydatid cysts were reviewed between 2008 and 2013. The results of patients with cystobiliary fistula were evaluated.

**Result:** There were cisto-biliary fistula in 26 (15.5%) of 166 patients. Twenty cases were females and 6 cases were males. Cystobiliary connection was detected intraoperatively in 20 (73%) cases and postoperatively in 7 (27%) cases. Suturing visible biliary orifices in the cyst was performed in 13 (50%) patients and T tube drainage was placed in 6 (23.1%) patients. In 4 (15.3%) cases, any intervention didn't make for cystobiliary connection because there were no visible biliary orifices. Endoscopic retrograde colangiopancreatography (ERCP) were performed in the 5 (19.2%) cases. There was major morbidity (biliary collection) in 2 (7.6%) patients who was undetected cystobiliary connection intraoperatively. They were treated percutaneously. There was no mortality.

**Conclusion:** The management of cystobiliary fistulas is important. Cystobiliary fistulas increases morbidity and hospitalisation period. Suturing cystobiliary fistula and/or T tube drainage is an effective method for intraoperatively detected fistulas. The detection and suturing cystobiliary communications during surgery reduces postoperative biliary complications. Endoscopic retrograde colangiopancreatography is a method to manage cystobiliary fistulas in the postoperative period.

## PP 69

**Radical or Conservative Surgery for Hepatic Hydatid Cysts?***Eyup Duran<sup>1</sup>, Zafer Kılbaş<sup>2</sup>, Nail Ersöz<sup>2</sup>, Nazif Zeybek<sup>2</sup>, Orhan Kozak<sup>2</sup>*

<sup>1</sup> Elazig Military Hospital, Department of General Surgery, Elazig, Turkey

<sup>2</sup> Gulhane School of Medicine, Department of General Surgery, Ankara, Turkey

**Background:** Cystic hydatid disease mainly affects the liver. Surgery is still considered the gold standard treatment. Two surgical treatment options (radical or conservative surgery) exist and the preferred management is unclear. The aim of this study is to review results of two surgical methods.

**Material and Methods:** The literature was reviewed from January 2009 to December 2013. Data was obtained through Pubmed search. Published studies involving the treatment of uncomplicated hepatic hydatid cysts were included. 4 articles were included in this study.

**Result:** Of 1569 patients who underwent liver surgery for hepatic hydatid cysts treatment had documented. Conservative surgery was established in 1090 patients and 479 patients were performed radical surgical approach. Local recurrence rate of the cysts was lower in the radical (2%) versus conservative surgery group (10.8%). Operative

mortality was 2.5% for conservative procedures and 6.4% for radical procedures. Postoperative complications was 48% and 31% for conservative and radical procedures, respectively.

**Conclusion:** Radical procedure which is a method of choice resulted in a low rate of recurrence and post-surgical complications. We consider more radical surgical approach.

#### PP 70

### The Retrospective Analyse of a Single Center Experience For Bile Duct Injuries

Ahmet Coker, Ismail Mehmet Demirci, Ela Ekmekcigil, Alper Uguz, Omer Vedat Unalp, Murat Sozbilen

Ege University, Izmir, Turkey

**Background:** The surgeons have performed an increasing number of laparoscopic cholecystectomies with smaller incisions, less pain and shorter hospitalization but significantly accompanying the risk for bile duct injuries. The aim of the research is, to analyse the factors that effect on this serious complication and to emphasize the treatment options.

**Material and Methods:** From May 2007 and December 2013; the datas of 82 patients are analysed retrospectively in Ege University, Department of General Surgery. The mean value for the age is 49.7 years and the distribution of female/male is 56/26. The outputs are verified according to the classification system of Strasberg and Bismuth-Corlette. Timing of repair is also classified to determine the treatment options with either surgery or interventional procedures.

**Result:** The analyses of 82 patients according to Strasberg-Bismuth C classification were; Type A 28 patients, Type D 16 patients, Type E2 12 patients, Type E3 11 patients, Type E4 14 patients and Type E1 1 patient. Three groups are determined according to the required number of operations. 43 patients had one surgical procedure after the injury with 1.2% mortality rate. For the second group; 15 patients had multiple surgical procedures and the mortality rate increased to 10.9%. For the third group, patients treated with the interventional procedures (e.g. PTK, PD or sphincterotomy with ERCP) without mortality.

**Conclusion:** The results of our data suggest that early recognition of an laparoscopic bile duct injury and immediate repair at a tertiary center is the best approach for the treatment.

#### PP 71

### An Aberrant Right Accessory Hepatic Duct as a Cause of Iatrogenic Bile Leak: A Case Report

Nehemiah Samuel, Victoria Proctor, Fayyaz Mazari, Muhammad Hanif Shiwani

Barnsley District General Hospital, Barnsley, United Kingdom

**Background:** The occurrence of Accessory Right Hepatic Duct (ARHD) is rare. We report on one such case identified intra-operatively and its learning implications.

**Material and Methods:** Case Presentation: A 27-year-old woman presented with signs and symptoms suggestive of Acute Cholecystitis and was treated with antibiotics; USS demonstrated multiple gall stones. Patient subsequently developed pancreatitis. An MRCP was done which showed multiple gall stones with no ductal dilatation. Laparoscopic cholecystectomy was planned as an urgent intervention. Intra-operatively, bile leak from an indeterminate site was encountered during Calot's triangle dissection. Cystic duct was isolated and intra-operative cholangiogram performed which demonstrated a short cystic duct arising from ARHD. The surgery was converted to open; iatrogenic bile leak from ARHD was identified and managed with a T-tube placement that was later removed. Retrospective review of pre-op MRCP did reveal the ARHD.

**Result:** Discussion: Although laparoscopic cholecystectomy is considered a safe procedure, commonly performed by trainees; it does carry its risks especially bile duct injury with its associated morbidity. The incidence of ARHD is low; however variation in the extra hepatic biliary system is common and could contribute to the higher incidence of bile duct injuries seen in laparoscopic procedures.

**Conclusion:** Despite advantages conferred by pre-op imaging, sound knowledge of extra hepatic biliary anatomy is a pre-requisite to anticipate and/or avert injury to the biliary system. To detect such injuries, trainees have to be taught intra-operative cholangiogram techniques and when indicated open surgical competence gained, to prevent further damage.

## PP 72

**Duct of Luschka: Importance of the Control of Gallbladder Bed During Laparoscopic Cholecystectomy***Burak Kavlakoglu<sup>1</sup>, Recep Pekcici<sup>2</sup>*<sup>1</sup> Veni Vidi Private Hospital, Ankara, Turkey<sup>2</sup> Ankara Yuksek Ihtisas Hospital, Ankara, Turkey

**Background:** Bile ducts of Luschka (also called supravascular ducts) are small bile ducts in the gallbladder bed. Although they do not drain any liver parenchyma, they can be a source of bile leak or biliary peritonitis after cholecystectomy in both adults and children, as shown in this case report. The duct of Luschka often may occur in case of the anatomic variation described by Hubert von Luschka (1820-1875) a German anatomist as the duct named after Luschka. In a favorable case the accessory bile duct closes by itself, but occasionally developing biloma and/or biliary peritonitis need to be operated on. Therefore control of gallbladder bed during laparoscopic cholecystectomy is very very important at the time of operation.

**Material and Methods:** Laparoscopic cholecystectomy was performed for chronic cholecystitis to 59-year-old woman. Two aberrant ducts of Luschka were found during the control of gallbladder bed at the time of operation. These ducts were sealed with surgical clips properly.

**Result:** Postoperative course was uneventful. The patient discharged from hospital on first day after operation.

**Conclusion:** Control of the gallbladder bed during laparoscopic cholecystectomy is very very important for early detection of bile leakage at the time of operation.

## PP 73

**Hepatic Vascular Anatomy of Rodents and Their Surgical Implications***Constanze Sanger<sup>1</sup>, Andrea Schenk<sup>2</sup>, Lars Ole Schwen<sup>2</sup>, Weiwei Wei<sup>1</sup>, Felix Gremse<sup>3</sup>, Sara Zarfania<sup>3</sup>, Fabian Kiessling<sup>3</sup>, Olaf Dirsch<sup>4</sup>, Uta Dahmen<sup>1</sup>*<sup>1</sup> Jena University Hospital; Department of General-, Visceral- and Vascular Surgery; Experimental Transplantation Surgery, Jena, Germany<sup>2</sup> Fraunhofer MeVis, Bremen, Germany<sup>3</sup> Universitatsklinikum RHTW Aachen, Department of Experimental Molecular Imaging (ExMI), Aachen, Germany<sup>4</sup> Jena University Hospital; Institution of Pathology, Jena, Germany

**Background:** The need for precise experimental-surgical-procedures parallels the development of clinical-hepatobiliary-surgery rising.

The intra-hepatic vascular anatomy in rodents & its variations

has not yet been described. We performed a detailed anatomical imaging study in rats & mice to allow for further refinement of experimental surgical approaches.

**Material and Methods:** 15 LEWIS-rats & 15 C57Bl/6N-mice were subjected to imaging using CT-or MRI-technology. 3D-reconstruction was prepared for an analysis of the hepatic vascular anatomy.

**Result:** In rats the right-inferior-lobe was not only supplied by a single right- inferior-PV (4/15cases), but received additional blood supply through a branch of the right-superior-PV (11/15cases). This is surgically relevant when ligate the right-superior-PV prior to resection. The right-inferior-lobe can lead to atrophy & in case of simultaneous ligation of the corresponding branch of the hepatic-artery to necrosis of the right-inferior-lobe.

In mice in 7/15cases the right-lobe is supplied by a right-PV stem, which divides into right-superior & right-inferior-PV. In 1/15cases, the right-superior & right-inferior-PV originate directly from the main portal stem.

In both species the distance between the right-superior- & right-median-HV was also variable. In case of a small distance, the piercing suture placed for resection of the right-median-lobe can damage the right-superior-HV & compromise its outflow.

**Conclusion:** Refinement of experimental hepatobiliary procedures in terms of resection or ligation of portal- &/ or hepatic-vein branches requires knowledge of the intra-hepatic vascular anatomy.

## PP 74

**Long-Term Outcome of Intestinal Failure Requiring Home Parenteral Nutrition in Patients with Crohn's Disease***Emiko Kono<sup>1</sup>, Sho Haneda<sup>1</sup>, Shinobu Ohnuma<sup>1</sup>, Hiroaki Musha<sup>1</sup>, Takanori Morikawa<sup>1</sup>, Munenori Nagao<sup>1</sup>, Tomoya Abe<sup>1</sup>, Naoki Tanaka<sup>1</sup>, Katsuyoshi Kudo<sup>1</sup>, Hiroyuki Sasaki<sup>1</sup>, Atsushi Kohyama<sup>1</sup>, Takeshi Aoki<sup>1</sup>, Hideaki Karasawa<sup>1</sup>, Megumi Obara<sup>1</sup>, Hiroki Hayashi<sup>1</sup>, Kei Nakagawa<sup>1</sup>, Hiroshi Yoshida<sup>1</sup>, Fuyuhiko Motoi<sup>1</sup>, Chikashi Shibata<sup>2</sup>, Yu Katayose<sup>1</sup>, Takeshi Naitoh<sup>2</sup>, Michiaki Unno<sup>1</sup>*<sup>1</sup> Tohoku University, Sendai, Japan<sup>2</sup> Tohoku Pharmaceutical University Hospital, Sendai, Japan

**Background:** Patients with Crohn's disease (CD) often require several surgeries in their lifetime, and some of the patients having polysurgery finally necessitate home parenteral nutrition (HPN) therapy because of intestinal failure (IF). The aim of this study was to investigate the long-term outcome of CD who underwent surgical therapy in terms of IF.

**Material and Methods:** We reviewed clinical record of patients who underwent initial operation for intestinal lesions of CD from 1973 to 2012 in our hospital.



**Result:** A total number of 280 CD patients underwent initial surgery during this period. IF occurred in 16 patients (13 male, 3 female). Median age at the time of onset of IF, and the duration from surgery to onset of IF were 34 years (range: 28-66), and 9 years (2-20). Median number of laparotomies before starting HPN was 3 (1-5), length of the remaining jejunioileum was 145 cm (100-280), and all 16 patients underwent surgery for the colon; ileocolic valve was resected in 13, ileostomy was constructed in 2, and colostomy was constructed in 1. Mortality rate was 13% (2 of 16), and both died of cancer but not of complications related to IF. Cumulative rate of IF was 7% in 10 years, and 18% in 20 years after the initial surgery.

**Conclusion:** The incidence of IF in CD patients was not low. Length of the jejunioileum shorter than 150 cm and surgery for the colon could be the risk factors for IF in patients with CD.

#### PP 75

### Upper Lesser Curvature Skeletonization in Radical Distal Gastrectomy

Xin-Zu Chen, Wei-Han Zhang, Jian-Kun Hu

Department of Gastrointestinal Surgery, West China Hospital, Sichuan University, China, Chengdu, China

**Background:** The lesser curvature skeletonization in radical distal gastrectomy is of importance to evaluate lymph node stations and is often neglected, especially in the Western. This study was to figure out metastatic status and its risk factors of lesser curvature regional node (LCRN), i.e. no. 1, 3a and 3b groups, in radical distal gastrectomy with upper lesser curvature skeletonization.

**Material and Methods:** Patients undergone radical distal gastrectomies were retrospectively collected during 2010.5-2013.9. The clinicopathological features and surgical outcomes were compared between LCRN (+) and (-) groups. The correlations among no. 1, 3a, 3b and other groups were analyzed. Univariate and multivariate analyses were performed to identify the independent risk factor for LCRN metastasis.

**Result:** Totally, 112 patients were analyzed and 45.5% had metastatic LCRNs, while the overall node positive cases were 59.8%. LCRN (+) and (-) groups had significantly different features, concerning gender, tumor size, histological grade, Lauren classification, gross type, T, N and TNM stages. Positivity of no. 1, 3a and 3b groups were 4.5%, 38.4% and 32.1%, respectively. Elsewise, no. 1, 3a and 3b groups were comprehensively correlated with D2 tier groups. Through univariate and multivariate analyses, only stage T3-4 and positive no. 4d nodes were documented as independent risk factors, while no. 5 and 11p nodes showed a trend.

**Conclusion:** Upper lesser curvature skeletonization can be recommended as a standard procedure in radical distal gastrectomy for the sake of thorough clearance at gastric

stump, especially for T3-4 or no. 4d group suspicious cases.

#### PP 76

### Assessment of Hemodynamics of Gastric Tube During Esophagectomy with ICG

Yoshitaka Tsuji, Youichi Kumagai, Toru Ishiguro, Koki Kuwabara, Hideyuki Ishida

Digestive Tract and General Surgery, Saitama Medical Center, Saitama Medical University, Kawagoe, Saitama, Japan

**Background:** Construction of a gastric tube that is well perfused with blood during esophagectomy is the most important factor in avoiding anastomotic leakage. We clarified the hemodynamics of the reconstructed gastric tube with indocyanine green (ICG) fluorescence.

**Material and Methods:** In 20 patients undergoing gastric tube reconstruction during esophagectomy, we evaluated blood flow in the gastric tube with ICG fluorescence imaging. We divided the patients into two groups according to the quality of blood flow to the gastric tube "good" and "sparse or absent", based on visual assessment of the anastomosis of the right and left gastroepiploic vessels. We measured the time from initial enhancement of the root of the right gastroepiploic artery until enhancement of the most cranial branch of the left gastroepiploic artery and tip of the gastric tube.

**Result:** The gastric tube was divisible into three zones according to the dominant arteries present in the greater curvature under ICG fluorescence. The left gastroepiploic artery was enhanced in a direction opposite that of physiological blood flow in all cases. The median period from initial enhancement of the root of the right gastroepiploic artery to the most cranial branch of the left gastroepiploic artery until perfusion up to the tip of the gastric tube did not differ significantly between the "good" and the "sparse or absent" groups.

**Conclusion:** It is essential to preserve the whole vessel arcade of the greater curvature to achieve good blood perfusion in the gastric tube. The ICG fluorescence method has potential usefulness for evaluation of blood flow in the gastric tube.

#### PP 77

### Results in Patients Greater than 80 Years Old after Colorectal Surgery

Daniel Schraffl, Renzo Joos, Peter Villiger

Cantonal Hospital Chur, Chur, Switzerland

**Background:** There are several challenges in surgical treatment of colorectal diseases in patients over 80. Our goal was to determine outcomes after colorectal surgery with postoperative quality of life (evaluated according to SF-36) and mortality.

**Material and Methods:** This study includes postoperative colorectal surgery patients over 80 years between January 1, 2009 and December 31, 2013. Data was taken from our hospital database, general practitioner and patient interviews. We included curative and palliative as well as elective and emergency interventions.

**Result:** One hundred and seven patients (46 male, 61 female, age between 80 and 99 years, mean age 87,2 +/- 5 years) were studied. Median follow up was 29 months. Five patients were lost to follow up. The overall mortality rate was 39,2 %. The 30 - day mortality rate of all patients was 13 %. Ten of 14 patients that died within the first 30 days had an emergency surgery. Based on SF-36 results, most of surviving patients had an improvement in postoperative quality of life. Patients without benefit most often claimed aggravation of pre-existing defecation problems. The correlation between ASA score and functional renal impairment mortality was highest in first 30 days.

**Conclusion:** Operation in patients over 80 years is safe. Emergency surgery has a much higher mortality rate than elective surgery. Risk factors include a high ASA score and functional renal impairment. Postoperative survivors demonstrated superior SF-36 scores and improved quality of life.

#### PP 78

### Surgical Treatment for Splenic Hydatidosis

Ali Uzunkoy

Harran University School of Medicine Department of General Surgery, Sanliurfa, Turkey

**Background:** Hydatid cyst disease is one of the most important health problems on the worldwide. Although hydatid disease is rare in spleen, it is the third most common area for hydatid cysts after liver and lung. Splenectomy is preferred treatment of splenic hydatid cysts. The aim of the study was to evaluate outcomes of surgical treatment of splenic hydatid disease.

**Material and Methods:** Sixteen patients who were operated on for splenic hydatid cysts between 1998 and 2013 were retrospectively evaluated.

**Result:** Six patients had isolated splenic hydatid cysts and 9 patients had splenic and hepatic hydatid cysts and one patient had splenic, lung and hepatic hydatid cysts. The diagnosis and localisation are established with abdominal ultrasonography and tomography. Albendazole was preoperatively given all the patients. Ten patients underwent total splenectomy and six patients had partial splenectomy (4 cases) or partial cystectomy (2 cases) with omentopexy. For hepatic hydatid cysts; PAIR (percutan aspiration injection and reaspiration) and drainage were performed in two cases and partial cystectomy and omentopexy was performed in seven cases. Albendazole treatment was postoperatively given all of cases during 14 day- three months. The patients were followed up with ultrasonography and tomography.

**Conclusion:** Splenic hydatidosis is a rare condition and there are no specific symptoms. Hydatid disease should be considered at the patients with splenic cysts to preserve spreading cystic content into abdominal cavity during surgical intervention. Optimal treatment of splenic hydatid cyst is total splenectomy. However, spleen preserving surgery (partial splenectomy or partial hydatid cystectomy) can be safely performed in the selected cases.

#### PP 79

### Which End-to-End Anastomosis Is Better as a Reconstruction in Crohn'S Disease: Hand-Sewn or Stapled?

Megumi Obara<sup>1</sup>, Sho Haneda<sup>1</sup>, Musha Hiroaki<sup>1</sup>,  
Takanori Morikawa<sup>1</sup>, Munenori Nagao<sup>1</sup>, Tomoya Abe<sup>1</sup>,  
Naoki Tanaka<sup>1</sup>, Shinobu Ohnuma<sup>1</sup>, Katsuyoshi Kudoh<sup>1</sup>,  
Hiroyuki Sasaki<sup>1</sup>, Atsushi Kohyama<sup>1</sup>, Takeshi Aoki<sup>1</sup>,  
Hideaki Karasawa<sup>1</sup>, Emiko Kono<sup>1</sup>, Fuyuhiko Motoi<sup>1</sup>,  
Hiroshi Yoshida<sup>1</sup>, Hiroki Hayashi<sup>1</sup>, Kei Nakagawa<sup>1</sup>,  
Chikashi Shibata<sup>2</sup>, Yu Katayose<sup>2</sup>, Takeshi Naitoh<sup>1</sup>,  
Michiaki Unno<sup>1</sup>

<sup>1</sup> Tohoku University, Sendai, Japan

<sup>2</sup> Tohoku Pharmaceutical University Hospital, Sendai, Japan

**Background:** Various types of anastomosis have been performed in Crohn's disease (CD) patients to decrease re-operation due to the recurrence. This study was designed to compare outcome of functional end-to-end anastomosis (FEE) and hand-sewn end-to-end anastomosis (HEE) after intestinal resection in CD.

**Material and Methods:** Clinical records of 155 patients were reviewed who underwent initial intestinal resection for CD and were reconstructed with FEE (110 patients with 120 anastomoses) or HEE (45 patients with 49 anastomoses) between 1973 and 2011.

**Result:** Median age at the time of surgery, and the duration from onset of CD to the operation were 27 (15-55) and 5 (0-33) years in FEE group, and 28 (13-48) and 3 (0-21) years in HEE group. Ileoileal anastomosis was performed in 42 (35%) and 15 (31%) patients, ileocolic anastomosis in 70 (58%) and 22 (45%), and colorectal anastomosis in 8 (6%) and 12 (24%), in FEE and HEE groups, respectively. Morbidity rate was 25% in FEE group, and 14% in HEE group. Cumulative re-operation rate due to the recurrence at the anastomotic site were 25% at 5-year, 60% at 10-year in FEE group, and 25% at 5-year, 55% at 10-year in HEE group. There were no differences in morbidity and re-operation rate between two groups.

**Conclusion:** Long-term outcome after FEE and HEE did not differ in terms of morbidity and re-operation rate. These results indicate that HEE could be a choice of reconstruction in CD.

## PP 80

**Outcomes for Consecutive Single-Site Laparoscopic Ileocelectomy**

Masanori Yoshimitsu, Manabu Emi, Hidenori Mukaida, Mizuho Akahane, Ichiro Ohmori, Mikihiro Kano, Takuhiro Ikeda, Akira Nakashima, Yuichiro Kai, Masateru Yamamoto, Mahito Hunakoshi, Naoki Hirabayashi, Wataru Takiyama

Hiroshima City Asa Hospital, Hiroshima, Japan

**Background:** Single-site laparoscopy represents an innovation may be limited by technical challenges. Especially single-site laparoscopic colectomy (SLC) has an emerging concept and a current dearth of outcomes data.

**Material and Methods:** A retrospective review of prospectively collected data was performed on initially consecutive single-site laparoscopic ileocelectomy. Patient characteristics and operative details were collected, and outcomes were analyzed.

**Result:** Between 2011 and 2013, 18 SLC procedures were performed. Surgeries included all ileocelectomy without D3 lymphadenectomy. There was no conversion to conventional multiport laparoscopic surgery and laparotomy. Patients had 10 males. Median age was 69 (47-84). Median body mass index was 20.4(17.4-27.2). Median operation time was 185(136-270mins). Median bleeding was 30ml(0-100ml). The most frequent indication for surgery was early colon cancer (n=11), followed by appendicular mucocele (n=3), adenoma (n=2) and malignant lymphoma (n=2). Tumors had been located on 9cecum, 5ascending, 3appendices and 2 ileums. 2patients had undergone previous abdominal surgery, gastrectomy and gynecological surgery. Mean length of hospital stay after operation was 10 days. There was one anastomotic leak, no postoperative bleeding, no surgical site infections, and no readmission.

**Conclusion:** Single-site laparoscopic ileocelectomy without D3 lymphadenectomy is safe and feasible when applied to unselected patients undergoing, including those patients who have undergone a previous laparotomy.

## PP 81

**Mesenteric Jejunal Diverticulitis**

Mehmet Erikoglu, Serhat Dogan

Necmettin Erbakan University Meram Medical Faculty, Konya, Turkey

**Background:** Small bowel diverticulitis is a rare hereditary disease, and usually seen on the antimesenteric side. In this study, our aim is to present a case of mesenteric jejunal diverticulitis which was confused with acute appendicitis.

**Material and Methods:** A 35 year old male patient was admitted to our clinic with abdominal pain, nausea and loss

of appetite. On physical examination, we detected hypoactive bowel sounds, abdominal tenderness, and defense on the right side of the abdomen. In laboratory findings, leucocytosis was detected: other parameters were normal.

**Result:** Direct abdominal X-ray graphy showed a few bowel air-fluid levels. Ultrasonography (USG) examination revealed minimal fluid between intestinal loops. The findings indicated that the patient had acute appendicitis and a laparoscopic exploration was performed. In this exploration, we observed the appendix was normal, but spinning purulent contents of the intestine were discovered. Because of the mesenteric location, the jejunal diverticulitis could not initially be determined which necessitated a laparotomy. A diverticulitis measuring 3x1cm had settled on the mesenteric side of the jejunum. The area around the diverticulitis was inflamed. As there was no perforation, resection was not considered. The patient was discharged on the post-operative fourth day with antibiotic therapy.

**Conclusion:** Jejunal diverticulitis is rare and may be difficult to diagnose. In uncomplicated cases, medical treatment should be applied for jejunal diverticulitis. Mesenteric jejunal diverticulitis can be confused with other disorders causing acute abdominal pain and may result in unnecessary laparotomies. We should consider jejunal diverticulitis in patients who present with acute abdomen pains.

## PP 82

**The Method of Surgical Treatment of Patients with Extra Sphincter Fistula Pararectal**

Sergey Katorkin, Alexandr Razin

Самарский государственный медицинский университет, Samara, Russian Federation

**Background:** Purpose. Improve patient outcomes with extra pararectal sphincter fistula due to the use of the original method of plastic surgical correction.

**Material and Methods:** Analysis of treatment of 146 patients with extra sphincter fistula rectal. Ligature method was performed in 50 (34.2%) patients (group I). Rectoplasty laterally offset muco- submucosal rectal flap was performed in 50 (34.2%) patients (group II). The proposed method of plastic correction was done in 46 (31.5%) patients (group III). Evaluation of the results of surgical treatment carried out in the early and late (4 years) postoperative periods.

**Result:** In the early postoperative bleeding diagnosed: Group I - 2 (4.0%), in the II - 3 (6.0%) , in the III - 5 (3.4%) cases . Festering wounds found operating in the I group 2 patients (4.0%), in the II - 3 (6.0%) in the III - in 2 (4.3%) patients. Minimum average rehabilitation period noted in group III and was 28,1 ± 2,0 days (p ≤ 0,05).

Analysis of long-term results of surgical treatment (n=115) revealed a recurrence of the disease in the I group, 3 patients (6.0%) in the II - 6 (12.0%) in group III - 3 (8.6%) patients. Functional insufficiency of the anal sphincter in the I group

was diagnosed in 16 (32.0%) in group II, only 1 (2.0%) patients in group III - is not revealed.

**Conclusion:** Advantages of the proposed correction method are small injury, the lack of anal sphincter insufficiency, shorter treatment.

#### PP 83

### Comparison of Short And Long-Term Results of Laparoscopic Versus Open Colectomy for Colorectal Cancer

Zafer Kilbas, Elgun Samadov, Subutay Peker, Nail Ersoz, Sezai Demirbas, Ismail Hakki Ozerhan, Fatih Can, Gokhan Yagci, Orhan Kozak, Yusuf Peker

Gulhane School of Medicine, Department of General Surgery, Ankara, Turkey

**Background:** Colorectal cancer (CRC) is very common and one of the leading cause of cancer related mortality worldwide. Laparoscopic colectomy has become an alternate approach to laparotomy for the treatment of patients with benign colonic conditions. However, oncological radicality and longterm outcome are main concerns and they have limited the adoption of laparoscopic surgery for CRC. The aim of this study is to compare short and long-term results of Laparoscopic and open surgery for curative resection of CRC.

**Material and Methods:** Demographic characteristics and clinico-pathologic results of the patients who underwent curative resection for CRC were obtained prospectively. The patients were divided into two groups either open surgery (n: 79) or laparoscopic surgery (n:79). The groups were compared in terms of length of hospital stay (LOS), number of retrieved lymph nodes (RLN), postoperative morbidity, recurrence and survival. The results were given as count, percent and mean +/- standart deviation. Student-t test was used for the analysis of continious data and Kaplan-Meier test was used for the analysis of survival.

**Result:** There weren't a significant difference in terms of age and stage of patients. LOS was shorter in laparoscopy group than open group, 13 and 18,8 days respectively. In addition, the number of RLN was more in laparoscopic group than in open group (17.6 vs 14.8). Postoperative complication rate was smaller in laparoscopy group.

**Conclusion:** Laparoscopic resection of CRC is associated with decreased LOS and postoperative complication rate. Surgery can be handled without compromising oncological principles in experienced hands.

#### PP 84

### How Should the Surveillance of Patients with Colorectal Cancer Be Planned?

Nail Ersoz, Zafer Kilbas, Ali Harlak, Eyup Duran, Sezai Demirbaş, Yusuf Peker

Gulhane Military Medical Academy, Department of General Surgery, Ankara, Turkey

**Background:** Colorectal cancer (CRC) is the third most common cause of cancer death and up to 30%-50% of patients will have a disease relapse following primary therapy. There has been ongoing debate for duration of follow-up strategies after curative resection. The aim of this retrospective study was to assess the follow-up strategy.

**Material and Methods:** Data of 324 patients who underwent curative resection for CRC were retrospectively obtained. These patient were called back in every three months for the first 3 year and then in every six months for the next 2 years. After five years, annual follow up strategy was planned. Clinicopathologic characteristics of patients and recurrence site according to the years were analyzed.

**Result:** During follow-up period, recurrent disease was observed in 60 patients, including 24 rectum cancers and 36 colon cancers. The recurrence rate according to the years was as follows for postoperative 1., 2., 3., 3-5 and >5 years, 20%, 35%, 16,6%, 13.1% and 15% respectively. Among the 60 patients, rectal cancer (28 months) recurred earlier than colon cancer (31.8 months) but significant differences weren't found ( $p>0.05$ ). Interestingly, recurrence rate after five years (15%) was equal to recurrence rate in the third year (16%).

**Conclusion:** Since early detection of recurrences will increase the chance of patients for curative therapy, intensive postoperative follow-up programs is mandatory. Recurrent disease is a major problem even after five years, so, surveillance programs may be revised again for a longer follow-up program.

#### PP 85

### Complex Treatment of Patients with Acute Condition Ulcerative Colitis with Endolymphatic Therapy

Pavel Andreev, Sergei Katorkin, Andrei Zhuravlev, Andrei Chernov

Samara State Medical University, Samara, Russian Federation

**Background:** Improvement of treatment of patients with medium heavy and heavy acute condition of ulcerative colitis by incorporating the medical complex endolymphatic antibacterial and immunostimulation therapy.

**Material and Methods:** Study includes 95 patients with heavy and medium heavy forms of acute condition ulcerative

colitis. Patients were divided into two groups. In the first group includes 50 patients whose complete treatment of ulcerative colitis was added with endolymphatic therapy. The second group (45) of patients were treated in a standard way.

**Result:** It was found with the help of clinico-endoscopic and laboratory and morphological studies, as well as microbiological examination of the colon mucosa tissue biopsy that endolymphatic therapy in conservative treatment of patients with acute condition ulcerative colitis proves to be effective. Use of an endolymphatic therapy can reduce the number of noninfectious complications in the postoperative period.

**Conclusion:** Application of endolymphatic therapy for patients with acute condition ulcerative colitis medium heavy and heavy form is pathogenetic justified and effective.

#### PP 86

##### Gastric Cancer Metastasis Causing Unusual Perforation of Sigmoid

*Nehemiah Samuel, Thomas Middleton, Khurram Siddique, Luke Wheldon, Muhammad Hanif Shiwani*

Barnsley District General Hospital, Barnsley, United Kingdom

**Background:** Linitis plastica is a particularly aggressive form of diffuse-type gastric cancer that generally carries poor prognosis due to its extension beyond locoregional confines at the time of diagnosis. We report one such case with an unusual site of metastasis causing bowel perforation and the median survival time at readmission.

**Material and Methods:** Case report : An 80-year-old woman initially presented with upper abdominal pain, early satiety, weight loss and underwent gastroscopy and abdominal CT imaging investigations that revealed linitis plastica of the stomach with no metastases. She declined any further treatment at that stage. Four years later, she presented acutely to the casualty with signs of bowel perforation; an emergency Hartmann's procedure was performed. Histology of the resected sigmoid colon demonstrated metastatic scirrhous adenocarcinoma in the perforated segment.

**Result:** Discussion: Classically linitis plastica of the stomach presents late, with the reported median survival time ranging from 18 to 30 months from time of diagnosis. Common metastatic distribution is to liver, peritoneal surfaces and non-regional or distant lymphnodes. This case was unusual in that the octogenarian had survived 4 years prior to re-presenting with transcoelomic metastasis to an unusual distal colon site.

**Conclusion:** Metastasis of gastric linitis plastica to colon is rare, however it should be considered as a possible differential diagnosis for patients presenting with symptoms of bowel pathology and a past history of gastric cancer.

#### PP 87

##### Seminal Vesicle-Rectal Fistula after Lap-LAR: Report of a Case

*Mizuho Akahane, Masanori Yoshimitsu, Manabu Emi, Hidenori Mukaida, Ichiro Ohmori, Mikihiro Kano, Takuhiro Ikeda, Akira Nakashima, Yuichiro Kai, Masateru Yamamoto, Mahito Hunakoshi, Naoki Hirabayashi, Wataru Takiyama*

Hiroshima City Asa Hospital, Hiroshima, Japan

**Background:** Seminal vesicle-rectal fistula due to anastomotic leakage after laparoscopic low anterior resection (Lap-LAR) for rectal cancer is rare.

**Material and Methods:** We report a case of seminal vesicle-rectal fistula due to anastomotic leakage after Lap-LAR.

**Result:** A 73-year-old man underwent Lap-LAR with D2 lymph node dissection for Rb rectal cancer as an additional resection after endoscopic mucosal resection (EMR). A Denonvilliers fascia was partially resected. Histopathological examination of the resected rectum revealed no residual adenocarcinoma and no regional lymph-node metastasis. We removed rectal tube on postoperative day (POD)3 and the drain on POD4. The patient developed a fever without symptoms of peritonitis on POD5, and was diagnosed with anastomotic leakage by a water-soluble contrast enema on POD6. On POD13 an abdominal CT scan demonstrated emphysema in the seminal vesicle. He was diagnosed with seminal vesicle and rectal fistula secondary to anastomotic leakage in computed tomography. Diverting ileostomy by single-site laparoscopic surgery was created on POD 22. The cure of the fistula was confirmed by a water-soluble contrast enema 8 months postoperatively, and thereafter, the ileostomy was closed.

**Conclusion:** We treated Seminal vesicle-rectal fistula due to anastomotic leakage after Lap-LAR for rectal cancer.

#### PP 88

##### Gastric Tube Esophagoplasty as Secondary Esophageal Replacement

*Mahmoud Elfiky*

Cairo University, Cairo, Egypt

**Background:** Our surgery department has long used Colon bypass for esophageal replacement. Two of our cases acquired esophageal perforation & required another graft using Gastric tube Esophagoplasty (GTE). In this work we shall highlight the outcome of reoperating on those cases.

**Material and Methods:** All cases have been operated upon previously by colon bypass procedure and were discharged after healing of the wound. Cases were prepared for reoperation after resuscitation & confirmation of esophageal perforation by contrast swallow. All cases used a Left

Gastroepiploic vessel pedicled Gastric Tube Esophagoplasty using a gastrointestinal anastomosis stapler. Complications (postoperatively or during followup) as stricture or dysphagia were assessed and managed accordingly.

**Result:** Two male patients (with previous esophageal atresia & colon bypass esophageal replacement) acquired iatrogenic perforation. Interval between replacement procedures averaged 12 months. There were no recorded intraoperative complications in first or second procedures. One case acquired moderate dysphagia after 6 months and cervical stricture which were managed by multiple trials of dilatations by Savary-Gilliard dilators and stricturoplasty. The other patient had a cervical fistula that healed spontaneously. On follow up, both patients had normal weight for age, achieved normal swallowing & parents were satisfied with results.

**Conclusion:** Gastric Tube Esophagoplasty is a novel procedure that requires an adamant amount of skill and needs good general condition of the patient especially as reoperation procedures. The lack of preoperative GIT preparation & short operative time give GTE an edge to cure these patients. In cases operated upon before by colon by pass, the procedure is an ideal solution as a second conduit.

#### PP 89

### The Role Of Chemokine Signal in Acquisition of Gemcitabine Resistance in Pancreatic Cancer

Yoichi Matsuo, Takahiro Shibata, Tomoya Shamoto, Mamoru Morimoto, Takafumi Sato, Ken Tsuboi, Hiromitsu Takeyama

Department of Gastroenterological Surgery, Nagoya City University Graduate School of Medical Sciences, Nagoya, Japan

**Background:** Gemcitabine (Gem) is currently the leading therapeutic for pancreatic cancer (PaCa) treatment, but there still is a problem of the acquisition of resistance against Gem. On the other hand, we previously reported the important role of chemokines in PaCa angiogenesis. In this study, we demonstrated the relation between chemokines and the resistance to Gem.

**Material and Methods:** (1) The concentration of chemokines in supernatant of PaCa was measured by ELISA. (2) The alteration of proliferation of PaCa or HUVEC by chemokine was examined by MTS-assay. (3) After the establishment of Gem resistant PaCa cell lines (PaCa-Gem-R), we compared the proliferation of PaCa-Gem-R with PaCa cell lines which were sensitive to Gem (PaCa-Gem-S). (4) The expression of chemokine in PaCa-Gem-R or PaCa-Gem-S was examined by cytokine array. (5) The angiogenic ability of PaCa-Gem-R or PaCa-Gem-S was determined by in vitro angiogenesis assay.

**Result:** (1) The production of chemokine in PaCa was higher compared with HPDE. (2) HUVEC proliferation was enhanced by chemokine but not PaCa proliferation. (3) There

was no significant difference of proliferation between PaCa-Gem-R and PaCa-Gem-S. (4) The angiogenic ability of PaCa-Gem-R was higher than PaCa-Gem-S, and the angiogenic ability was inhibited by CXCL8 Ab.

**Conclusion:** The expression of chemokine was enhanced by the acquisition of Gem-resistance. The regulation of chemokine would become a potential therapeutic target in Gem resisted PaCa.

#### PP 90

### The Vacuum Assisted Closure [V.A.C] System for Surgical Site Infection with Involved Vascular Grafts

Karaca Saziye, Kalangos Afksendiyos

Service of Cardiovascular Surgery, University Hospital Geneva, CH-1211 Geneva, Switzerland, Geneva, Switzerland

**Background:** In vascular surgery, surgical site infection [SSI] is the most common postoperative morbidity, occurring in 5–10% of vascular patients. The optimal management of surgical site infection [SSI] with involved lower limb vascular grafts remains controversial. We present our 6-year results of using the V.A.C. system in [SSI] with involved vascular grafts.

**Material and Methods:** A retrospective 6-years review of patient who underwent a VAC® therapy for postoperative surgical site infection [SSI] in lower limb with involved vascular grafts in our department between January 2006 and December 2011. V.A.C therapy was used in 40 patients [34 male, 6 female, median age 72.4]. All patients underwent surgical wound revision with VAC® therapy and antibiotics.

**Result:** The mean time of use of the V.A.C. system was 14.2 days [range 10 to 20] days. There was no evidence of infection after mean of 12 [range 10 to 20] days in 34 of 40, in whom the use of VAC® therapy resulted in delayed primary closure or healing by secondary intention. The mean postoperative follow-up time was 61.67 months [range 36-83 months], during which 3 [7.5%] patients died.

**Conclusion:** We showed that the V.A.C. System is valuable for managing severe complications in vascular surgery, specifically surgical site infection [SSI] with involved vascular grafts. Using the V.A.C. System, reoperation rates are reduced; 85% of patients avoided graft replacement.

## PP 91

**Hot Water Related Acute Aortic Dissection***Münevver Dereli<sup>1</sup>, Oya Oruc<sup>2</sup>, Fahri Adalı<sup>1</sup>*<sup>1</sup> Afyon Kocatepe University Cardiovascular Surgery, Afyonkarahisar, Turkey<sup>2</sup> Afyon Kocatepe University Emergency Department, Afyonkarahisar, Turkey

**Background:** Acute Aortic dissection is a rapidly fatal disease, necessitating emergent evaluation and management. Patient often present with sudden onset of severe chest pain radiating to the back, but atypical symptoms are common. In recent month it has come increasingly clear that there is a relation between hot water, hypertension and aortic dissection.

**Material and Methods:** The Patient is a 62-years-old male who was presented in the emergency department with acute chest pain. The examination of the patient was unremarkable and his medical, surgical and family history was negative but before one hour use too hot water to swimming history is positive. ECG was on sinus rhythm without any abnormalities. Cardiac CT with contrast material showed the presence of an descending aortic acute dissection and presence of an intimal tear in the descending aorta as well Fig 1. Its treated by TEVAR technic which is percutan endovascular graft implantation. The clinical manifestation and diagnosis of aortic dissection associate.

**Result:** Cardiac CT with contrast material showed the presence of an descending aortic acute dissection and presence of an intimal tear in the descending aorta as well Fig 1. Its treated by TEVAR technic which is percutan endovascular graft implantation.

**Conclusion:** The clinical manifestation and diagnosis of aortic dissection associated with hot water swimming related hypertention are similar to those unrelated to hot water swimming use. One should be able to attention how use to swimming water hot deggree.

## PP 92

**Ghrelin Effects in Damage of Myocardial Ischemia-Reperfusion***Münevver Dereli<sup>1</sup>, Cigdem Ozdemir<sup>2</sup>, Fahri Adalı<sup>1</sup>*<sup>1</sup> Afyon Kocatepe University Cardiovascular Surgery, Afyonkarahisar, Turkey<sup>2</sup> Afyonkocatepe University Cardiovascular Patology Department, Afyonkarahisar, Turkey

**Background:** This study aims to elucidate whether ghrelin mitigates acute heart injury induced by lower limb ischemia-reperfusion (I/R 30/120 min.) and Their protective effects cover cytokines and heart tissue damage.

**Material and Methods:** Forty rats were randomized

into four groups: control (group 1), ischemia reperfusion (group 2), Ghrelin (group 3), sham (group 4). Ghrelin was administered before ischemia. Samples were obtained for tumor necrosis factor-alpha(TNF-a), interleukin 6(IL-6). Finding of heart injury were examined. Cardiac function was monitored, and histomorphologic features, degree of myocardial injury, level of ERS markers, and number of apoptotic cardiomyocytes were determined.

**Result:** Compared with control group, THA I/R group showed significantly decreased cardiac function, seriously damaged myocardial tissue, increased number of apoptotic cells, and overexpression of mRNA and protein of ERS markers. Preadministration of ghrelin in vivo (10.8 mol/kg, intraperitoneal injection greatly ameliorated the damaged heart function, attenuated myocardial injury and apoptosis, and decreased the expression of ERS markers: it decreased the mRNA and protein levels of glucose-regulated protein78 (GRP78) and C/EBP homologous protein (CHOP), with reduced caspase-12 protein expression.

**Conclusion:** In this acute heart injury model induced by I/R of the lower limbs, pretreatment with ghrelin significantly attenuated proinflammatory activities and parenchymal heart damage. Ghrelin directly inhibited the myocardial ERS response induced by tunicamycin or dithiothreitol in rat cardiac tissue. Ghrelin could protect the heart against I/R injury, at least in part, through inhibiting myocardial ERS.

## PP 93

**Invasive and Non-Invasive Experimental Procedures on Animal Models in Kaposvár University***Rita Garamvölgyi<sup>1</sup>, Örs Petneházy<sup>1</sup>, Zsolt Petrás<sup>2</sup>, Imre Repa<sup>1</sup>*<sup>1</sup> University of Kaposvár, Institute of Diagnostic Imaging and Radiation Oncology, Kaposvár, Hungary<sup>2</sup> University of Kaposvár, Faculty of Agricultural and Environmental Science, Department of Companion Animal Science, Kaposvár, Hungary

**Background:** The Institute of Diagnostic Imaging and Radiation Oncology of Kaposvar University was founded in 1990. The clinical diagnostic service is a key activity of the Institute. The Institute works in joint participation with the departments of the University of Kaposvár and participates in national and international animal breeding science research programmes, and provides services to international companies engaged mainly in angiographic studies.

**Material and Methods:** The experimental research activity of the Institute is supported by the following infrastructure: CT and MR scanners, the laboratory work is supported by a Bruker Minispec PC 140 NMR spectrometer, Partec Cyflow® Space flow cytometry, Il Gem Premier 3000 blood electrolyte analyzer. Since 2000, invasive and non-invasive cardiovascular research has been supported with the Siemens Coroscop Top angiography system.

**Result:** Animal model studies at the Institute of Diagnostic Imaging and Radiation Oncology

1. Testing of aneurysm-closing materials
2. Stent-implantation procedures in coronary or/and carotid arteries.
3. Myocardial infarction model in pigs.
4. Open heart surgery and consequential embolism detection in the brain of pigs by means of MRI.
5. Pacemaker testing in pigs.
6. Atrial Septal Defect (ASD-PFO) and Ventricular Septal Defect (VSD) model in pigs.
7. Testing new type of vessel catheters, angiological and orthopedical surgical methods in pigs.
8. Double Balloon Technique for pulmonary vein isolation using arctic front in sheeps.

**Conclusion:** Our aim is to provide a high quality invasive and non-invasive experimental work on different animal models using the excellent facility and researcher staff of the Institute.

#### PP 94

### Deep Venous Thrombosis in Childhood Related Use of Corticosteroid for Fascial Paralysis: A Rare Case Report

Münevver Dereli, Fahri Adalı, Görkem Çarşanba

Afyonkocatepe University Cardiovascular Surgery Department, Afyonkarahisar, Turkey

**Background:** Venous thromboembolism is a rare condition in children, but the incidence appears to be increasing. Newborns and teenagers are at the highest risk of thrombosis, mostly associated with an underlying risk factor, the primary risk factor being the venous catheter.

**Material and Methods:** More than 90% of children with VTE will have  $\geq 2$  predisposing factors. Deep venous thrombosis in child related use of corticosteroid for fascial paralysis hasn't reported before. 11 years old boy using corticosteroid for fascial paralysis child was diagnosed as having deep venous thrombosis. Symptoms was the lower extremity leg pain, swelling of the leg, and reddish or blue-purple discoloration of the lower extremity. Lower-extremity venous ultrasound was positive for deep vein thrombosis and was positive lower-extremity diameter increase. He was treated successfully with low molecular weight heparin. No underlying risk factor could be determined. Genetic risk factors and malignancies should be inquired at these ages when deep venous thrombosis is encountered.

**Result:** Its very interestig such rare condition deep venous thrombosis in child related use of corticosteroid for fascial paralysis should be immediately treated appropriate drug.

**Conclusion:** Treatment of pediatric thrombosis with low molecular-weight heparin appears safe, but the effectiveness remains to be established.

#### PP 95

### Vascular Impedance Changes after Total Aortic Arch Replacement: Superiority of Decellularized Allografts Compared with Conventional Prostheses

Gergő Merkely<sup>1</sup>, Tamás Radovits<sup>1</sup>, Alexander Weymann<sup>2</sup>, Balázs Tamás Németh<sup>1</sup>, Attila Oláh<sup>1</sup>, Csaba Mátyás<sup>1</sup>, Bastian Schmack<sup>2</sup>, Pál Soós<sup>1</sup>, Roland Istók<sup>1</sup>, Matthias Karck<sup>2</sup>, Béla Merkely<sup>1</sup>, Gábor Szabó<sup>2</sup>

<sup>1</sup> Semmelweis University, Budapest, Hungary

<sup>2</sup> University of Heidelberg, Heidelberg, Germany

**Background:** To date, no studies provide detailed analysis of vascular impedance changes after total aortic arch replacement. We investigated ventriculoarterial coupling (VAC) and vascular impedance after replacement of the aortic arch with conventional prostheses vs. decellularized allografts.

**Material and Methods:** After preparing decellularized aortic arch allografts, their mechanical, histological and biochemical properties were evaluated and compared to native aortic arches and prostheses in vitro. Total aortic arch replacement was performed in dogs with prostheses or decellularized allografts (n=5/group). Aortic flow and pressure were recorded continuously, left ventricular pressure-volume relations were measured by using a pressure-conductance catheter. From the hemodynamic variables end-systolic elastance (Ees), arterial elastance (Ea) and VAC were calculated. Characteristic impedance (Z) was assessed by Fourier analysis.

**Result:** While Ees did not differ between the groups and over time, Ea showed a higher increase in the prosthesis group (4.01 +/- 0.67 vs. 6.18 +/- 0.20mmHg/ml) in comparison to decellularized allografts (5.03 +/- 0.35 vs. 5.99 +/- 1.09mmHg/ml). This led to impaired VAC in the prosthesis group, while it remained unchanged in the allograft group (62.5 vs. 3.9%). Z showed a strong increasing tendency in the prosthesis group and it was markedly higher after replacement when compared to decellularized allografts (44.6 +/- 8.3dyn•sec•cm<sup>-5</sup> vs. 32.4 +/- 2.0dyn•sec•cm<sup>-5</sup>).

**Conclusion:** Total aortic arch replacement with prostheses leads to contractility-afterload mismatch by means of increased impedance and invert VAC. Implantation of decellularized allografts preserves vascular impedance thereby improving ventriculoarterial mechanoenergetics after aortic arch replacement.



## PP 96

**Antifibrinolytics for Reduction of Postoperative Bleeding in Cardiac Surgery: Aprotinin and Tranexamic Acid**

Balázs Tamás Németh<sup>1</sup>, László Hidi<sup>2</sup>, Richárd Tóth<sup>1</sup>, Gábor Veres<sup>1</sup>, Attila Oláh<sup>1</sup>, Csaba Mátyás<sup>1</sup>, Gergő Merkely<sup>1</sup>, Béla Merkely<sup>2</sup>, Tamás Radovits<sup>1</sup>, Gábor Szabó<sup>2</sup>

<sup>1</sup> Semmelweis University, Budapest, Hungary

<sup>2</sup> University of Heidelberg, Heidelberg, Germany

**Background:** Anti-haemorrhagic drugs are being used to prevent and treat haemorrhagic complications in cardiac surgery. Aprotinin is an antifibrinolytic agent that had been used in clinical practice for decades. In 2008, the BART-study revealed its unfavourable effects on postoperative mortality, which led to its withdrawal from the market.

We compared the effects of aprotinin and the currently available tranexamic acid (TA) on postoperative blood loss, hemodynamic, hemostaseologic and inflammatory parameters, using a canine model of cardiopulmonary bypass (CPB).

**Material and Methods:** Beagle dogs were randomized into three groups (n=8/group). Control dogs received placebo, treated groups were given aprotinin or TA. All animals underwent 90min of CPB, which was followed by 130min observation. We regularly determined blood loss and coagulation parameters, while hemodynamic parameters were continuously monitored. To assess the systemic inflammatory response induced by CPB, plasma levels of IL-6, IL-8 and TNF $\alpha$  were determined by ELISA.

**Result:** Compared to control, aprotinin significantly reduced blood loss (105 $\pm$ 22ml vs. 41 $\pm$ 8ml), while TA was found to be less effective (65 $\pm$ 16ml). Regarding hemodynamic and coagulation parameters, no significant difference was detected among the groups. The elevation of proinflammatory cytokine levels during CPB was significantly decreased by TA (TNF $\alpha$  90min after starting CPB: 5.2 $\pm$ 1.2ng/ml control vs. 3.7 $\pm$ 0.9ng/ml aprotinin vs. 0.8 $\pm$ 0.3ng/ml TA).

**Conclusion:** Compared to aprotinin, TA is less effective in reducing blood loss, but has a stronger anti-inflammatory effect. Our work points out the need for the development of novel pharmacological tools for effective and safe postoperative blood loss reduction.

## PP 97

**Vac-Instill® for the Treatment of Mycoplasma Hominis Mediastinitis**

Karaca Saziye, Kalangos Afksendiyos

Service of Cardiovascular Surgery, University Hospital Geneva, CH-1211 Geneva, Switzerland, Geneva, Switzerland

**Background:** The incidence of poststernotomy mediastinitis is 1-3% with mortality rate of 10-25%. Poststernotomy Mycoplasma hominis sternal wound infection is uncommon and difficult to diagnose and treat, as they are rarely cultured by conventional laboratory methods and exhibit a poor response to broad-spectrum antibiotics, which can lead a fatal outcome. Mycoplasma hominis frequently colonizes the human genital and respiratory tract. There are currently no guidelines to manage Mycoplasma hominis mediastinitis; thus, reporting of new cases is useful for sharing successful experiences.

**Material and Methods:** A 56-year old patient who underwent ascending aorta replacement postoperatively developed mediastinitis with atypical Mycoplasma hominis. Vacuum-assisted closure (VAC)® treatment for sternal wound infection has been common since 1996. The VAC system has recently been modified to allow for intermittent instillation of antiseptics, antibacterials, or saline into the wound bed (VAC-Instill®).

**Result:** We present the first successful treatment of Mycoplasma hominis mediastinitis after cardiac surgery with VAC-Instill® therapy combined with dilute antiseptic irrigation for bacterial eradication.

**Conclusion:** The adequate delivery of bactericidal agents to infected tissue can be difficult, especially in mediastinitis with Mycoplasma species. Closed continuous irrigation has the advantage of washing out bacteria, necrotic tissue, fibrin, and clots. The effective eradication of Mycoplasma hominis parallels intravenous antibiotic therapy and prepares the wound bed until sternal closure. Although this is only one case, the VAC-Instill® system for the treatment of this very difficult wound may have eliminated the need for high-risk replacement of the prosthetic graft.

## PP 98

**Suppression of C5a Decreases Ischemia/Reperfusion Injury in the Rat Ileum**

Eszter Tuboly<sup>1</sup>, Mitsuru Futakuchi<sup>2</sup>, Gabriella Varga<sup>1</sup>,  
Dániel Érces<sup>1</sup>, Tünde Tóké<sup>1</sup>, András Mészáros<sup>1</sup>,  
József Kaszaki<sup>1</sup>, Masumi Suzui<sup>2</sup>, Mihály Boros<sup>1</sup>,  
Hidechika Okada<sup>3</sup>, Noriko Okada<sup>4</sup>

<sup>1</sup> Institute of Surgical Research, Faculty of Medicine,  
University of Szeged, Szeged, Hungary

<sup>2</sup> Department of Molecular Toxicology, Graduate School  
of Medical Sciences, Nagoya City University, Nagoya,  
Japan

<sup>3</sup> Choju Medical Institute, Fukushima Hospital,  
Toyohashi, Japan

<sup>4</sup> Department of Immunology, Graduate School of  
Medical Sciences, Nagoya City University, Nagoya, Japan

**Background:** The pathways leading to regeneration of injured epithelial cells after transient ischemia remain incompletely defined. Accordingly, we set out to study the mechanism of epithelial injury and regeneration in a standardized model of acute mesenteric ischemia-reperfusion (I/R) injury.

**Material and Methods:** Anaesthetized rats were exposed to sham operation or 45 min of intestinal ischemia, with or without 30 min of reperfusion. Additional groups were treated with AcPepA (4 mg/kg iv.), a synthetic C5a antagonist peptide before ischemia or reperfusion. The proliferative capacity of the epithelium was determined by the degree of injury and proliferating cell nuclear antigen (PCNA) staining. The number of C5a receptor-positive PMN leukocytes (C5L2 staining), CD68 and CD204-positive macrophages and hypoxia-inducible factor 1 alpha (HIF-1 $\alpha$ ) activation were determined by immunohistochemical analysis.

**Result:** The average of severely injured villi was 6% after ischemia, and reperfusion has led to 76%, while AcPepA administration significantly decreased this to 24% ( $p < 0.001$ ). Treatment with AcPepA before reperfusion significantly increased the PCNA index in the injured villi, as compared to the other groups. The average numbers of C5L2, CD68 and CD204-positive cells were increased by I/R, mainly near the injury site, and these changes were reduced by AcPepA treatment. The induction of HIF-1 $\alpha$ -positive cells correlated closely with the number of CD204-positive cells.

**Conclusion:** These results demonstrate that C5a activation amplifies PMN-macrophage cross-talks and I/R-induced villus injury. Inhibition of C5a generation reduces the induction of HIF-1 $\alpha$ -positive macrophages which lowers destruction and increases epithelial proliferation.

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## PP 99

**Microorganisms Associated with Wound Infection in Intensive Care Units and Surgery Clinics and Their Antibiotic Resistance Patterns**

Hülya Duran<sup>1</sup>, Eyup Duran<sup>2</sup>, Fatih Mehmet Yazar<sup>3</sup>,  
Emine Sevgican<sup>4</sup>, Ahmet Kizirgil<sup>5</sup>

<sup>1</sup> Elazig Training and Research Hospital, Microbiology  
laboratories, Elazig, Turkey

<sup>2</sup> Elazig Military Hospital, Department of General Surgery,  
Elazig, Turkey

<sup>3</sup> Elazig Training and Research Hospital, Department of  
General Surgery, Elazig, Turkey

<sup>4</sup> Elazig Training and Research Hospital, Department of  
Infectious Disease, Elazig, Turkey

<sup>5</sup> Firat University, Department of Microbiology, Elazig,  
Turkey

**Background:** Infection affecting the skin and subcutaneous tissue is very common among people of all ages. The aim of this study is to evaluate microorganisms involved in wound infections in intensive care units and surgery clinics and their antibiotic resistance pattern.

**Material and Methods:** This study was conducted in surgical departments (general surgery, orthopedic, urology, plastic surgery, heart and vascular surgery) and intensive care units of our hospital. Wound infections were recorded in 443 patients. All samples were subcultured to blood agar and eosin methylene blue (EMB) agar. Microorganisms were identified by conventional methods and automated systems (Vitek 2, bioMerieux) and antibiotic susceptibility were evaluated.

**Result:** Pathogen microorganisms were cultivated from 128 (%28.9) patient samples. Gram-positive microorganisms constituted 45.3% (58 patients) of the pathogens responsible for wound infection and gram negative microorganisms constituted %53.1 (68 patients) of the pathogens. The rate of positive samples were highest in intensive care unit patients (%28.1) and general surgery patients (%23.4). The most commonly isolated microorganisms were Coagulase Negative Staphylococcus (CNS) (%18.75), Staphylococcus aureus (%17.2) and Escherichia coli (%17.2). Methicillin resistance in Staphylococcus aureus and CNS was %18.2 and %61.9, respectively. Resistance to penicillin, amoxicilline/clavulanic acid and tetracycline was high for gram positive bacteria and resistance to trimethoprim/sulfamethoxazole, cefazolin and ceftriaxone was high for gram negative bacteria. Acinetobacter spp. isolates had highest rate of resistance to antimicrobials.

**Conclusion:** This study indicates that antibiotic susceptibility tests are crucial in the treatment of patients with wound infection.

## PP 100

**Spatial and Temporal Differences of HMGB1 Expression in the Pancreas of Rat**

Can Yu, Xiao Yu

Third Xiangya Hospital, Central South University, Changsha, China

**Background:** To investigate the spatial and temporal expression differences between HMGB1 and early-stage inflammatory cytokines in acute pancreatitis rat pancreas.

**Material and Methods:** SD rats were randomly divided into sham-operated group, and the experimental group which were injected with 5% sodium taurocholate into the bili-pancreatic duct retrogradely to produce ANP models, for SO group with equal dose of saline. The rats were sacrificed at different time points at 0h, 3h, 6h, 12h, and 24h post modeling, respectively. The peripheral blood amylase and different inflammatory factors in ANP rats at different time points were detected by ELISA, and the expression of HMGB1 in the pancreatic tissue was detected by Western blot and Q-PCR methods.

**Result:** The serum amylase in the ANP model rats was significantly higher than the sham-operated group ( $P < 0.05$ ). The early inflammatory factors (IL-1, TNF- $\alpha$  and IL-6) increased quickly at 3h after the model induction, reached the peak level at 6h (higher than SO group,  $P < 0.05$ ), then decreased at 12h, and at 24h the levels were lower than those at 12h ( $P < 0.05$ ). The HMGB1 level in the pancreatitis tissue did not change significantly at 3h and 6h ( $P > 0.05$ ), however, it increased remarkably at 12h, and maintained up to 24h ( $P > 0.05$ ).

**Conclusion:** As a late inflammatory factor, the expression of HMGB1 in acute pancreatitis was obviously later than the early inflammatory factors IL-1, TNF- $\alpha$  and IL-6. HMGB1 may play a key role in maintaining the development of the acute pancreatitis.

## PP 101

**Diabetic Foot Infections Caused by Achromobacter Xylosoxidans**Hülya Duran<sup>1</sup>, Onur Gökdemir<sup>2</sup>, Eyup Duran<sup>3</sup>, Ahmet Kizirgil<sup>4</sup><sup>1</sup> Elazig Training and Research Hospital, Medical Microbiology Laboratory, Elazig, Turkey<sup>2</sup> Elazig Training and Research Hospital, Department of Plastic Surgery, Elazig, Turkey<sup>3</sup> Elazig Military Hospital, Department of General Surgery, Elazig, Turkey<sup>4</sup> Firat University, Medical Microbiology Laboratory, Elazig, Turkey

**Background:** Achromobacter xylosoxidans is a nonfermentative, gram-negative bacillus and is rarely isolated from clinical material. The aim of this case report is to describe A.xylosoxidans isolated from three patients with diabetic foot infections.

**Material and Methods:** We present three cases: A. xylosoxidans caused an infection leading to diabetic foot.

**Result:** Three patients who were admitted with history of diabetic foot, were 76, 62 and 54 years old. They were hospitalized. Purulent exudate samples were obtained from wound infection of diabetic foot. The bacterium was isolated on blood and eosin methylene blue (EMB) agar plates. It was nonfermenter, oxidase positive and indol negative. Identification was carried out with Vitek 2 (bioMerieux) system. The isolates were susceptible to imipenem, meropenem, piperacillin-tazobactam, ceftazidime and trimetoprim/sulfamethoxazole. The patient were treated with piperacillin-tazobactam and ceftazidime. Control cultures remained sterile.

**Conclusion:** A.xylosoxidans is an opportunistic pathogen and can be isolated from wound infections. A.xylosoxidans has the potential to cause infection in patients with diabetic foot.

## PP 102

**Electrocautery Versus Scalpel for Abdominal Incision in Open Appendectomy**Pouya Tayebi<sup>1</sup>, Soha Zia Abadi<sup>2</sup><sup>1</sup> Tabriz University of Medical Sciences, Babolsar, Iran, Islamic Republic of<sup>2</sup> Tehran University of Medical Sciences, Tehran, Iran, Islamic Republic of

**Background:** The aim of this study was to assess the outcome of operated patients following use of scalpel versus electrocautery for abdominal incision in McBurney's point appendectomy.

**Material and Methods:** 80 patients undergoing open appendectomy in McBurney's point were analyzed

retrospectively from Aug 2013 to Dec 2013. Patients divided into two groups, matched for age, sex, co-morbidities and medications according to the method used to perform incision, i.e., scalpel or surgical diathermy. Wound related complications, cosmetic assessments of the scar, total operating time and postoperative wound pain were compared.

**Result:** The overall incidence of wound related complications in this study was few with no significant difference between the two groups before discharge and at 1-month follow-up; include 2 surgical site infections in scalpel group versus 1 in electrocautery group. However, the mean of operating time ( $46.63 \pm 17.59$  min) and Visual Analog Scale (VAS) for post operative wound pain ( $4.51 \pm 1.23$ ) of the cautery was used in the group is significantly less than the scalpel group respectively ( $61.46 \pm 18.69$  min), ( $7.12 \pm 1.28$ ) ( $p < 0.05$ ).

**Conclusion:** The use of electrocautery for performing surgical incision in open appendectomy can significantly reduced the operating time and postoperative wound pain and there wasn't any significant difference in wound complication rates or scar cosmesis between scalpel and electrocautery for abdominal incision. The authors suggest electrocautery as a safe and effective method for performing surgical incision in open appendectomy.

#### PP 103

### Can Fibrinolysis Explain Efficacy of Hydrogen Peroxide in Wound Cleaning?

Zita M Jessop<sup>1</sup>, Elena Garcia<sup>2</sup>, Norbert Kang<sup>1</sup>

<sup>1</sup> Royal Free Hospital, London, United Kingdom

<sup>2</sup> Restoration of Appearance and Function Trust, London, United Kingdom

**Background:** 3% hydrogen peroxide (H2O2) is widely used to irrigate wounds and was observed clinically to be more effective at cleaning off blood than normal saline. Our hypothesis was that this was due to a direct effect of H2O2 on fibrin clot formation and degradation. We decided to investigate the mechanism using an in-vitro model.

**Material and Methods:** We performed coagulation assays with normal saline, 1% and 3% final concentrations of H2O2 to investigate its effect on fibrin clot formation as determined by spectrophotometer absorbance readings at 425nm wavelength. Effect on fibrinolysis was studied by immersing and agitating blocks of fibrin clot in normal saline, 1%, 3% and 10% H2O2 solutions. We took photographs, samples for protein assay and clot dimensions at set time intervals. We performed scanning electron microscopy on fibrin clots to examine clot structure.

**Result:** Fibrin clots immersed in 1%, 3% and 10% H2O2 demonstrated  $0.09 \text{ mm}^3/\text{min}$  ( $\pm 0.14 \text{ SD}$ ,  $n=4$ ),  $0.25 \text{ mm}^3/\text{min}$  ( $\pm 0.13 \text{ SD}$ ,  $n=4$ ) and  $0.14 \text{ mm}^3/\text{min}$  ( $\pm 0.04 \text{ SD}$ ,  $n=2$ ) rate of volume loss whereas those immersed in the normal saline increased in volume by  $0.02 \text{ mm}^3/\text{min}$  ( $\pm 0.13 \text{ SD}$ ,  $n=4$ ). H2O2 reduced the rate of initial increase in light

absorption, an indicator of fibrin clot formation, in a dose dependent manner (NaCl;  $0.20/\text{min}$ , 1% H2O2;  $0.08/\text{min}$ , 3% H2O2;  $0.02/\text{min}$ ).

**Conclusion:** We have shown that the efficacy of H2O2 in cleaning blood from wounds may be related to its effects on the coagulation pathway, in a concentration dependent manner, by a currently undescribed mechanism.

#### PP 104

### Prevention Of Surgical Site Infection by Optimizing Abdominal Fascia Closure Techniques

Vladimir A. Samartsev<sup>1</sup>, Vasily A. Gavrilov<sup>1</sup>, Alexey G. Kuchumov<sup>2</sup>, Alexey A. Sergeev<sup>3</sup>

<sup>1</sup> Perm State Medical Academy named ac. E.A. Vagner, Perm, Russian Federation

<sup>2</sup> Perm National Research Polytechnic university, Perm, Russian Federation

<sup>3</sup> Perm State Medical Academy named ac. E.A. Vagnera, Perm, Russian Federation

**Background:** The aim of our studies was to advance abdominal wall closure technique with absorbable suture materials with antibacterial coating.

**Material and Methods:** Mechanical and rheological properties of the surgery suture material were used for the biomechanical modeling and mathematic analysis of continuous and interrupted sutures by developing virtual biomechanical model of abdominal wall. The calculated experimental parameters of the abdominal wall closure were studied on the biological model of rats. Regenerative changes of the aponeurosis samples with different suture materials were morphologically evaluated. 293 patients with midline incisions of abdominal wall were included into the studying. 67 of them - midline abdominal fascia was closed with a simple continuous suture with a triclosan-coated loop suture PDS Plus, a continuous suture to the adipose tissue with Vicryl Plus and continuous intracutaneous suture with Monocryl Plus. The obtained data were compared with retrospective studies of 226 patients operated for the similar pathology with operative wounds closed with interrupted sutures using capron.

**Result:** Using a virtual mechanical model of abdominal wall shows efficiency of simply continuous suture in fascial closure. In group 2 of laboratory rats post-operative wounds were epithelized at the cutaneous level. Aponeuroses were almost completely restored. In the observed group no post-operative herniations were observed after 12 months after operation. After 12 months in the comparative group 13 of 226 cases were diagnosed with incision hernias.

**Conclusion:** Suturing of the anterior abdominal wall with the simple continuous suture using synthetic absorbable suture material has allowed to decrease the rate of late postoperative complications.

## PP 105

**Splenic Rupture 15 Days after Blunt Abdominal Trauma: True Imaging?***Ulvi Mehmet Meral<sup>1</sup>, Oguz Hancerliogullari<sup>1</sup>, Turan Ilica<sup>2</sup>*<sup>1</sup> Izmir Military Hospital Department of General Surgery, Izmir, Turkey<sup>2</sup> Izmir Military Hospital Department of Radiology, Izmir, Turkey

**Background:** Splenic injury, is the most frequent solid organ injury in blunt abdominal trauma patients admitted to the emergency room.

**Material and Methods:** 21 year-old man was admitted to first step hospital then to our second step hospital with general body trauma as a result of assault. He was complaining headache, right lower quadrant abdominal pain. Because of his maxillofacial and cranial injury he was sent to third step hospital for CT scan. Urinary ultrasound(US) and non-contrast abdominal CT had been reported as normal. The third step hospital sent the patient home with reporting that there is no pathologies requiring emergency treatment.

**Result:** 15th day after trauma, in the morning, the patient was brought to emergency, with hypotension, tachycardia, abdominal tenderness. Fast US shown that free fluid in all quadrants and laceration in the spleen. Splenectomy procedure performed immediately and he was discharged without any problem.

**Conclusion:** In retrospective evaluation; the patient had splenic injury during the first application, when we studied on the third step hospital's CT scans carefully. In general body traumas which are being evaluated by second or third step hospitals, if possible, we must image the abdominal solid organs and evaluate the images by a senior radiologist for their possible injuries. A great amount of splenic injuries may recover by only supportive treatment and movement restricted hospitalization if there is only grade 1-2 laceration and subcapsular hematoma. We think that effective imaging may decrease possible organ failures, misdiagnosis and possible legal issues due to splenectomy like our patient.

## PP 106

**Jaam Dic Score Can Predict Patient Death And Massive Transfusion In Trauma***Gando S<sup>1</sup>, Oshiro A<sup>2</sup>, Yanagida Y<sup>1</sup>, Henzan N<sup>3</sup>, Takahashi<sup>2</sup>, Makise H<sup>3</sup>*<sup>1</sup> Division of Acute and Critical Care Medicine, Department of Anesthesiology and Critical Care Medicine, Hokkaido University Graduate School of Medicine, Sapporo, Japan<sup>2</sup> Emergency and Critical Care Center, Teine Keijinkai Hospital, Sapporo, Japan<sup>3</sup> Emergency and Critical Care Center, Sapporo City General Hospital, Sapporo, Japan

**Background:** We tested hypothesis that disseminated intravascular coagulation (DIC) score on admission can be used to predict the prognosis of patients with coagulopathy of trauma.

**Material and Methods:** We conducted a retrospective study of 338 patients whose data were obtained immediately after admission to the emergency department. We collected serial data for the platelet counts, global markers of coagulation and fibrinolysis and antithrombin levels. DIC was diagnosed according to the Japanese Association for Acute Medicine (JAAM) DIC scoring system.

**Result:** The higher levels of FDP and D-dimer and greater FDP/D-dimer ratios in the DIC patients suggested DIC with the fibrinolytic phenotype. The DIC patients with the fibrinolytic phenotype exhibited persistently lower platelet counts and fibrinogen levels, increased prothrombin time ratios, higher FDP and D-dimer levels, and lower antithrombin levels compared with the non-DIC patients on arrival to the emergency department and during the early stage of trauma. The JAAM DIC score and fibrinogen levels obtained immediately after arrival to the emergency department was an independent predictor of massive transfusion and death due to trauma and correlated with the amount of blood transfused.

**Conclusion:** Patients who develop DIC with the fibrinolytic phenotype during the early stage of trauma exhibit consumption coagulopathy associated with increased fibrin(ogen)olysis and lower levels of antithrombin. The JAAM DIC score and fibrinogen levels can be used to predict the prognosis of patients with coagulopathy of trauma.

## PP 107

**PPOSSUM For Optimising Perioperative Care in Emergency General Surgery**

Muneer Junejo, Shazia Hafiz, Antonia Hoyle, Salim Kurrimbooccus

North Manchester General Hospital, Manchester, United Kingdom

**Background:** Emergency General Surgery (EGS) in the UK accounts for 80% to 90% of mortality from surgical procedures. The POSSUM (Physiological and Operative Severity for the enUmeration of Mortality and Morbidity) score is a useful pre-operative scoring system to predict perioperative mortality and morbidity to inform surgical management and level of peri and postoperative care. As part of quality improvement and auditing of outcomes, it is calculated for all EGS procedures in our hospital. Patients with predicted mortality of >5% are regarded as 'high-risk' and should be considered for critical care support.

**Material and Methods:** A retrospective audit of the use of preoperative POSSUM scoring at a tertiary centre was carried out for EGS procedures. Data was collected during a five-week study period to assess utilisation of the score in planning surgical management and perioperative care.

**Result:** A total of 31 operations consisted of incision and drainages of abscesses, appendectomies, laparotomies, hernia repairs and cholecystectomies with the mean age of 38 years. 3 procedures constituted 'high-risk' surgery but only one patient received postoperative critical care support.

**Conclusion:** The PPOSSUM score was calculated for theatre audit but documented in the notes in only 2% of the cases. It remains unclear whether the information provided was used clinically to inform risk of surgery and the level of perioperative care. Only one patient received critical care support as per guidelines. It is important that its utility is realised beyond providing audit statistics, to inform patient and physician when negotiating perioperative care inpatients undergoing EGS.

## PP 108

**Isolated Renal Arterial Thrombosis Due to Blunt Thoracoabdominal Trauma: Case Report**

Zafer Kilbas<sup>1</sup>, Ali Harlak<sup>1</sup>, Elgun Samadov<sup>1</sup>, Ali Kagan Coskun<sup>1</sup>, Oner Mentem<sup>1</sup>, Rahman Senocak<sup>1</sup>, Ali Dadasov<sup>2</sup>, Orhan Kozak<sup>1</sup>

<sup>1</sup> Gulhane School of Medicine, Department of General Surgery, Ankara, Turkey

<sup>2</sup> Gulhane School of Medicine, Department of Radiology, Baku, Azerbaijan

**Background:** Isolated renal arterial thrombosis induced by blunt abdominal trauma occurs substantially rare. Classical

approach in cases of renal arterial injury usually requires nephrectomy, however renal sparing therapy should be prioritised in current approach. Optimal treatment for this uncommon entity has not yet been established. In this study, application of selective renal arterial stenting in isolated renal arterial thrombosis is presented.

**Material and Methods:** We present a case and review the literature

**Result:** A 21 year-old male patient was observed clinically due to blunt thoracoabdominal trauma (because of being crushed under a truck ) following first intervention in the ward. Because of pneumothorax that had occurred shortly after trauma, bilateral tube thoracostomy was applied. In his physical examination bilateral eyes were echimotic and oedematous. Thrombosis of left renal artery was suspected through thoracoabdominal tomography scan and the other intraabdominal structures were normal. A CT angiography investigation showed that occlusion a 2 cm length in a segment within the middle of left renal artery. Thereby an expandable balloon stent was placed into the segment where thrombosis occurred. After the procedure, renal arterial flow was assessed as patent by enhanced contrast angiogram.

**Conclusion:** In case of isolated renal arterial thrombosis, treatment options include observation, conservative approach, thrombolytic medications, surgically nephrectomy and recently percutaneous transluminal angioplasty and stent placement. In selected patients, stent placement into the renal artery can reduce the renal damage and clear away the necessity of nephrectomy. It must be diagnosed and treated as soon as possible to avoid progressive permanent loss of renal function.

## PP 109

**Humanitarian Care By NATO Role-2 Hospital in Afghanistan: 4 Year Experience**

Dogan Pinar<sup>1</sup>, Ulvi Mehmet Meral<sup>2</sup>, Necati Salman<sup>3</sup>

<sup>1</sup> Elazig Military Hospital, Department of Otolaryngology, Elazig, Turkey

<sup>2</sup> Izmir Military Hospital, Department of General Surgery, Izmir, Turkey

<sup>3</sup> Etimesgut Military Hospital, Department of Emergency, Ankara, Turkey

**Background:** The aim of this presentation is to describe the clinical and surgical experiences of Turkish Role-2 military hospital providing humanitarian care for Afghan civilians and coalition forces' patients.

**Material and Methods:** Data were retrospectively gathered from medical records of Role-2 hospital in Kabul from January 2010 to December 2013.

**Result:** 303 patients were hospitalized and treated by our medical and surgical team. 15 (4%) of the patients were female and 288 (96%) were male. The mean age was 24,8 (1-72 years). Fifty one percent of these patients were Turkish soldiers and civilians, 34,6% were Afghan civilians,

and 14,2% were other coalition forces. 28% presented with general surgery diagnoses, 24,4% presented with infectious disease diagnoses, 22,4% presented with orthopedic and trauma diagnoses, 12,2% presented with otolaryngology disease diagnoses, 5% presented with inner disease diagnoses and 8% presented with diagnoses from various other subspecialties. 111 (36,6%) of 303 patients were performed surgical treatment. 23 (7%) patients were referred to tertiary hospital for further investigation and treatment. Only one patient died in our hospital.

**Conclusion:** Medical support provided by NATO is vital for civilians because of the difficulty of getting qualified diagnostic and treatment services in Afghanistan.

#### PP 110

### The Role of N-Butyl –2- Cyanoacrylate in the Repair of Traumatic Diaphragmatic Injuries

Gurhan Bas<sup>1</sup>, Orhan Veli Ozkan<sup>2</sup>, Orhan Alimoglu<sup>1</sup>, Ramazan Eryilmaz<sup>3</sup>, Mustafa Sahin<sup>4</sup>, Ismail Okan<sup>4</sup>, Ugur Cevikbas<sup>5</sup>

<sup>1</sup> Umraniye Training and Research Hospital, Department of Surgery., Istanbul, Turkey

<sup>2</sup> University of Sakarya, School of Medicine, Department of Surgery., Sakarya, Turkey

<sup>3</sup> University of Akdeniz, School of Medicine, Department of Surgery., Antalya, Turkey

<sup>4</sup> Vakif Gureba Training and Research Hospital, Department of Surgery., Istanbul, Turkey

<sup>5</sup> University of Istanbul, School of Medicine, Department of Pathology., Istanbul, Turkey

**Background:** Diaphragmatic injuries either by blunt or penetrating trauma. N-butyl–2-cyanoacrylate (n-butyl-2-CA) is a tissue adhesive which has gained wide application in many areas of surgery. The use of tissue adhesives for mesh fixation may circumvent the potential problems associated with the use of sutures or staples. The study aimed to evaluate the efficiency of using tissue adhesives in diaphragmatic repair by synthetic mesh.

**Material and Methods:** Twenty-four rats were divided into 3 groups each containing 8 rats. A 1cm defect of diaphragm was created. The defect was repaired by polypropylene suture in GroupI. In groupII the defect was repaired by mesh fixed with sutures. GroupIII where the defect was restored by mesh fixed with n-butyl-2-CA. The rats were sacrificed after 1 month. The episode of hernia and the adhesions were assessed by adhesion density score. Microscopically, the abscess and the inflammation in the repaired tissue were evaluated.

**Result:** No diaphragmatic hernia was detected in any group. While Group III had more adhesion density scores than group I (p:0.027), there were no differences between group III and II (p:0.317) and group II and I (p=0.095). The inflammation grade was higher in group III than groupI and II (p<0.001) and was higher in groupII than group I (p<0.05). There was no differences between each groups, regarding

microabscess formation (p>0.05).

**Conclusion:** Repair of traumatic diaphragmatic injury by penetrating wound, with polypropylene mesh fixed by n-butyl-2-CA in rats appears to be as safe as conventional methods.

#### PP 111

### The Results of Treatment the Rectal Cancer Complicated by Obstruction

Valeriy Totikov, Zaurbek Totikov

North-Ossetian State Medical Academy, Vladikavkaz, Russian Federation

**Background:** Working out of an optimal surgical treatment in patients with rectal cancer complicated by acute intestinal obstruction

**Material and Methods:** They were 152 patients. On the basis of the algorithm the stage of rectal permeability was determined. In stage 1 a pre-operative preparation was carried on during 7-10 days. In 2 and 3 stage there was made an attempt of recanalisation of a cancer canal, which appeared to be positive in 16 patients from 72, and that in why further tactics was the same as in stage 1. In negative result in patients with stage 2 during 24 hours, in stage 3-12 hours a loop transversostoma was applied through the mini entrance in right hypochondrium. In the 2 stage emergency operation with anastomosis application was performed in 7-10 days. In stage 4 (peritonitis), operation were performed during 2-3 hours.

**Result:** In post-operative period 3 (2,0%) patients with stage 4 have died. Different complications have developed in 22 (14,9%) patients.

**Conclusion:** Our clinico-radiographic classification allows to determine the duration of the pre-operative preparation, type of surgical interference. Introduction of 3-stage operative interferences with shortened interoperative period allows to decrease the number of complications and lethality.

#### PP 112

### The Treatment of the Patients with Locally Advanced Cancer of the Left Side of the Colon, Complicated by Acute Intestine Obstruction

Valeriy Totikov, Zaurbek Totikov

North-Ossetian State Medical Academy, Vladikavkaz, Russian Federation

**Background:** In recent years, cancer of the colon is one of the top places in the structure of cancer morbidity. Increases the number of common and complicated forms of disease that makes the problem of treating such patients. The purpose of this study was to improve the results of treatment

of the patients with locally advanced cancer of the left side of the colon, complicated by the intestine obstruction.

**Material and Methods:** 18 patients have been examined.

**Result:** The 1 stage was revealed in 33 (27,0%) patients, the 2 stage in 51 (41,8%), the 3 stage in 24 (19,7%) and the 4 stage in 14 (11,5%). The patients of the 1 stage were operated on during 7-10 days after the resolution of obstruction. The patients of the 2 stage were operated on during 12-24 hours, of the 3 – during 6-12 hours, The patients of the 4 stage were operated on during 2-3 hours after the necessary preoperative examination. In 44 (37,3%) cases the radical stage was supplemented by intra-operative intra-abdominal chemotherapy and early postoperative chemotherapy. Lethality – 5.1% (6 patients). Postoperative complications - 20,3%.

**Conclusion:** The suggested classification of obturative dysfunction of the colon, and the algorithm of treatment and diagnostics gives us the possibility to optimize the duration of preoperative preparation and the extent of the following intervention, so we can also create conditions for combined ways of treatment.

#### PP 113

### Treatment of the Patients with Locally Advanced Cancer of the Colon, Complicated with the Bowel Obstruction

*Valeriy Totikov, Zaurbek Totikov*

North-Ossetian State Medical Academy, Vladikavkaz, Russian Federation

**Background:** The purpose of this study was to improve the treatment results of the patients with locally advanced cancer of colon complicated with the bowel obstruction.

**Material and Methods:** 122 patients have been examined. We define 4 stages in the clinical course of obstruction.

**Result:** The combined resection was performed to 84.1% of the patients, the salvage procedure – to 5.9% of the patients. The resection performed to the patients with the 1 stage of obstruction resulted in anastomosis formation. The patients with 2 and 3 stages of obstruction in bad condition, with tumour located right at the 1 step of the operation there were performed 6 (4.9%) ileostomies, those with tumour located left were performed 12 (9.9%) transversed colostomies via mini excess. To the patients with the 2 and 3 stages of obstruction with low anesthesia risk and with the tumour located distal part of sigmoid colon there were formed transversed colostomies. Postoperative complications occurred to 21.2%. Lethality – 8.3%.

**Conclusion:** The suggested tactics allows us to increase the quantity of radically operated patients and decrease lethality. The transversed colostomies via mini excess applied to the patients with the cancer of distal part of sigmoid colon and with low anesthesia risk allows us to decline Hartmann's operation and avoid hard reconstructing and recovering stages.

#### PP 114

### Volvulus of Sigmoid Colon And Small Intestine

*Istvan Zöllei, Alzubi Ali*

Teaching Hospital, Oroshaza, Hungary

**Background:** Volvulus of bowels results from rotation of a segment of bowel about its mesenteric axis sufficient to produce partial or complete obstruction of the lumen. Varying degrees of circulatory impairment of the twisted segment are produced by the twisting of the root of the mesentery. Volvulus is the third most common cause of colonic obstruction, ks the leading cause of strangulated obstruction of the colon.

**Material and Methods:** An 81 years old and a 67 years old women were admitted because of signs of small bowel obstruction. Explorative laparatomies were performed. In the first case a small bowel tumor (10cm; 700g) caused the volvulus. Histological result was GIST. In the other case there was no specific histological problem. Primary bowel resection (with anastomosis) were performed. There were no postoperative complications.

A 16 year old girl and a 67 years old woman were admitted because of symptoms of colon obstruction. Earlier they had intermittent, cramping lower abdominal pain with constipation. Both of patients had volvulus of megasigmoid colon. Primary resection (with anastomosis) of colon were performed. They recovered without serious complications. The young girl had Hirschprung disease. There was no specific histologic result in the other case.

**Result:** Authors found two patients with volvulus of small bowels and two persons with volvulus of sigmoid colon. One patient with GIST after the surgery went for adjuvant Glivec treatment.

**Conclusion:** Authors think that the presentation of these volvulus-cases are usefull for young physions of the ER or/ and surgical departments. One GIST and one Hirschprung disease were found.

#### PP 115

### Ischaemic Colitis as a Rare Complication of Chronic Nsaids Use

*Nehemiah Samuel, Victoria Proctor, Khurram Siddique, Luke Wheldon, Muhammad Hanif Shiwani*

Barnsley District General Hospital, Barnsley, United Kingdom

**Background:** Nonsteroidal anti-inflammatory drugs (NSAIDs) are one of the most commonly used drugs and gastroduodenal toxicity is a well-known complication of its chronic use. We report a rare case of ischaemic colitis secondary to chronic NSAID ingestion.

**Material and Methods:** Case Presentation: A 67-year-old woman presented with two day history of abdominal



pain, distension, vomiting and not opening bowels. She was tachycardic, hypotensive and hypoxic with a worsening acidosis and raised lactate despite aggressive fluid resuscitation; CT abdomen demonstrated ischaemia of terminal ileal segment, distal transverse and descending colon. She underwent emergency small bowel resection and subtotal colectomy with formation of end-ileostomy. Histology of the resected specimen was reported as patchy areas of submucosal necrosis and fibrous thickening consistent with ischaemia, possibly related to NSAID use. On revisiting history, patient admitted to regular NSAIDs use for chronic pain.

**Result:** Discussion: GI mucosa uses COX-1 to generate mucosal-protective prostaglandins (PGs). Most NSAIDs cause reversible inhibition of COX-enzymes and with prolonged use cause injuries ranging from subtle alteration in mucosal barrier function to macroscopically obvious ulcers, which is commonly found in the acidic environment of gastro-duodenum. Although ischaemic colitis is not a stated adverse effect of NSAIDs, chronic use in this patient had caused extensive ulceration unusually at the distal gut leading to secondary ischaemia.

**Conclusion:** Although NSAIDs are unlikely to be implicated in most cases of ischaemic colitis, it could be considered as one of the differentials, especially in the elderly with a history of its chronic use.

#### PP 116

### Benign Metastasizing Leiomyoma: 3 Fairly Different CT Findings

Hironori Ishibashi<sup>1</sup>, Masahide Hirose<sup>2</sup>, Shinichiro Ohta<sup>2</sup>

<sup>1</sup> Tokyo Medical and Dental University, Tokyo, Japan

<sup>2</sup> Shizuoka General Hospital, Shizuoka, Japan

**Background:** Benign metastasizing leiomyoma (BML) is a rare entity with approximately 100 cases reported in the literature. However, only scattered case reports describe chest radiographic and computed tomography (CT) findings in the lungs. The purpose of our study was to present 3 BML cases with fairly different cases of chest radiographic and CT findings.

**Material and Methods:** Three cases of pathologically proven BML were retrospectively reviewed. Chest radiographs and CT scans were evaluated to determine lesion size, distribution, and number. In all patients, the diagnosis was based on the results of lung biopsy via a surgical procedure.

**Result:** Case 1: A 46-year-old woman had undergone myomectomy for a uterine leiomyoma at the age of 32. The CT finding was "multiple small nodules type," with three 5-mm nodules in both lungs.

Case 2: A 50-year-old woman had undergone myomectomy for a uterine leiomyoma at the age of 36. Positron emission tomography-CT during a health screening program showed numerous multiple nodules in both lungs. The CT finding was "numerous tumors type," with more than 100 nodules in both lungs.

Case 3: A 47-year-old woman, who had undergone hysterectomy with oophorectomy for a uterine leiomyoma at the age of 27. Chest radiography showed a right-sided moving mass, and the CT finding was a partial "atelectasis type" tumor, arising from the right middle lobe just like a "tongue". The tumor was surgically resected.

**Conclusion:** We presented 3 fairly different CT findings of BML.

#### PP 117

### EBUS-TBNA to Diagnose Large Posterior Mediastinal Parathyroid Adenoma

Buderi, Silviu<sup>1</sup>, Saleh, Hesham<sup>2</sup>, Theologou, Thomas<sup>2</sup>, Shackcloth, Michael<sup>2</sup>

<sup>1</sup> Liverpool Heart and Chest Hospital, Cardiothoracic Surgery, Liverpool, United Kingdom

<sup>2</sup> Liverpool Heart & Chest Hospital, Cardiothoracic Surgery, Liverpool, United Kingdom

**Background:** A 65-year-old female patient was referred with hypercalcemia and found to have a 4cm retrotracheal mass on computed tomography. The patient also suffered from neurofibromatosis and a recently diagnosed gastric mass. Tc99sestamibi scintigraphy revealed an area of intense uptake in the right upper mediastinum. Endo-bronchial ultrasound-guided trans-bronchial needle aspiration was used to confirm the diagnosis of parathyroid adenoma and thoracoscopic resection was subsequently performed. Endo-bronchial ultrasound-guided trans-bronchial needle aspiration biopsy can be a helpful diagnostic tool to confirm diagnosis of mediastinal parathyroid masses in patients with atypical or complex clinical presentations.

**Material and Methods:** A 65-year-old female patient was referred for surgical excision of a mediastinal parathyroid adenoma. The diagnosis of hyperparathyroidism was established previously with elevated calcium level of 3.68 mmol/L, normal parathyroid hormone levels and a well-defined retro-tracheal mass measuring (4cm x 3cm x 2cm) on computed tomography. Tc99sestamibi scintigraphy showed focal intense uptake in the upper right side of the mediastinum. The patient's medical history also included a diagnosis of type 1 neurofibromatosis and a recent upper gastro-intestinal bleed investigated by endoscopy and biopsy of an antral gastric mass that proved to be benign.

**Result:** Further characterization of the mass was deemed necessary due to its size to exclude a parathyroid carcinoma, and ultrasound-guided trans-bronchial needle aspiration (EBUS-TBNA) was performed as a means of obtaining a histopathological diagnosis.

**Conclusion:** The results of biopsy were consistent with a parathyroid adenoma. Patient was operated with good results.

## PP 118

**Primary Hydatid Cyst of the Anterior Thoracic Wall**

Oner Mentes, Ali Kagan Coskun, Zafer Kilbas,  
Ramazan Yildiz, Orhan Kozak, Yusuf Peker

GATA Dept. of Surgery, Ankara, Turkey

**Background:** Hydatid cyst caused by *E. granulosus* can develop in any organ but undoubtedly, hepatic and pulmonary localizations are most frequent. The anterior thoracic wall is a very rare site of infestation, constituting only 0.1% of all infections. This rarity can cause dilemma and if surgery is carried out unaware of the diagnosis, spilling of the cyst will result in dissemination of the disease. The aim of the present study is to report a rare case of primary hydatid cyst located at anterior thoracic wall.

**Material and Methods:** A 44-year-old man presented with a painless lump at the anterior thoracic wall for past two years. Physical examination revealed a 8x5 cm, semimobile, well-defined mass. Blood tests (complete blood count and blood chemistry) and the patient's past medical history were unremarkable. Ultrasonography and MRI revealed a cystic mass with regular borders, 10 cm in diameter.

**Result:** The cystic mass was excised without spilling under general anaesthesia. Macroscopic and microscopic examination of the specimen confirmed a hydatid cyst. Postoperative course of the patient was uneventful, and computed tomography scans of the thorax and abdomen showed no evidence of hepatic or pulmonary involvement.

**Conclusion:** Although hydatid cysts at the anterior thoracic wall are rare, they should be considered in the differential diagnosis of cystic lesions, especially in endemic regions. If a definite diagnosis can not be made before the operation, great care must be taken to avoid spilling of the cystic contents. Abdominal ultrasonography and a plain chest radiograph are mandatory to exclude liver and lung involvement.

## PP 119

**Bilateral Abducens Nerve Paresis as a Complication of Spinal Anesthesia**

Eyup Duran<sup>1</sup>, Hakan Cansiz<sup>2</sup>, Muharrem Oztas<sup>3</sup>,  
Mustafa Tanriseven<sup>4</sup>

<sup>1</sup> Department of General Surgery, Elazig Military Hospital, Elazig, Turkey

<sup>2</sup> Department of Anesthesia, Elazig Military Hospital, Elazig, Turkey

<sup>3</sup> Department of General Surgery, Sirtak Military Hospital, Sirtak, Turkey

<sup>4</sup> Department of General Surgery, Diyarbakir Military Hospital, Diyarbakir, Turkey

**Background:** Paralysis of abducens nerve is a rare complication of spinal anesthesia. Isolated sixth cranial nerve is affected because of its long intracranial course.

**Material and Methods:** We report a rare case of bilateral abducens nerve paresis after spinal anesthesia which resolved completely three weeks later.

**Result:** A 27-year-old man underwent surgery for pilonidal sinus while he was spinal anesthesia. Patient suffered headache and bilateral diplopia on the fourth postoperative day. Examination revealed bilateral eye lateral movement disability. The remainder of neurological examination was unremarkable. Under conservative treatment diplopia was resolved at three weeks post-op. Post-dural puncture headache and abducens nerve palsy are caused by the effect of downward sagging of brain after cerebrospinal fluid leakage. Headache occurs 12-24 hours of puncture and abducens palsy occurs 4-14 days after lumbar puncture and resolves after 4 weeks to 6 months. Our patient developed abducens palsy on the fourth postoperative day and resolved completely after three weeks.

**Conclusion:** Although abducens nerve palsy is an extremely rare complication, it is kept in mind after spinal anesthesia.

## PP 120

**Establishment of a Porcine Model in Order to Simulate ARDS Following Esophagectomy**

Camelia Garoussi<sup>1</sup>, Mohammadreza Hafezi<sup>2</sup>,  
Nahid Rezaei<sup>2</sup>, Arash Saffari<sup>2</sup>, Golnaz Emami<sup>2</sup>,  
Thorsten Brenner<sup>1</sup>, Stefan Hofer<sup>1</sup>, Arianeb Mehrabi<sup>2</sup>

<sup>1</sup> Klinik of Anesthesiology, University of Heidelberg, Heidelberg, Germany

<sup>2</sup> General, Visceral and Transplantation Surgery, University of Heidelberg, Heidelberg, Germany

**Background:** The cause of ARDS after oesophagectomy is unknown but the period of one-lung Anesthesia required during oesophagectomy, as well as collapse and subsequent re-expansion of the non-dependent lung may produce lung

injury by an ischemic/reperfusion mechanism. A good model imitating the mechanism of ARDS after oesophagectomy will help us to gain a better understanding of the real pathophysiology and to evaluate the treatment approaches more accurately. This study aimed to establish an animal model in terms of similarity to the clinical situation after oesophagectomy.

**Material and Methods:** Six landrace pigs under general anesthesia were used to establish ARDS models by Ischemia/reperfusion mechanism (by clamping the hilus of the lung after thoracotomy). Hemodynamic and pulmonary function data were measured. Histopathological assessment was performed to confirm the ARDS.

**Result:** During the induction of ARDS, blood pressure and central venous pressure were sharply decreased. PH, arterial partial pressure of O<sub>2</sub> (PaO<sub>2</sub>), PaO<sub>2</sub>/inspired O<sub>2</sub> fraction (FiO<sub>2</sub>) and lung compliance decreased in comparison with baseline. PaO<sub>2</sub>/FiO<sub>2</sub> ratio in all cases was less than 200, as was defined for ARDS and did not elevate after 90-minute stabilization. The pathological alterations were similar to ARDS. The blotchy hemorrhage of the lung surfaces and bloody forth in the trachea and bronchi were seen. Histologically congestion, hemorrhage and interstitial edema which caused a marked thickening of alveolar walls were detected.

**Conclusion:** We could establish an easy experimental model in porcine to simulate the clinical setting of ARDS after oesophagectomy which allows for a diversity of studies on ARDS.

#### PP 121

##### Protective Effect of Intestinal Ischemic Postconditioning

Nedvig Klára<sup>1</sup>, Jancsó Gábor<sup>2</sup>, Róth Erzsébet<sup>2</sup>, Szabó Györgyi<sup>3</sup>, Csukás Domokos<sup>3</sup>, Sándor József<sup>3</sup>, Weber György<sup>3</sup>, Ferencz Andrea<sup>3</sup>

<sup>1</sup> Zala County Hospital, Zalaegerszeg, Hungary

<sup>2</sup> University of Pecs, Pecs, Hungary

<sup>3</sup> Semmelweis University, Budapest, Hungary

**Background:** Ischemia/reperfusion injury is a grave condition resulting from intestinal transplantation. The aims of our work was to follow up the oxidative stress parameters and tissue structural changes during intestinal autotransplantation testing the protective effect of ischemic postconditioning (IPO) especially to investigate the activation of transcriptional factor Nuclear Factor-kappaB (NF-kB).

**Material and Methods:** Total orthotopic autotransplantation was performed in Wistar rats (n=30). Grafts were stored in cold University of Wisconsin solution for 1, 3 and 6 hours. Reperfusion took 3 hours. Prior to reperfusion IPO was performed by 3 cycles of 30 second ischemia and 30 second reperfusion. Tissue damage was evaluated by Park's and software Scion Image on HE-stained sections. To monitor oxidative stress tissue malondialdehyde (MDA), reduced glutathione (GSH), and superoxide dismutase (SOD) were

determined. Cytoplasmic and nuclear NF-kB level were detected by ELISA method.

**Result:** IPO significantly decreased the intestinal wall injury (p<0.05). Meanwhile, the reperfusion-ended MDA's value was lower and the capacity and activity of endogenous antioxidant protective systems (GSH: 789±8.2 vs. 834±5.1 umol/g; SOD: 110±9 vs. 126±4.4 IU/g; p<0.05) remained higher in IPO groups. Total and activated form of NF-kB significantly elevated 30 minutes following IPO. 1 hour after IPO its activation decreased to the control level, however, after 2 hours gradual activation of NF-kB was detected again.

**Conclusion:** Three cycles of IPO prior to reperfusion could moderate intestinal oxidative and structural injury inducing intracellular signalling pathways on autotransplanted model.

#### PP 122

##### Effect of Splanchnic Circulation on an Intestinal Obstruction Model

Laura Correa-Martín<sup>1</sup>, Laura Hernández Hurtado<sup>1</sup>, Gregorio Castellanos<sup>2</sup>, Monica García-Lindo<sup>1</sup>, Idoia Díaz-Güemes Martín-Portugués<sup>1</sup>, Francisco Miguel Sánchez Margallo<sup>1</sup>

<sup>1</sup> Minimally Invasive Surgery Centre Jesús Usón, Cáceres, Spain

<sup>2</sup> Hospital Clínico Universitario Virgen de la Arrixaca, Murcia, Spain

**Background:** Intestinal obstruction is one of the main causes for increased intraabdominal pressure (IAP) in humans. Tonometry is the usual method to determine the degree of ischemia in the gastrointestinal tract. To assess the prognostic value of gastric air tonometry as a predictor of inadequate splanchnic perfusion on a porcine model of intestinal obstruction.

**Material and Methods:** Animals were divided in two groups of 5 animals each according to IAP constituting a control group and a group with increased IAP up to 30 mmHg. In the latter, pressure was maintained for 3 hours. The acidity of the gastric mucosa was determined by measuring the intramucosal gastric pH (pHim) and PgCO<sub>2</sub>. Using IAP and mean arterial pressure (MAP) values we indirectly obtained the abdominal perfusion pressure (APP) with the following formula: APP=MAP- IAP. The measurements were registered at eight different times throughout the study.

**Result:** In 30 mmHg group there is a time progressive decrease of pHim, with statistically significant differences observed between groups 30 min after increased IAP. The values of PgCO<sub>2</sub> were increased. In this parameter, significant differences were observed between groups from the start of increased IAP. There is a time progressive decrease of APP, with statistically significant differences being observed between groups 60 min after increased IAP.

**Conclusion:** The experimental model used on this study allows for the simulation of the pathophysiological changes occurring in human patients with IAP. Moreover, tonometry

allows for the early detection of gastric mucosal sensitivity to splanchnic hypoperfusion due to IAP.

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**PP 123****Pyeloureterostomy Versus Ureteroneocystostomy Following Renal Transplant Surgery**

Joseph M Norris, Sangeeta Ravi-Shankar

Bedford Hospital, Bedford, United Kingdom

**Background:** A best evidence topic in transplant surgery was written according to a structured protocol. The question addressed was: In patients undergoing renal transplant surgery requiring urinary reconstruction, does pyeloureterostomy, as compared to ureteroneocystostomy, improve clinical outcomes?

**Material and Methods:** A total of 116 papers were identified using the search protocol described, of which four represented the best evidence available to answer the clinical question. The authors, journal, date and country of publication, patient group studied, study type, relevant outcomes and results of these papers are tabulated.

**Result:** Three of the four studies compared clinical outcomes between pyeloureterostomy (uretero-pyelostomy) and ureteroneocystostomy; the fourth paper additionally addressed ureteroureterostomy. Whilst ureteroneocystostomy remains the most common method of reconstruction, two studies actually demonstrated considerable advantages of pyeloureterostomy with regards to lower rates of postoperative sepsis, urinary obstruction and lower requirements for secondary operative intervention for ureteral reconstruction. One paper described no clear advantage of pyeloureterostomy, and the authors of another trial suggested that ureteroneocystostomy should be favoured over pyeloureterostomy as this produced lower rates of major urologic complications.

**Conclusion:** The clinical bottom line is that pyeloureterostomy should form an essential component in every transplant surgeon's toolbox, particularly for difficult patients with multiple anticipated complications, or when there is fear of ureteral blood compromise, such as with cadaveric kidneys. Nonetheless, a secondary conclusion from our study is that a further, larger scale trial would be immensely useful in this prescient field, to aid clarification to the discrepancies that we have highlighted.

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**PP 124****Urinary Leakage Due to Ureter Necrosis and Unexpected Double J Catheter Distortion in a Renal Transplant Patient**

Mehmet Erikoglu, Mehmet Balasar, Serhat Dogan

Necmettin Erbakan University Meram Medical Faculty, Konya, Turkey

**Background:** After renal transplantation, double J catheter-related urinary complications are quite rare. Our aim is to explain urinary leakage resulting from ureteric necrosis and double J catheter distortion in a renal transplant patient.

**Material and Methods:** A 55 year old female cadaveric renal transplantation patient was detected to have a high flow urine leakage on the post-operative third day. She underwent urgent surgery. During the operation, the ureter anastomosis was observed as necrotic. It was excised and a new ureteroneocystostomy was made. At the same time, we inserted a new double J catheter. After this operation on the fifth day, we detected a new urinary leakage. The abdominal X-ray graphy and unenhanced computerised tomography revealed that the double J catheter kinked in the ureter. The patient underwent a cystoscopy, and the urinary leakage was treated by pulling the double j catheter into the bladder.

**Result:** In this case, we thought that over dissection of the cadaveric kidney may have caused the necrosis of the ureter, the other leakage resulted from distortion of the double double J catheter.

**Conclusion:** In conclusion; during the removal of the kidney and ureter, renal hilum dissection must be made more carefully. Double J catheter leakage of urine due to distortion is quite rare. During kidney transplantation, the double J catheter must be selected carefully for accurate size and length and inserted precisely.

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**PP 125****Experimental Small Bowel Allotransplantation in Rats: Review of Surgical Techniques**

Jalal Arvin<sup>1</sup>, Arash Nickkholgh<sup>1</sup>, Sandra Weih<sup>2</sup>, Giovanni Frongia<sup>2</sup>, Arianeb Mehrabi<sup>1</sup>

<sup>1</sup> Departments of General, Visceral and Transplantation Surgery, Heidelberg, Germany

<sup>2</sup> Departments of Pediatric Surgery, Heidelberg, Germany

**Background:** Small bowel transplantation has become the definitive surgical therapy for irreversible intestinal failure. SBTx still faces technical, therapeutic challenges that limit its success and clinical applications. Experimental studies are therefore still needed to address various challenges in the field of SBTx and Rat is the most ideal model for the purpose.

**Material and Methods:** An analysis of all Medline-published papers regarding SBTx in the rat model was

performed regarding the characteristics of animals, methods of animal care, techniques of procurement, recipient procedures, arterial and venous reconstructions, intestinal exteriorization, and post-transplant care.

**Result:** Generally, young male Sprague-Dawley (ideal for microsurgical procedures) or Lewis (ideal for physiological and immunological studies) rats were used. Irrigation of the bowel lumen with and systemic heparinization is usually performed. Flushing of the graft has been performed through superior mesenteric artery, aorta, or ileocolic artery. Iced lactated Ringer's solution, normal saline, University of Wisconsin, or Histidine-Tryptophan-Ketoglutarate has been used as perfusion solution. Grafted segment was frequently selected from ligament of Treitz to ileocecal valve. SMA or aortic Carrel patch have been frequently used for the arterial revascularization into recipient's abdominal aorta (E/S), renal artery after a recipient nephrectomy (E/E), or even recipient's common carotid artery. Superior mesenteric vein or portal vein has been used for venous drainage into the recipient's IVC, portal vein, or renal vein.

**Conclusion:** The researchers may be better able to select and standardize the required techniques depending on their aims and objectives.

#### PP 126

### Scintigraphic Method to Prove the Survival of Autotransplanted Splenic Tissue in Canine Model. A Pilot Study

*Irén Mikó<sup>1</sup>, Katalin Pető<sup>1</sup>, Andrea Furka<sup>2</sup>, Norbert Németh<sup>1</sup>, Ferenc Kiss<sup>1</sup>, Gergely Kalóczyka<sup>1</sup>, Ádám Deák<sup>1</sup>, Tamás Nagy<sup>3</sup>, István Furka<sup>1</sup>, László Galuska<sup>3</sup>, József Varga<sup>3</sup>*

<sup>1</sup> Department of Operative Techniques and Surgical Research, Institute of Surgery, Faculty of Medicine, University of Debrecen, Debrecen, Hungary

<sup>2</sup> Division of Radiotherapy, Department of Clinical Oncology, Faculty of Medicine, University of Debrecen, Debrecen, Hungary

<sup>3</sup> Department of Nuclear Medicine, Faculty of Medicine, University of Debrecen, Debrecen, Hungary

**Background:** Spleen saving methods play an important role in the prevention of serious complications. Our aim was to implement a scintigraphic method that identifies functioning residual splenic tissue, separates it from other tissue types, and allows quantitative characterization.

**Material and Methods:** Tc99m labeled RBCs were used in six groups of beagle dogs: sham-operated (SH, n=1), splenectomized (SE, n=1), partially resected (R1/3 and R2/3, n=2-2), 5 or 10 autotransplanted spleen chips (AU5/AU10, n=2-2). Dynamic (30 min), then SPECT images were acquired by a two-headed gamma camera. Parametric images of the change rate (10-30 min) were calculated. Tomographic images reconstructed using OS-EM algorithm were attenuation-corrected using Chang's method, and the total uptakes of foci accumulating radiopharmaceutical were expressed as

fractions of the injected dose. In 6 further animals SE(n=1), AU10(n=2), R2/3(n=2), R1/3(n=1) a SPECT-CT camera was used.

**Result:** The parametric images visualized only the spleen and the urinary bladder proving the method's specificity. With SPECT 77% of the autotransplanted spleen chips could be visualized with varying uptake values. Fused display with the CT slices made the identification of spleen chips much easier. After spleen-preserving operations the uptake of radiopharmaceutical did not show any significant relation to the percentage of spleen preserved.

**Conclusion:** Scintigraphy with labeled denatured RBCs proved to be capable of detecting both retained and autotransplanted functioning splenic tissue in a noninvasive way. From our limited number of cases it was not clear which factors influenced the extent of radiopharmaceutical accumulation. (Grant: OTKA-K105618)

#### PP 127

### The Effects of Treatment Modalities on Outcome in Diabetic Foot Patients

*Engin Ozay<sup>1</sup>, Serkan Bilgic<sup>1</sup>, Osman Rodop<sup>1</sup>, Omer Ersen<sup>2</sup>*

<sup>1</sup> Gulhane Haydarpasa Training Hospital, Istanbul, Turkey

<sup>2</sup> Maresal Cakmak Military Hospital, Erzurum, Turkey

**Background:** Diabetic foot is one of chronic complications of diabetes which causes the longest hospitalization and a problem ends up with amputation even death. Therefore in treatment process multidisciplinary approach will be more beneficial rather than one doctor follow-up.

**Material and Methods:** In this study we evaluated the effects of treatment modalities on outcome in diabetic foot patients in our hospital last two years and analyse the comorbidities retrospectively.

In the study 166 patients evaluated, 112 men and 54 women. Men/women ratio was approximately 2/1. We could not show any advantage of sex in major amputation patients. The mean diabetes duration was 18.5 years. However there was no statistically significant relation between diabetes duration and major amputation.

**Result:** The mean fasting blood glucose level was 185 mg/dl, mean HbA1c level was 7.52. These shows poor glycemic control in our patient group. No relation was found between glycemic regulation and major amputation.

Treated patients divided into three groups; conservative, minor and major amputation. Major amputation group compared with conservative and minor amputation group as one afterwards.

There was a statistically significant relation between peripheral vascular disease (PVD), neuropathy and also chronic renal failure with major amputation.

**Conclusion:** It is seen that some of the patients appealed at the last stage and statistical analyses showed that multidisciplinary approach is effective preventing major amputation.

## PP 128

**Total Hip Arthroplasty Results of Coxarthrosis Secondary to DHD**

Oner Tatar<sup>1</sup>, Serkan Bilgic<sup>2</sup>, Omer Ersen<sup>3</sup>,  
Bulent Karlioglu<sup>4</sup>, Yuksel Yurttas<sup>1</sup>, Cemil Yildiz<sup>1</sup>,  
Mustafa Basbozkurt<sup>1</sup>

<sup>1</sup> Gulhane Military Medical Academy, Istanbul, Turkey

<sup>2</sup> Gulhane Haydarpasa Training Hospital, Istanbul, Turkey

<sup>3</sup> Maresal Cakmak Military Hospital, Erzurum, Turkey

<sup>4</sup> Kasimpasa Military Hospital, Istanbul, Turkey

**Background:** Latency in diagnosis and inaccurate treatment of Developmental hip displasia (DHD) causes seconder osteoarthritis in young adults and elder patients. Variable reconstructive surgical procedures can be performed, but the most satisfactory functional results are achieved by total hip arthroplasty (THA).

**Material and Methods:** In this study, we analyzed the results of the cementless total hip arthroplasties performed in coxarthrosis secondary to developmental hip displasia. 53 patients, whom performed 59 total hip arthroplasties in our clinic were included in the study. 10 of the patients were male (%19), and 43 of them were female(%81). The mean age was 48,7. In 23 patients (%44), THA procedure was performed at the right hip and in 24 patients (%45) at the left hip.

**Result:** All patients were followed up 8-38 months (mean 20,6 months) with clinical and radiological evaluation. The hospitalization period varied between 7-14 days, mean 8,3 days. Posterolateral incision was used at all of the patients. Totally 10 (%17) complications were observed. 5 (%8,5) of them was intraoperative and 5(%8,5) was postoperative. Patients evaluated preoperatively and postoperatively with modified Harris Hip Score. While preoperative mean Harris score was 39,1, the postoperative mean score measured as 90,3. The results were excellent in 52 cases(%88,1), and very good in 7 cases(%11,9).

**Conclusion:** Appropriate implementation of cementless total hip prosthesis in patients with hip osteoarthritis secondary to DHD, who have good bone quality and surgical indicaton; clinical and radiological short term results were satisfactory.

## PP 129

**Use of Digital Photography and Electronic Archiving System in Trauma and Orthopaedics**

Jasmeet Jhaj, Marshall Sangster, Alex Humphries,  
Sarah Irby

Great Western Hospital, Swindon, United Kingdom

**Background:** Photographs are a useful tool for documentation in Trauma. UK guidelines require photographs to be taken of open fractures. Apart from record-keeping,

advantages include minimizing the number of times wounds are uncovered for inspection reducing risk of infection and improved communication between clinicians. The same advantages apply to other trauma or even infections which require input from Trauma and Orthopaedics. The use of personal cameras or phones is not legally permitted, but anecdotally widespread. Hospitals must provide cameras for this purpose.

**Material and Methods:** Nine hospitals in the region (Severn Deanery, UK) were visited as part of an audit to determine the availability and accessibility of photographic cameras, as well as electronic archiving systems and consent documentation. Actions were taken to improve the status quo, and the audit was repeated. Results are presented along with experiences and learning points of using a digital camera and an electronic archiving system.

**Result:** The majority of hospitals did not have cameras in their emergency departments. Consent and archiving was poor and physical as opposed to digital in the majority. Personal cameras or mobile phones were not used in hospitals which had cameras. Acquisition of a camera resulted in better communication and adherence to guidelines.

**Conclusion:** Photography is very useful to Trauma and Orthopaedics clinicians in the acute setting. Hospital owned digital cameras and electronic archiving systems are most practical and useful, and help to adhere to clinical guidelines and the law.

## PP 130

**Patella Maltracking Post Intramedullary Nailing of Supracondylar Fracture**

Zita M Jessop, Matthew Welck, Anthony Mcgrath,  
Nicholas Goddard

Royal Free Hospital, London, United Kingdom

**Background:** The incidence of periprosthetic fractures following total knee replacement (TKR) is 5.5% with supracondylar femur fractures being the most common type. Fixation of supracondylar fractures following total knee replacements present a challenging problem for orthopaedic surgeons and recognized complications include infection, fixation failure, nonunion and revision surgery. Our case highlights a previously unreported potential late complication following intramedullary nailing of a supracondylar periprosthetic fracture.

**Material and Methods:** A fifty-year-old male patient, who had a good functional outcome and was pain free following his left cemented TKR in 1980, sustained a left femoral extra-articular supracondylar periprosthetic comminuted fracture following a fall in 2007 and subsequently underwent internal fixation using a retrograde locked supracondylar femoral nail. He presented five year later with gradual onset of anterior knee pain.

**Result:** Single-photon emission computed tomography revealed intense tracer uptake in the patellofemoral junction

and proximal tibiofibular articulation both of which appeared degenerative with a significant patellofemoral joint space loss with no metabolic features of infection or loosening. It was thought that patellofemoral joint degeneration and hence gradual onset of anterior knee pain was related to patella maltracking due to disruption of joint axis following intramedullary nailing of the left supracondylar periprosthetic fracture, supported by the fact that the patient's symptoms resolved following elective patella resurfacing.

**Conclusion:** The study population sizes on patients treated with intramedullary nailing for periprosthetic supracondylar fractures are small and lack long term follow up which may explain why this late complication has not previously been reported.

#### PP 131

### The Role of Pathology of Venous Outflow on The Formation of Structural and Functional Disorders of the Ankle and Knee Joints When Comorbidity Musculoskeletal and Venous Systems

Gennady Kotelnikov, Yaroslav Syzonenko, Sergey Katorkin, Igor Losev

Samara State Medical University, Samara, Russian Federation

**Background:** On osteoarthritis accounts for 60-80% of diseases of the musculoskeletal system. Varicose disease is the most common peripheral vascular disease. Of particular interest is a mutual relationship between the breach of the venous outflow in the formation of osteoarthritis and joint mobility limitation in the development of varicose veins. Purpose: Evaluate the mutual influence of the venous outflow disorders and osteoarthritis feet.

**Material and Methods:** We examined 564 patients with comorbidity venous and musculoskeletal systems. Mean age 51,2±11,3 years. Of these, 202 male (35.8%) and 362 (64.2%) women. Held Doppler and angioscanning, CT, rheovasography, fotoplantography, dynamic goniometry and functional electromyography.

Performed 513 surgeries on the venous system of the legs. Orthopedic surgical correction was performed 1-3 months after rehabilitation.

**Result:** There is a common etiology and pathogenesis of osteoarthritis and venous diseases. Osteoarthritis of the joints of the foot was diagnosed in 253 (45%), ankle at - 236 (42%), gonarthrosis at - 208 (37%). Violation of the outflow of venous tone and impair blood flow to the joints. Reveals the relationship between impaired venous outflow and stage osteoarthritis. Range of motion of ankle and knee joints decreased due to degenerative processes and pain - 10,3±1,09°. The combination of disease leads to functional failure, limiting the main categories of life and decreased quality of life.

**Conclusion:** Violation of venous outflow and motor function leg joints are mutually confounding diseases. Important to choose the optimal set of studies of the functional state statodinamiki and venous outflow.

#### PP 132

### Endothelial Progenitor Cells Enhance Muscle Revascularization before Islet Graft

Quintane Laurence<sup>1</sup>, Hubert Thomas<sup>1</sup>, Gmyr Valery<sup>1</sup>, Delalleau Nathalie<sup>1</sup>, Kerr-Conte Julie<sup>1</sup>, Arrouche Nassim<sup>2</sup>, Uzan Georges<sup>2</sup>, Pattou François<sup>1</sup>

<sup>1</sup> UMR 859 Biotherapies for diabetes, INSERM, Lille, France

<sup>2</sup> U972 Inserm, Villejuif, France

**Background:** Optimization of islet vascularization is of paramount importance in the field of islet transplantation. Endothelial progenitor cells (PECs) have been shown to be able to differentiate into vessels. These cells improve the vascularization of cardiac muscle after heart attack in rats, and to improve clinical symptoms of chronic limb ischemia in humans.

The aim of our study was to determine if transplantation of PECs with islets would improve islet vascularization, and improve their survival.

**Material and Methods:** In our minipig model of intramuscular islet autotransplantation, we explored the outcome of autologous islet transplantation with or without PECs. We used 7 females minipigs (n=7). Three hundred milliliters of blood was obtained from each animal. PECs were isolated from blood and cultured. We next performed a caudal pancreatectomy and islet isolation on each animal, and islets were autotransplanted into the gracilis muscle using 4 different conditions: islets only, islet + PECs, islet + PECs (double dose), and PECs only. Two months later, grafts were explanted and animals were sacrificed. We used immunofluorescent staining for chromogranin A (red) to identify islets and immunofluorescence staining for von Willebrand Factor (vWF) (green) to assess the neovascularization of the graft. We measured the ratio between the green stained surface and the graft surface for each condition.

**Result:** The vascular density of the graft zone with PECs was significantly higher than the one without PECs (1.97 vs 7.37; p<0.0015).

**Conclusion:** These results suggest, in a clinically relevant preclinical model, that PECs can help to improve vascularization of the graft area.

## PP 133

**Giant Anaplastic Thyroid Carcinoma Arising in a Neglected Goitre: A Case Report**

Orhan Veli Ozkan<sup>1</sup>, Orhanyagmurkaya<sup>2</sup>, Omer Yalkin<sup>3</sup>, Fehmi Celebi<sup>1</sup>, Yasemin Gunduz<sup>4</sup>, Zeynep Kahyaoglu<sup>5</sup>, Ismail Zengin<sup>1</sup>, Fatih Altintoprak<sup>1</sup>

<sup>1</sup> Department of General Surgery, Faculty of Medicine, Sakarya University, Sakarya, Turkey

<sup>2</sup> Department of General Surgery, Research and Educational Hospital, Sakarya University, Sakarya, Turkey

<sup>3</sup> Department of General Surgery, Faculty of Medicine, Sakarya University, Sakarya, Turkey

<sup>4</sup> Department of Radiology, Faculty of Medicine, Sakarya University, Sakarya, Turkey

<sup>5</sup> Department of Pathology, Faculty of Medicine, Sakarya University, Sakarya, Turkey

**Background:** Diffusely enlarged giant thyroid glands are becoming increasingly infrequent. However, in some geographical areas they are still relatively common. Anaplastic thyroid carcinoma is rare but is an aggressive and lethal malignancy. Since it is associated with severe complications, surgical treatment of giant goitre requires a high level of expertise.

**Material and Methods:** Herein, a case of giant goiter in a 71-year-old female patient, diagnosed 40 years ago and gradually progressed in size has been presented. Although she was informed about the biopsy and consequent surgery indication years ago, she refused to undergo any surgical intervention. She was suffering of a huge neck swelling with a sense of tightness and heaviness that interfered with her neck movements. She was confirmed to be in euthyroid status. Cervical and thorax computed tomography imaging studies revealed a giant goiter deviating the trachea to the right and lymphadenopathies appearing as metastatic lesions in lungs and mediastinum respectively.

**Result:** The patient underwent surgery with a 20 cm length elliptic incision and total thyroidectomy was performed. The surgical specimen weighed 2.5kg, had a right lobe 8.5x5x3.5cm in size and a left lobe 18.5x17.5x10 cm in size. The pathological examination reported the specimen as anaplastic thyroid carcinoma.

**Conclusion:** Thyroid diseases associated with goiter should be surgically treated without a delay since those cases could be complicated with malignant transformation in the gland and considerably increased surgical complication rates due to advanced age and increased size of goiter.

## PP 134

**Effects of Laparoscopic Sleeve Gastrectomy on Type 2 Diabetes and Nonalcoholic Fatty Liver Disease**

Akira Sasaki, Hiroyuki Nitta, Koki Otsuka, Toru Obuchi, Shigeaki Baba, Akira Umemura, Takeshi Iwaya, Satoshi Nishizuka, Keisuke Koeda, Masaru Mizuno, Go Wakabayashi

Iwate Medical University School of Medicine, Morioka, Japan

**Background:** The aim of the present study was to evaluate the effects of laparoscopic sleeve gastrectomy (LSG) on type 2 diabetes mellitus (T2DM) and nonalcoholic fatty liver disease (NAFLD).

**Material and Methods:** Between June 2008 and January 2014, 31 Japanese patients with severe obesity underwent LSG. Fifteen patients had T2DM; 12 patients were taking oral hypoglycemic agents, and 6 patients were receiving insulin treatment. All patients underwent computed tomography before and 6 months after LSG, and visceral adipose tissue (VAT) and liver volume were analyzed. The data collected included patient demographics, clinical outcomes, and metabolic and inflammatory parameters.

**Result:** The mean postoperative excess body weight loss at 1 and 3 years after LSG was 56% and 81%, respectively. Complete remission of T2DM was achieved in all 15 patients at 1 month after LSG. Peak GLP-1 and insulin levels during a 75 g oral glucose tolerance test increased significantly at 1 and 6 months after LSG, respectively. The mean liver volume was significantly decreased at 6 months after LSG (2,301 vs 1,746 mL,  $p=0.006$ ), and the grades of steatosis and hepatic inflammation in the 5 NASH patients were all reduced. In the T2DM patients, the reduction in VAT was found to correlate with the changes in high-sensitivity C-reactive protein ( $p=0.006$ ) and the HOMA-IR ( $p=0.001$ ).

**Conclusion:** The effects of the surgery on body weight and metabolic function indicate that LSG may be a part of the treatment strategy for T2DM and NAFLD.

## PP 135

**Papillary Thyroid Cancer Evolving from Thyroglossal Duct Cyst: Case Report**

Zafer Kilbas, Semih Gorgulu, Ramazan Yildiz, Oner Menten, Erkan Ozturk, Yusuf Peker

Gulhane Military Medical Academy, Department of General Surgery, Ankara, Turkey

**Background:** Thyroglossal duct cyst (TDC) in adults is uncommon and TDC carcinoma is a very rare finding. Its presentation is similar to that of a benign cyst, so, the diagnosis is usually made postoperatively after histological



examination. We aimed to find answers to management dilemmas regarding the roles of total thyroidectomy in papillary thyroid carcinoma evolving from TDC by means of a case.

**Material and Methods:** Herein we present a very rare cases of PTC evolving from the TDC.

**Result:** Case: A 21-year-old man presented to with the diagnosis of papillary thyroid cancer (PTC) evolving from TDC. His past medical history revealed a TDC excision one month before due to midline neck mass. After gathering the diagnosis of PTC evolving from TDC, he was sent for further investigation. Physical examination revealed no palpable nodules in thyroid gland and there was not any palpable lymph nodes. Thyroid scintigraphy, thyroid and cervical ultrasonography were performed. Thyroid ultrasound showed a hypoechoic, 6-mm solid nodule in right lobe. Since FNA revealed a synchronous papillary cancer in right lobe of thyroid gland, total thyroidectomy with Sistrunk's procedure was performed. The final postoperative pathology reported an 6 mm papillary cancer in the right lobe of the thyroid. The patient was treated with radioactive iodide and thyroid suppression therapy was given as an adjuvant treatment.

**Conclusion:** The occurrence of PTC in a TDC is rare. To exclude a synchronous tumor in thyroid gland, further investigation is mandatory and total thyroidectomy with Sistrunk's procedure is the optimum treatment modality.

#### PP 136

##### Effect Of Sildenafil in a Rat Model of Short Bowel Syndrome

Tuna Bilecik<sup>1</sup>, Mehmet Tahir Oruç<sup>1</sup>, Cemal Özben Ensari<sup>2</sup>, Burhan Mayir<sup>1</sup>, Ramazan Eryılmaz<sup>2</sup>

<sup>1</sup> Antalya Education and Research Hospital, Antalya, Turkey

<sup>2</sup> Akdeniz University Faculty of Medicine, Antalya, Turkey

**Background:** Short Bowel Syndrome (SBS) is a clinical situation characterised by nutritional and metabolic disorders which occurs after wide resections of the intestines due to any reasons. At present day, SBS still has great morbidity and mortality rates. Because of this reason; it is a promising treatment option for the SBS patients to accelerate and strengthen the intestinal adaptation. We aimed to search the affects of sildenafil on the intestinal adaptation in SBS by several physiopathological mechanisms in this study.

**Material and Methods:** For this purpose, we searched 48 Wistar-albino male rats which are weighed between 231-390 grs (median 320 gr). We searched 4 groups. These are classified as; Group 1 (Control group): Ileal transection + anastomosis, Group 2 (Sildenafil group): Ileal transection + anastomosis + Sildenafil users, Group 3 (SBS Group): 75% intestine resection + anastomosis, Group 4 (SBS + Sildenafil group): 75% intestine resection + anastomosis + Sildenafil users. In the sildenafil groups, sildenafil was injected concurrently on a daily basis starting on the postoperative

3rd day by the dosage of 60 mg/kg/day subcutaneously.

**Result:** In this study, we observed significant positive alterations of sildenafil on the intestinal adaptation parameters, and also we investigated that, these alterations were strongly marked especially in the jejunum.

**Conclusion:** After observing the positive affects of sildenafil on the experimental animal models with SBS and in consideration of its clinical usefulness, we believe that sildenafil should be used in the treatment of SBS for improving the intestinal adaptation.

#### PP 137

##### The Diagnostic Value of IMA and MPV in a Rat Model of Mesenteric Ischemia

Güvenç Cantilav<sup>1</sup>, Tahir Oruç<sup>1</sup>, Tuna Bilecik<sup>1</sup>, Barış Rafet Karakaş<sup>1</sup>, Hamit Yaşar Ellidağ<sup>2</sup>, Nurullah Bülbüller<sup>1</sup>

<sup>1</sup> Antalya Education and Research Hospital, Department of General Surgery, Antalya, Turkey

<sup>2</sup> Antalya Education and Research Hospital, Department of Biochemistry, Antalya, Turkey

**Background:** Although less frequently observed compared to other abdominal causes, Acute Mesenteric Ischemia (AMI) is an abdominal vascular emergency that has high mortality rates (60-80%) often due to late diagnosis. This study aims to investigate the value of ischemia modified albumin and average trombosit volume on early diagnosis of mesenteric ischemia.

**Material and Methods:** For this experimental research, we used three groups each consisting of 8 rats; 1st group: laparotomy is not done, 2nd group: laparotomy is done 3rd group: caused to develop mesenteric ischemia. Blood samples taken from both groups on 2nd hour for serum IMA and MPV measurements.

**Result:** Average MPV values were 10,9±0,6 for mesenteric ischemia group (Group C) which was reasonably higher (p<0,05) than Group B (7,0±0,2) and Group A (6,6±0,3). IMA values were reasonably higher (p>0,05) in mesenteric ischemia group (Group C) with an average 274,5 ±17,5 than Group B (180,3± 6,3) and Group A (183,2± 2,3).

**Conclusion:** Even though the laboratory and imaging techniques showing rapid improvement, early diagnosis of AMI is still very hard for a surgeon. Considering that late diagnosis is the main reason increasing morbidity and mortality for patients with Acute Mesenteric Ischemia, there is major need for markers particularly indicating pre-ischemia. In this study we obtained reasonable results showing high MPV and IMA values could be used as an indicator for early diagnosis of artery originated mesenteric ischemia.

## PP 138

**Publication Rates of General Surgery Theses in Journals in Turkey**

Burhan Mayir, Tahir Oruç, Tuna Bilecik, Uğur Doğan, Ümit Koç, Cemal Ensari, Arif Aslaner

Antalya Education and Research Hospital, antalya, Turkey

**Background:** In our country, the rate of theses published in a medical journal is not very high. In this study, we have analyzed the ratio of theses on general surgery which have been published in a national or international journal and the factors affecting publication of medical theses.

**Material and Methods:** All medical theses published on general surgery in the Electronic Archive of Higher Education Council Thesis Center between the years 2007 and 2008 were analyzed within the scope of the study. Data regarding the thesis topic, type of research and the university hospital where the study was carried out was recorded. Afterwards, we checked whether the theses were published in a journal or not by searching the theses in three different resources by the name of their authors.

**Result:** In three years, 232 theses were completed in total. 116 (50%) of those theses were experimental studies while the other 161 (50%) were clinical studies. 70% of all those theses were published in various journals. When only the theses published in SCI and SCIE journals were considered, publication rate of experimental studies, randomized prospective clinical studies, retrospective clinical studies and prospective clinical studies were found to be 25%, 22.7%, 20.5% and 16.3%, respectively.

**Conclusion:** In our study the rate of published theses may seem high compared to previous studies, however, only 19.5% of all theses could be published in SCI and SCIE journals. Therefore, theses should be considered as scientific research and planned as scientific studies not as perfunctory assignments.

## PP 139

**Evaluation of Two Different Barbed Sutures for End-to-End Jejunojejunal Anastomosis in Pigs**

Marco Gandini, Gessica Giusto, Selina Iussich, Massimiliano Tursi, Giovanni Perona

Department of Veterinary Sciences, University of Turin, Grugliasco (TO), Italy

**Background:** Barbed sutures are characterized by the presence of barbs cut into the body of the thread that allows knotless suturing. These sutures have proven effective in performing end-to-end anastomosis *ex-vivo* in dogs and horses but to date no experimental study evaluated the characteristics of such anastomoses *in vivo*.

The aim of this study is to compare two different barbed

suture materials for extramucosal end-to-end jejuno-jejunal anastomosis in pigs.

**Material and Methods:** Three pigs were subjected to a total of 18 end-to-end jejuno-jejunal anastomosis with a continuous extramucosal pattern. In each animal two anastomoses were performed with Barbed Glycomer 631, two with Barbed Polydioxanone and two with normal Glycomer 631. Construction time was measured and compared.

Animals were euthanased 8 days after surgery.

At necropsy adhesions, stenosis, leakage, presence of abscesses or granulomas at the anastomotic site were recorded.

Bursting pressure was measured for each anastomosis and compared.

Samples were submitted for histopathology to evaluate inflammation and healing.

**Result:** Between barbed sutures the Barbed Polydioxanone was subjectively easier to handle.

Construction time was significantly faster with barbed sutures.

The presence and type of adhesions didn't differ between groups.

There was no evidence of stenosis or leaking at anastomotic sites. Bursting pressure was higher with both barbed sutures. Histologically no difference could be detected in the grade of inflammation.

**Conclusion:** Barbed sutures can be effectively used for extramucosal anastomosis in pigs. They are comparable to Normal Glycomer 631 but could provide higher resistance with a shorter surgical time.

## PP 140

**Comparison of The Effects of Platelet-Rich Plasma and Plasma Rich in Growth Factors on Anastomotic Healing in Pigs**

Marco Gandini, Gessica Giusto, Erika Cobisi, Selina Iussich, Massimiliano Tursi, Giovanni Perona

Department of Veterinary Sciences, University of Turin, Grugliasco (TO), Italy

**Background:** Autologous regenerative medicine has gained interest in different medical fields, and studies have been undertaken to examine the effect of platelet-rich plasma (PRP) on intestinal healing. The aim of this study is to compare the effects on intestinal healing of two different autologous plasma preparations: PRP and plasma rich in growth factors (PRGF).

**Material and Methods:** Six pigs were subjected to handsewn jejuno-jejunal anastomoses, and randomly assigned to two groups. In all animals two anastomoses served as controls. In group A, PRP was applied to the remaining 4 anastomoses, and in group B PRGF was applied to the remaining 4 anastomoses. PRP/PRGF were obtained after centrifugation of venous blood and then activated just before application. The intestinal edges were immersed into the activated

preparation until it had completely gelled. The anastomosis was then completed. All animals were euthanased 8 days after. At necropsy adhesions, leakage, presence of granulomas at the anastomotic site were recorded. Bursting pressure was measured for each anastomosis and compared. Samples were submitted for histopathology to evaluate epithelialization, ulceration, inflammation, fibroplasia and neovascularization.

**Result:** There was no evidence of leaking at anastomotic sites. Adhesions were more on PRP samples. Bursting pressure was higher with PRGF but not significantly. Histologically no difference was found in the grade of inflammation, fibroplasia or neovascularization. Mucosal epithelialization was complete in a higher number of cases treated with PRGF compared to PRP and controls.

**Conclusion:** In the early phases of intestinal healing PRGF improves mucosal epithelialization while reducing mucosal ulceration in jejunal anastomosis in pigs.

#### PP 141

### An Evaluation of the Endoscopic Surgical Skills Assessment with Video Analy

Takahisa Suzuki<sup>1</sup>, Hiroyuki Egi<sup>1</sup>, Minoru Hattori<sup>2</sup>,  
Hiroyuki Sawada<sup>1</sup>, Hideki Ohdan<sup>1</sup>

<sup>1</sup> Department of Gastroenterological and Transplant Surgery, Applied Life Sciences, Institute of Biomedical & Health Sciences, Hiroshima University, Hiroshima, Japan  
<sup>2</sup> Advanced Medical Skills Training Center, Institute of Biomedical & Health Sciences, Hiroshima University, Hiroshima, Japan

**Background:** Recently, endoscopic surgical skills of surgeons have been focused by many people and society. Hence, the importance of the training and education for safe endoscopic surgery is gradually increasing. We developed our own motion analysis system called as the HUESAD and already demonstrated its construct validity. In this study we verified another motion analysis system (dartfish software) could assess the surgeons' endoscopic surgical skills.

**Material and Methods:** Experts (who had experience in performing more than 100 laparoscopic surgeries), surgeons (who had experience in performing more than 100 general surgeries) and the novices (who had no experience in performing laparoscopic surgery) were recruited for this study. The task was suturing in dry box trainer. The time and the locus tracing of the both sides' needle holders were analyzed by the video analysis software. The study used Linear discriminant analysis, a classification method to automatically determine the threshold level for classifying experts, surgeons or novice according to the time and the locus tracing of the both sides' needle holders. Performance of the classification methods was examined using a cross-validation.

**Result:** The results indicate that there is a statistically significant difference among the three groups on the two variables (time:  $p < 0.05$ , the locus tracing of the both sides' needle holders:  $p < 0.05$ ). Moreover, our classification methods

can correctly classify 80% of experts in the three groups.

**Conclusion:** The results of this study demonstrated that motion analysis by the dartfish software were well correlated with operator's skill.

#### PP 142

### Improvement in Muscular Workload Through an Ergonomic Training Program

Francisco J. Pérez-Duarte,  
Francisco Miguel Sánchez-Margallo,  
Laura Hernández Hurtado,  
Idoia Díaz-Güemes Martín-Portugués,  
Marcos Lucas-Hernández, Jesús Usón Gargallo

Jesús Usón Minimally Invasive Surgery Centre, Cáceres, Spain

**Background:** In laparoscopic surgery there are no validated ergonomic training programs in spite of the multiple benefits it has demonstrated in other fields. The objective of this study is to evaluate the effect in muscular workload of a training program based on ergonomics applied to laparoscopic surgery.

**Material and Methods:** A total of 30 surgeons participated in the study divided in two groups: novice (N) and experts (E). All of them attended a 21 hour laparoscopic course in which our training program on ergonomics is included. This is divided in three learning levels, which include theoretical concepts and practical aspects during the performance of laparoscopic surgeries. At the beginning and at the end of the course participants performed a suturing task on box trainer. During this task, muscular activity of biceps brachii, triceps brachii, forearm flexors and extensors, and trapezius muscles was registered through surface electromyography (EMG).

**Result:** During the first day of course muscular activity for trapezius ( $N 51.66 \pm 26.39$  vs  $E 16.35 \pm 7.21$ ), forearm extensor ( $N 24.48 \pm 13.43$  vs  $E 12.13 \pm 4.98$ ) and forearm flexors ( $N 22.94 \pm 12.73$  vs  $E 5.79 \pm 2.94$ ) muscles was significantly lower in the experts group. Nevertheless in the third day of the course no statistical differences were found between experts and novices. Moreover muscular activity for trapezius, muscle was significantly lower in the novice group during the third day when compared with the first day ( $N 1 51.66 \pm 26.39$  vs  $N 3 28.48 \pm 19.45$ ).

**Conclusion:** The proposed training model based in ergonomic criteria objectively reduces muscle workload during laparoscopy.

## PP 143

**An Effective, Easy-to-Make Haemostasis Simulator**

Marco Gandini, Gessica Giusto, Francesco Comino

Department of Veterinary Sciences, University of Turin, Grugliasco (TO), Italy

**Background:** Many skills in open surgery need to be practiced to achieve self-confidence and good technique. Among these, correctly placing ligatures on vessels to assure haemostasis is paramount. Aim of this study is to describe an easy-to-make haemostasis simulator that can provide hints about precision and effectiveness of vessel ligature placement.

**Material and Methods:** Materials commonly found in every hospital or clinic were used to build the simulator. These are: a column manometer, a 500 ml saline bag, two intravenous fluid lines, a three way stopcock, a syringe and a penrose drainage (6 mm diameter). The simulator has been tested on final year students of veterinary medicine; they performed 40 knots each and "haemostasis" was verified by absence of pressure indicated by the manometer. At the end of the training period, students were asked to fill out a questionnaire to evaluate the simulator in terms of improvements in security and technique of knots realization.

**Result:** The simulator was effective in objectively evaluating the students' ability to place ligatures on vessels. After training with this model, students skills were improved as well as their self-confidence in placing effective haemostatic sutures. They assigned a mean scores of 8,5/10 for the simulator overall assessment, compared to a 6,5/10 for cadaver training.

**Conclusion:** The simulator resulted reliable and effective in providing the "feel" to properly close a vessel. The model was effective to teach basic surgical skill in open surgery with a very low cost for construction.

## PP 144

**Additional Information on Monitoring the Effectiveness of Surgical Hand Rub Movements Among the 3rd Year Medical Students**Erzsébet Ványolos<sup>1</sup>, Katalin Pető<sup>1</sup>, Aida Viszlai<sup>1</sup>, Irén Mikó<sup>1</sup>, Norbert Németh<sup>1</sup>, Piroska Orosi<sup>2</sup>

<sup>1</sup> Department of Operative Techniques and Surgical Research, Institute of Surgery, Faculty of Medicine, University of Debrecen, Debrecen, Hungary

<sup>2</sup> Department of Hygiene and Infection Control, Faculty of Public Health, University of Debrecen, Debrecen, Hungary

**Background:** Teaching adequate and standard hand movements of surgical hand rub technique is a priority of „Basic Surgical Techniques" course. To check and visualize the effectiveness of the process UV light was used after applying

fluorescent antiseptic solution.

**Material and Methods:** The trial was conducted with 253 students in the 10th (Test-I) and 14th week (Test-II) of the educational program. The hand rub's last phase was done with fluorescent solution then the hands were placed under UV light. Photos were taken and analyzed with software. Based on the error numbers, localization and pixel numbers, the specified area and intensity were compared. Error considered being an area, where the fluorescent solution didn't show completely or with significant intensity difference. The palmar(P) and dorsal(D) hand surfaces were divided into 4 regions (1: distal phalanx, 2: thumb and metacarpus I, 3: fingers II-V, 4: metacarpus II-V).

**Result:** At Test-I 123, while at Test-II only 65 students' technique were objectionable: 2.56 +/- 1.7(1-9) and 2.02 +/- 1.1(1-6) erroneous regions. On both hands the most frequent localization of errors were D/2 and P/4 in Test-I, while D/1 and P/4 in Test-II. During the second survey there was an improvement in the number of erroneous regions and their extension. The right-handed students made less errors on their non-dominant hand compared to the left-handed students (n=23).

**Conclusion:** The method was suitable to monitor the efficacy of hand rub technique and identify the critical territories.

## PP 145

**Mortality During the Research Should Be Analysed; ASD in a Wistar Rat**Erzsébet Ványolos<sup>1</sup>, Katalin Pető<sup>1</sup>, Aida Viszlai<sup>1</sup>, Irén Mikó<sup>1</sup>, Norbert Németh<sup>1</sup>, Piroska Orosi<sup>2</sup>

<sup>1</sup> Department of Operative Techniques and Surgical Research, Institute of Surgery, Faculty of Medicine, University of Debrecen, Debrecen, Hungary

<sup>2</sup> Department of Hygiene and Infection Control, Faculty of Public Health, University of Debrecen, Debrecen, Hungary

**Background:** The use of animal models to study cardiovascular disease has substantially contributed to increasing our understanding of disease pathogenesis. Experimental models of coronary occlusion provided accurate data on the development of necrosis. Perioperative mortality of myocardial infarction model that constituted using albino Wistar rat, ranges 40-60% according the various of studies<sup>1</sup>. In addition to operative mortality, also animals' cardiac functional reserve has a significant role on mortality.

**Material and Methods:** We present an animal case (345 gr weight, male Wistar albino rat) which give abnormally response to anesthetic agents (ketamine/medetomidine).

**Result:** Pre-operatively performing echocardiography showed that severe right heart failure, right ventricular and atrial dilatation with normal left ventricular and atrial function and dimension (figure, left). After anesthesia, bradycardia and severe cardiac depression were seen, and our rat was finally dead. In the rat autopsy, findings supported

our echocardiographic observation: right ventricular and atrial dilatation, liver congestion. Investigation of rat heart revealed a secundum type of atrial septal defect (figure, right).

**Conclusion:** Although ketamine/medetomidine in combination is used for anesthesia in rats safely, they sometimes induce respiratory depression, bradycardia and diuresis<sup>2, 3</sup>. Despite safety of ketamine/medetomidine combination for rats, presence of congenital heart defect can result deterioration of pulmonary and cardiac functions and sometimes mortality.

#### PP 146

##### Mental Health and Physical Health Monitoring

*Florentina Luiza Popescu, Lee Dvorkin*

North Middlesex University Hospital, London, London, United Kingdom

**Background:** Mental wellbeing has a significant impact on the recovery and length of stay of patients during their admission to a general hospital and after surgical intervention. Specific challenges include; any acute deterioration in mental function (anxiety/ delirium/psychosis) and its management on a general surgical ward, the timely recognition and management of surgical complications and informed consent.

**Material and Methods:** We conducted a prospective study. In the initial audit we aim to identify the appropriate use of current mini tools in assessing / monitoring of mental health at the North Middlesex University Hospital. Over a period of 2 weeks we audited all the clerking proformas filled in on admission.

**Result:** As the audit findings were below the expectations, and the AMT was poorly recorded on admission, we intend to adjust the current mini tool in order to address the importance and implications that mental health can have on the prognosis of a general surgical inpatient. The mini questionnaire that will be used includes sections regarding past psychiatric history, mood, cognition, and mental capacity.

**Conclusion:** Inpatients with mental illness represent a significant challenge for any surgical department. There is evidence that mental health issues are unrecognised and not fully addressed by medical and nursing staff in general hospitals. Early recognition of any cognitive impairment and decline in activities of daily living can improve the quality of life in the patients developing mental illness and reduce the socio-economical burden that many of these psychiatric conditions bring with them.

#### PP 147

##### Nasal Dermoid Sinus Cyst in an Adult; A Rare Case

*Dogan Pinar<sup>1</sup>, Bulent Evren Erku<sup>2</sup>, Hakan Cincik<sup>2</sup>*

<sup>1</sup> Elazig Military Hospital, Department of Otolaryngology, Elazig, Turkey

<sup>2</sup> GATA Haydarpaşa Training Hospital, Department of Otolaryngology, Istanbul, Turkey

**Background:** Nasal dermoid sinus cysts are very rare congenital anomalies in adults. These lesions are estimated to occur in 1:20,000 to 40,000 births. They usually exist at birth and may appear anywhere along the nasal midline from the glabella to the nasal columella. These disorders are clinically important because of their potential for connection to the central nervous system.

**Material and Methods:** We present a case of 21-year-old man with a small midline pit on the bridge of the nose from which hair was emerging. He also complained of occasional discharge of pus and serous material from right side of upper nasal dorsum. After antibiotherapy treatment sinus tract was investigated by computed tomography and magnetic resonance imaging. There was no connection to the central nervous system.

**Result:** Nasal dermoid sinus cyst was excised but one month later recurrence was occurred. An additional surgery was performed for recurrence.

**Conclusion:** Recurrence is frequent if the nasal dermoid sinus cyst is not completely excised.

#### PP 148

##### A Case of Bilateral Branchial Cleft Fistula in a Young Adult Patient

*Dogan Pinar<sup>1</sup>, Ulvi Mehmet Meral<sup>2</sup>, Bulent Evren Erku<sup>3</sup>, Hakan Cincik<sup>3</sup>*

<sup>1</sup> Elazig Military Hospital, Department of Otolaryngology, Elazig, Turkey

<sup>2</sup> Izmir Military Hospital, Department of General Surgery, Izmir, Turkey

<sup>3</sup> GATA Haydarpaşa Training Hospital, Department of Otolaryngology, Istanbul, Turkey

**Background:** Branchial cleft fistulas are uncommon developmental defects of the neck. Bilateral defect is extremely rare case.

**Material and Methods:** A 20 years old male patient admitted to our hospital with bilateral painless swelling of neck and seromucinous discharge. Clinic examination revealed bilateral branchial fistula. Fistula had been presented since birth. Ultrasonography and computerized tomography with contrast injection confirmed the diagnosis of bilateral cleft fistula and revealed a fistulous tract extending from the

cervical neck skin to tonsillar fossa.

**Result:** He underwent bilateral branchial fistula excision and there was no recurrences at 18 months of follow up.

**Conclusion:** We must keep in mind if branchial cleft fistula is diagnosed, we must evaluate the other side of neck.

#### PP 149

### Surgical Treatment of Complicated Forms of Ptosis and Prolapse of Inner Genital Organs

Valeriy Totikov, Zaurbek Totikov, Diana Dzanaeva

North-Ossetian State Medical Academy, Vladikavkaz, Russian Federation

**Background:** The purpose of this study was to work out the treatment of complicated forms of ptosis of pelvic ground with the use of polypropylen net.

**Material and Methods:** 86 patients were made vaginal extirpation of the uterus without adnexa (1 group), 19 was made on operation due to the method carried out in the clinic with the use of Prolene Soft material (2 group).

**Result:** Excellent results were received in 14,2% of the 1 group patients and in 88,2% in the 2 group. Good results were pointed out in 62,3% in the 1 group and in 62,5% in the 2 group. Satisfactory results were received in 22,4% in the 1 group and in 12,5% in the 2 group. In 12,3% of the 1 group patients the signs of difficult defecation was marked. In 8,2% in 1 group was marked the relapse of rectocele of the 1-2 degree. In 8,2% was marked the prolaboration of the uterus stump. In 6,1% of the 1 group patients were marked the symptoms of imperative urge incontinence due to stress and in 8,2% of imperative urge incontinence. Unsatisfactory results was found out in 14,3% of cases in the 1 group. There wasn't found out any unsatisfactory results and relapses in the 2 group.

**Conclusion:** In complicated forms of the lowering of the pelvic ground atrophy it is necessary to use additional means of fixing.

#### PP 150

### EPC in 3D Culture of HUC-MMSC for the Treatment of CLF

Saburina I.N.<sup>1</sup>, Shagidulin M.Y.<sup>2</sup>, Gorkun A.A.<sup>1</sup>, Zurina I.M.<sup>1</sup>, Repin V.S.<sup>3</sup>, Onishchenko N.A.<sup>2</sup>

<sup>1</sup> The Institute of General Pathology and Pathophysiology RAMS, Moscow, Russian Federation

<sup>2</sup> V.I. Shumakov Federal Research Center of Transplantology and Artificial Organs, I.M. Setchenov Moscow State Medical University, Moscow, Russian Federation

<sup>3</sup> The Institute of General Pathology and Pathophysiology RAMS, Russian Medical Academy of Postgraduate Education, Moscow, Russian Federation

**Background:** Transplantation of 3D microspheres from human umbilical cord MMSC is a promising direction in treatment of CLF.

**Material and Methods:** To obtain 3D microspheres of HUC-MMSC cells were placed in non-adhesive agarose microwells, cultured for 7 days in standard conditions. Endothelial differentiation of HUC-MMSC was induced by addition of VEGF to culture medium. CLF was modeled on 20 Wistar rats by CCl<sub>4</sub> administration. VEGF-induced microspheres were injected into rat's liver (n=15), in control-saline solution (n=5). 1, 3 and 6 months after HUC-MMSCs microspheres transplantation morphological, morphometric and immunocytochemical analysis was performed.

**Result:** After addition of VEGF in culture medium we observed an appearance of CD31+Flk-1+ endothelial progenitor cells (EPC) in HUC-MMSC microspheres, which formed tubule-like structures when placed in Matrigel. 1 month EPC integrated into recipient's endothelium and expressed Flk-1. Analysis performed at 3 months revealed high safety of main liver structure, as well as absence of false liver lobules and hypertrophy of hepatocytes in both groups, but control was periportal fibrosis and diffuse hyaline droplet degeneration of hepatocytes. We observed in study group less progression cirrhosis and less expressed portal fibrosis appeared in 6 months. Morphometric investigation showed higher quantity of new capillaries in study group versus control group.

**Conclusion:** As a result, 3D cultivation of HUC-MMSC in induction medium allows obtaining of EPC for the following angio- and vasculogenesis both in vitro and in vivo, which is a new and perspective technology for cell therapy of chronic liver failure.