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Udruga za promicanje
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i gušterače - HPB

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Liver surgical anatomy for Glissonean pedicle approach

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Experience with pNET

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MIS Liver Cancer Therapies

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Management of severe liver trauma in a tertiary center

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Major liver resection in the elderly

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Obstructive jaundice

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ABSTRACT

The most common causes of obstructive jaundice are choledocholithiasis, strictures of the biliary tract, cholangiocarcinoma, carcinoma of pancreas, pancreatitis, parasites and primary sclerosing cholangitis. Diagnosis of this syndrome is based on clinical examination, laboratory findings, imaging and endoscopic examination. Regardless of the cause, the physical obstruction causes a predominantly conjugated hyperbilirubinemia. Obstructive jaundice can be complicated with renal dysfunction, hemostasis impairment, hepatic dysfunction, increased intestinal permeability, and other complications. When mechanical biliary obstruction is diagnosed, surgical, endoscopic or radiologic intervention is usually recommended. Endoscopic Retrograde Cholangiopancreatography is an established diagnostic and therapeutic tool for pancreaticobiliary diseases including choledocholithiasis. However, Magnetic Resonance Cholangiopancreatography has gradually become an alternative diagnostic tool and is considered to be a noninvasive diagnostic technique in biliary diseases. In spite of the advances made in diagnostic procedures over the past several decades, only about 20% of pancreatic cancers are found to be resectable at the time of presentation. Various palliative therapeutic strategies have been described. Today, the most common treatments are endoscopic biliary stenting and surgical biliary bypass surgery. The recommendation is that

endoscopic stenting should be performed in patients with a poor prognosis (i.e., a life expectancy less than six months), and that patients with a life expectancy of greater than six months should be treated with biliary bypass because of the better long-term results associated with surgery.

Resection after neoadjuvant therapy for locally advanced pancreatic cancer

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Background. The aim of the present study was to determine the outcome of patients with locally advanced, unresectable pancreatic cancer (PC) who underwent neoadjuvant therapy, with particular attention to the rate of resectability and R0 tumor margin achievement.

Methods. All patients with unresectable locally advanced PC who underwent treatment with FOLFIRINOX at a single Institution between 2012 and 2015 were retrospectively evaluated from a prospective data base. Response to chemotherapy, resectability, morbidity, and survival were collected and analyzed.

Results. Overall, 14 patients received FOLFIRINOX as first-line therapy for locally advanced and unresectable PC. Only one patient experienced dose reduction due to toxicity after 1 cycle, and two patients experienced progressive disease. Six patients had stable disease, and 6 partial remission. After restaging, 6 patients underwent surgical exploration: one patient had only exploratory laparotomy and biopsy for para-aortic nodes involvement, while 5 patients underwent pancreatic resection (4 pancreaticoduodenectomy and 1 distal pancreatectomy with associated left nephrectomy), associated with tangential resection of portal vein in one. Pathologic examination showed complete response in one cases, and T3N1 pancreatic cancer in the remaining 4 patients. R1 resection occurred in two patients (posterior margin <0.1mm and focal infiltration of pancreatic stump, respectively). One patient showed postoperative bleeding from pancreatico-gastric anastomosis that required relaparotomy, for a postoperative morbidity of 20% (1/5 resected patients). Mortality rate was 0%. Overall median survival time was 12.5 months (range 3-27 months): 4 patients died for disease's progression, and 10 patients are still alive (all 5 resected and 5 non resected patients).

Conclusion. This study confirms that neoadjuvant FOLFIRINOX therapy is an effective, well-tolerated regimen for patients with advanced, non-metastatic pancreatic cancer. Although the number of patients is small and follow-up is short, pancreatic resection is possible with acceptable surgical risk, and eventually with R0 surgical margins or complete pathologic response.

Pancreatectomy with vascular resection for locally advanced pancreatic cancer

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The aim of the present study was to determine the outcome of patients undergoing pancreatic resection with (VR+) or without (VR-) mesenteric-portal vein resection for locally advanced pancreatic carcinoma. Between January 1998 and December 2014, 305 patients with pancreatic cancer underwent pancreatic resection: in 69 patients, surgery included venous resection for macroscopic invasion of mesenteric-portal vein axis. Survival curves of patients with or without portal vein resection were constructed with Kaplan-Meier method and compared with Log-rank test. Univariate and multivariate analyses were used to evaluate the impact of clinicopathologic factors on long-term survival of both groups of patients. Morbidity and mortality did not differ between the two groups (VR+: 29% and 3%; VR-: 30% and 4.0%, respectively). Radical resection was achieved in 58/69 (84%) in the VR+ group and in 186/236 (78%) in the VR- group. Vascular invasion was histologically proven in 50 (79%) of the VR+ group. Survival curves were not statistically different between the two groups. Mean and median survival time were 26 and 15 months, respectively in VR- versus 20 and 14 months, respectively, in VR+ group ($p=0.52$). In the VR+ group only histologically proven vascular invasion significantly impacted survival ($p=0.02$), while in the VR- group, R0 resection ($p=0.001$) and tumor's grading ($p=0.01$) significantly influenced long-term survival.

Vascular resection during pancreatectomy can be performed safely, with acceptable morbidity and mortality. Long-term survival was the same, with or without venous resection. Survival was worse for patients with histologically confirmed vascular infiltration. Since vascular invasion is clearly shown only after histological examination, combined vascular resection with pancreatectomy is justified, whenever possible.

Intrathoracal colecystitis

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Injuries of the diaphragm were first described in 1541 by Sennertus and the initial repair was performed by Riolfi in 1886. Posttraumatic diaphragmatic hernia in adults is usually caused by blunt trauma and may remain asymptomatic and undiagnosed for many years. Right-sided tears are significantly less likely than left-sided tears because of the protective effect of the liver. They are associated with high mortality and morbidity. The rupture of the right side of the diaphragm and the presence of an inflamed gallbladder in the thoracic cavity are uncommon. We present the case of a 57-year-old Albanian man with prolapses of his gallbladder and other abdominal organs into the thoracic cavity through the herniation of his

right hemidiaphragm due to trauma. The diaphragmatic hernia and gallstones seen in the thorax computed tomography scan were diagnostic. The organs herniated to the thoracic cavity were placed back into the abdominal cavity, a cholecystectomy was performed and the defect in the diaphragm was repaired with a prolene mesh graft during the operation. The patient was discharged 10 days after the surgical procedure, and no complications were reported. Diaphragmatic hernia should be considered as a possible diagnosis in patients with respiratory disorders or unusual shadows in the thoracic region after recently sustained injury or with a history of injury. The prolapse of a gallbladder is rare. The symptoms are uncharacteristic and patients with this disease may remain without symptoms for a long period. Treatment is surgical.

Major Pancreatic resection in patients 80-years and older

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Background. Pancreatic and periampullary neoplasms in patients aged 80 or older trouble the surgeons because of the risk of surgical treatment. We have reviewed our experience and literature's reports of pancreatectomy in octogenarians, evaluating early results and long-term survival in pancreatic cancer group.

Methods. Patients who underwent pancreatic resection from 1998 to 2013 were divided in two groups: Group 1, patients younger than 80 years of age, and Group 2, patients 80 years of age and older. Operative morbidity, mortality, disease-free and long-term survival were analysed. English literature was systematically searched for pancreatic resection's outcome in octogenarians.

Results. There were 568 pancreatic resections: 535 patients were in Group 1 and 33 patients in Group 2. There was no significant difference regarding gender, and pathologic findings between the two Groups. Complication rate (40 vs. 42%), mortality rate (4% vs., 3%), and overall median survival for cancer patients (median 18 vs. 16 months; $p=0.86$) were not statistically different in the two groups. Literature review showed 14 reports of pancreatic resection in octogenarians. Most of the studies (particularly in centres with high-volume pancreatic surgery) showed that long-term outcome after pancreatectomy was not different in octogenarians or in younger patients. However, morbidity and mortality rates were reported to be higher in elderly patients, suggesting that the proper selection of patients is essential to obtain better results.

Conclusion. Pancreatic resection is a safe option for elderly patients. Age alone should not be considered a contraindication to major pancreatic resection, but a careful preoperative evaluation and an accurate postoperative management are mandatory.

The management of patients with acute pancreatitis

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ABSTRACT

Based on Atlanta's criteria, acute pancreatitis is classified as:-Edematous acute pancreatitis and necrotic acute pancreatitis. Acute necrotic pancreatitis is developed in 15 to 20% of cases. The pancreatic necrotic infection occurs in the second and third week of illness in 40 to 70% of the patients with acute necrotic pancreatitis. This infection is mainly one of major risk factor which influence in complication rate and mortality. Diagnosis of acute pancreatitis is based on clinical presentation, laboratory findings and radiological examinations. There are a number of prognostic systems for detection of illness severity and patient prognosis with acute pancreatitis, such as: Ranson's criterias, APACHE II system, Glasgow system by Imrie, Baltazar stratification of CT-scan etc. The important thing in patients with acute pancreatitis is identification of pancreatic necrotic infection. Golden standard for necrotic infection identification is aspiration with fine needle "CHIBA" followed by US or CT-scan. The patients with acute pancreatitis can be treated conservatively or surgically. It is widely believed that all patients with infection of pancreatic necrosis need surgical treatment. Now, all scientists agree that surgical intervention has to be delayed as long as possible. The modern way of treatment, in the future has to be focused on a single multimodal therapy, which inhibits inflammatory excessive reaction, meanwhile preserves immunity competence and antimicrobial defense.

Treatment with endoscopic nasobiliary drainage

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Purpose: The purpose of this study is to analyze the treatment strategies of patients with endoscopic retrograde cholangiopancreatography (ERCP)-related perforations. This is a retrospective study.

Methods: We experienced 16 perforations associated with ERCP. We reviewed the medical records and classified ERCP-related perforations according to mechanism of injury in terms of

perforating device. Injury by endoscopic tip or insertion tube was classified as type I, injury by cannulation catheter or sphincterotome knife as type II, and injury by guidewire as type III.

Results: Of six type I injuries, one case was managed by conservative management after primary closure with a hemoclip during ERCP. The other three patients underwent surgical treatments such as primary closure or duodenojejunostomy or pancreatico-duodenectomy. Of six type II injuries, two patients underwent conservative management and the other three cases were managed by surgical treatment such as duodenojejunostomy,

duodenal diverticulization and pancreatico-duodenectomy. Of four type III injuries, three patients were managed conservatively and the remaining patient was managed by T-tube choledochostomy.

Conclusion: Type I injuries require immediate surgical management after ERCP or immediate endoscopic closure during ERCP whenever possible. Type II injuries require surgical or conservative treatment according to intra- and retro-peritoneal dirty fluid collection findings following radiologic evaluation. Type III injuries almost always improve after conservative treatment with endoscopic nasobiliary drainage.

Splenic Artery Embolization for Treatment of Gastric Variceal Bleeding Secondary to Splenic Vein Thrombosis in Necrotizing Pancreatitis: Application of theory of Warshaw operation

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[Introduction] In the setting of splenic vein thrombosis (SVT), gastric variceal bleeding (GVB) can be occurred and it is sometimes lethal. However, in postoperative state of Warshaw operation, GVB was not observed because splenic artery is also ligated. And some literatures have reported effectiveness of splenic artery embolization (SAE) for treatment of GVB secondary to SVT. Herein, we report a case of GVB secondary to SVT in severe necrotizing pancreatitis, successfully managed by SAE. [Case report] A 42-year-old man was referred to our hospital for treatment of a necrotizing pancreatitis. Despite of endoscopic transgastric internal drainage and percutaneous drainage, abdominal pain and fever was not subsided. An emergency operation; necrosectomy and external drainage; was performed. In operative field, severe adhesion and bleeding tendency due to inflammation was seen. On postoperative day 13, hematemesis was noted and his hemoglobin level decreased from 11.2 g/dL to 7.6 g/dL. An abdominal CT angiogram demonstrated bleeding from gastric fundus and perigastric venous engorgement. The splenic vein was not seen on CT scan. Endoscopist tried endoscopic hemostasis, but failed. An emergency angiogram was performed. An arteriography showed no extravasation from arterial system. The splenic artery was embolized with vascular plug at just proximal to branching point of left gastroepiploic artery; similar to the ligation point of distal splenic artery in Warshaw operation. No more fresh blood was drained via nasogastric tube from the next day of SAE, and F/U CT showed no more bleeding from gastric fundal varix. At present, 3 months after the SAE, no recurrent GVB was

observed. [Conclusion] Splenic artery embolization is a safe and feasible option instead of splenectomy to manage GVB secondary to SVT, especially when splenectomy would be high risk.

Timing of laparoscopic cholecystectomy

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Aim: The appropriate time for laparoscopic cholecystectomy (LC) following endoscopic retrograde cholangiopancreatography (ERCP) in patients with obstructive choledolithiasis is controversial. We aim to compare early versus delayed LC after ERCP in patients with calcular obstructive jaundice as regards conversion rate, postoperative morbidity and hospital stay.

Methods: this study that was conducted on 124 patients who underwent LC after ERCP due to calcular obstructive jaundice. Patients were randomly classified to two groups; in the first group (early group, n=62) LC was performed within 72 hours after ERCP, while in the second group (delayed group, n = 62) LC was performed after 6 weeks.

Results: Conversion to open cholecystectomy was significantly more incident when LC was delayed for more than 6 weeks after ERCP (22.6% in delayed group versus 6.5% in early group). The duration of surgery and the postoperative hospital stay in the early group was significantly shorter than that of the delayed group (42.3 ± 10.6 minutes versus 72.2 ± 16.8 minutes and 1.1 ± 1.9 day versus 3.5 ± 1.2 days respectively). No statistically significant difference was found between both groups as regarding the postoperative morbidity.

Conclusion: Performing LC as early as possible (within 72 hours after ERCP) lowers the conversion rate to open cholecystectomy thus decreasing the anticipated postoperative morbidity and prolonged hospital stay.

The effect of ursodeoxycholic acid in liver functional restoration of patients with obstructive jaundice after endoscopic treatment: a randomized clinical trial

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ABSTRACTBackground: The effect of ursodeoxycholic acid in patients with obstructive jaundice after endoscopic treatment has not yet been fully studied. The aim of this study was to evaluate the effect of ursodeoxycholic acid in patients with obstructive jaundice after endoscopic treatment. Methods: We prospectively studied 32 patients undergoing endoscopic treatment for obstructive jaundice, which were randomly allocated to the study group and treated by ursodeoxycholic acid, and to the control group. In the study group were randomly allocated 20 patients (13 women, 7 men; mean age 65.2 ± 16.5 years), while to the control group 12 patients (7 women, 5 men; mean age 50.5 ± 21.1 years). Serum-testing in patients with obstructive jaundice has included determination of bilirubin (total and conjugated fractions), alanine transaminase, aspartate transaminase, gama-glutamyl transpeptidase, alkaline phosphatase, albumin, urea, creatinine, glycaemia, and neutrophil-lymphocyte ratio. These parameters were determined prior endoscopic intervention, and on the fifth, tenth, and fifteenth days after endoscopic intervention. The primary outcome measure in this trial was the bilirubin and alkaline phosphatase decreasing rate. The secondary outcome was assessment liver functional parameter in which, treatment with ursodeoxycholic acid, has had greater impact. Results: The bilirubin decrease rate was significantly higher in the study group than in the control group up on the 10 day after endoscopic treatment ($P < 0.05$). On the day 15 the difference between the groups was not statistically significant ($P > 0.05$). The alkaline phosphatase decrease rate was significantly higher in the study group than in the control group up on the days 5 and 10 ($P < 0.05$). The alanine transaminase, aspartate transaminase, and gama-glutamyl transpeptidase decrease rates within study and control group reached statistical significance ($P < 0.0001$), while the difference between the groups was not statistically significant ($P > 0.0001$). Conclusions: It seemed that ursodeoxycholic acid can accelerate the functional liver restoration in patients with obstructive jaundice in early phase after endoscopic treatment. Trial registration: ClinicalTrials.gov, NCT01688375 Keywords: obstructive jaundice, UDCA treatment, liver restoration

Pancreas transplant at Taipei Veterans General Hospital

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Type 1 diabetes eventually leads to nephropathy, neuropathy, retinopathy and angiopathy after 10 – 30 years. Currently, pancreas transplant is the treatment of choice in tight control of

blood sugar for IDDM patients, and further to stabilize, prevent or even to reverse the diabetic complications. We will present our experience in pancreas transplant which was initiated on September 19, 2003. From September 2003 to July, 2015, there were 112 pancreas transplants performed for 107 patients at Taipei Veterans General Hospital, with 39 SPK, 10 PAK, 40 PTA and 16 PBK. Most (82.3%) of our pancreas transplants were for IDDM patients. The blood sugar usually returned to normal level within 5 hours (median) after revascularization of the pancreas grafts. The fasting blood sugar maintained within normal range thereafter throughout the whole clinical course in most cases. There were 2 surgical mortality. The technical success rate was 96.0%. Excluding the 4 cases with technique failure, overall 1-year pancreas graft survival is 98.5% and 5-year is 94.1%, with 100% 1-year for SPK, 97.1% 1-year for PTA, 100% 1-year for PAK and 100% 1-year for PBK.

In conclusion, pancreas transplant provided an ideal insulin-free solution for DM, especially IDDM. Pancreas transplant could be performed with similar successful rate irrespective of the type of pancreas transplant at our hospital.

Early laparoscopic cholecystectomy without relief of jaundice after ERCP is feasible in acute cholangitis and cholecystolithiasis

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Background: Laparoscopic cholecystectomy (LC) is recommended after endoscopic clearance of choledocholithiasis in patients with acute cholangitis and cholecystolithiasis. However, the appropriate interval between endoscopic retrograde cholangiopancreatography (ERCP) and LC remains uncertain. Therefore, we aimed to evaluate optimal timing of elective LC after acute cholangitis and subsequent clearance of choledocholithiasis

Methods: A retrospective review of electronic medical records was performed for 166 patients who underwent elective LC after ERCP between January 2010 and April 2014. We compared the hospital stay, perioperative morbidity and the rate of surgical conversion to open cholecystectomy according to the resolution of jaundice before surgery.

Results: The mean age of enrolled patients was 58.6 ± 17.0 years. The enrolled patients were divided into two groups; resolution of jaundice before surgery (group 1, n =72) or not (group 2, n = 94). Initially, there were no significant differences between the groups in terms of age, sex distribution, American Society of Anesthesiologists score, previous surgical history, white blood cell, c-reactive protein, operative time. There was no significant difference in

postoperative hospital stay between two groups (4.6 ± 3.2 vs. 5.8 ± 4.8 days, $p=0.069$). Moreover, there were not statistical differences in conversion rate (1.3% vs. 4.2%, $p=0.390$) and perioperative morbidity (8.3% vs. 12.7%, $p= 0.454$).

Conclusions: LC would not be delayed until resolution of jaundice after ERCP since there were no significant differences of perioperative morbidity and surgical conversion rate to open cholecystectomy. Early LC after ERCP may be feasible and safe in patients with acute cholangitis and cholecystolithiasis.

Application of gallbladder drainage in the treatment of elderly and surgically high-risk patients with acute cholecystitis

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ObjectiveTo investigate the application of percutaneous transhepatic gallbladder drainage (PTGBD) in the treatment of elderly or critically ill and surgically high-risk patients with acute cholecystitis (AC) . **Methods:** From March 2010 to October 2013, the clinical data of 32 elderly or critically ill and surgically high-risk patients with AC treated by PTGBD were analyzed retrospectively in our hospital. The patients are 65 to 98 years old, average 79.38 years old. All patients occurred co-morbidities, ASA score III in 6 cases (18.8%) and IV in 26 cases (81.2%). **Results:** The drainage tubes were successfully placed in all cases. No bleeding, bile leakage and bile peritonitis, abdominal abscess and other complications occurred. After PTGBD, all patients recovered gradually. The body temperature decreased, the abdominal pain and abdominal signs were relieved, and the white blood cell count decreased. On the one day after PTGBD, the body temperature reduced from 39.32 ± 0.62 to 37.63 ± 0.37 ($P<0.001$), the white blood cell count reduced from 15.16 ± 2.74 to 10.34 ± 1.80 ($P<0.001$). No death cases occurred. After gallbladder inflammation controlled and drainage tube clipped for one to three months, drainage tubes of patients were extracted. During follow-up, 3 cases with contraindication of laparoscopic cholecystectomy (LC) suffered from AC (acalculous AC) again after the removal of the drainage tube. The condition of patients improved after the recatheterization. 7 patients underwent elective LC, and the recovery was successful. **Conclusions:** PTGBD is a low risk management option for elderly or critically ill and surgically high-risk patients with AC. It is not only efficacious as a temporizing procedure before a definitive treatment, but is also a possible definitive treatment option for AC.

Preventive transanastomotic biodegradable biliary stenting in porcine model – first results

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Outcomes of patients with hepatocellular carcinoma after decision of liver transplantation in multidisciplinary team meeting

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Objectives: intention-to-treat (ITT) analysis of overall survival (OS) for patients who develop hepatocellular carcinoma (HCC) on underlying cirrhosis and for which liver transplantation is decided in multidisciplinary team meeting (MDT).

Methods: cohort study based on data recorded from a MDT dedicated to HCC. Data was collected prospectively and analysed retrospectively Every patient presented in our MDT between 2006 and 2013 with a newly diagnosed HCC and decision of LT was included.

Results: 136 patients were included, with a median follow-up of 27.5 months. Median age was 59 years. 71% (n=97) patients were inside Milan criteria. Median waiting time before LT was 11 months. 63 patients (46%) were never transplanted. 1, 3 and 5-year ITT OS was 88%, 44% and 25%. 1, 3 and 5-year OS for transplanted patients was 96%, 69% and 60%. When initial decision was not respected, 1, 3 and 5-year OS was 78%, 16% and 7% (p<0,001). Patients were not listed for LT or dropped out because of progression (n=28, 45%), patient refusal (n=13, 21%), contraindication (n=9, 14%) or death (n=9, 14%). Among deceased patients, only one death was related to HCC. Patients who did not get LT were treated by transarterial chemo-embolisation (TACE) (n=33, 52%), radiofrequency ablation (RFA) (n=12, 19%), sorafenib (n=3, 5%), hepatic resection (n=1, 1,5%), or best supportive care (BSC) (n=14, 22%). 1, 3 and 5-year OS were : 92%, 45% and 30% with RFA ; 85%, 12% and 0% with TACE ; 33%, 0% and 0% with sorafenib ; 42%, 9% and 0% with BSC.

Conclusion: only 54% of patients with HCC on cirrhosis who were eligible for LT when discussed in MDT were transplanted. Patients who did not get LT were mostly treated with RFA or TACE, with much poorer outcomes.

Outcomes of curative treatments for hepatocellular carcinoma: an intention-to-treat analysis

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Objectives: to compare overall survival (OS) with the three curative treatments of hepatocellular carcinoma (HCC) on an intention-to-treat (ITT) basis, and to analyse overall and disease-free survival (DFS) with these treatments once they were performed.

Methods: we conducted a cohort study based on data recorded from a multidisciplinary team meeting (MDT) dedicated to HCC. Data was collected prospectively and analysed retrospectively. Every patient presented in our MDT between 2006 and 2013 with a newly diagnosed HCC and decision of curative treatment (liver transplantation (LT), radiofrequency ablation (RFA), surgical resection (SR)) was included. Inclusions were closed in July 2013 to get a minimum follow-up of 18 months.

Results: 387 patients were included, with a median follow-up of 27,5 months. 355 patients (92%) had cirrhosis. LT was decided in 136 cases (35%), RFA in 131 cases (34%) and SR in 120 cases (31%). 66% of patients received the treatment initially decided: 54% in the LT group, 80% in the RFA group and 64% in the SR group. 5-year OS on ITT basis was 35% for the LT-group, 32% for the RFA-group and 34% for the SR-group. With an ITT analysis, the main risk factors were the disrespect of the MDT decision ($p<0,001$) as well as an elevated alpha-foeto-protein ($p=0,005$) and being outside Milan criteria ($p<0,001$). For people undergoing a curative treatment, 5-year OS and DFS were respectively: 64% and 86% for LT, 34% and 18% for RFA, 40% and 40% for SR.

Conclusion: on an ITT basis, OS after decision of curative treatment for newly diagnosed HCC are inferior to those published in literature, which only take in account effectively treated patients. The main prognosis factors with our ITT analysis are the disrespect of MDT advice, an elevated alpha-foeto-protein and being outside Milan criteria.

PVE for CRC liver metastases

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Introduction: Insufficient future liver remnant volume (FLRV) is a main cause of colorectal liver metastases (CLMs) non-resectability. Portal vein embolization (PVE) with application of autologous hematopoietic stem cells (aHSC) can be the method of FLRV growth stimulation.

Method: PVE with aHSC were used in 20 patients with primary non-resectable CLMs (3/2011 – 2/2016). FLRV growth was examined each week after procedure by computed tomography (CT). Liver resection was performed as soon as FRLV was $\geq 30\%$ of the total liver volume. Adjuvant chemotherapy, patient's age, number and volume of CLMs, liver volume changes were evaluated as factors for overall and disease free survival (OS, DFI).

Results: Sufficient FLRV developed in 2-3 weeks after procedure. R0 hepatectomy was performed in 16 patients (80 %), exploratory laparotomy in four patients (3x tumor progression, 1x severe adhesions). One and two years OS was 76.6, resp. 50.3%, DFI 67.2, resp. 32.1% in patients after liver resection. More than three CLMs were only significant factor for DFI ($p < 0.04$). The growth of CLMs volume was found in 17 (85%) of patients ($p < 0.003$), but it was significant neither for OS nor for DFI. Four patients (20 %) died in the interval of 9 to 13 months after hepatectomy (tumor progression). Ten patients are without any tumor recurrence. Six patients had CLMs recurrence (6-9 months) in the resection line.

Conclusion: PVE with aHSC appears to be promising method for stimulation of FLRV growth in patients with primary non-resectable CLMs.

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Hepatoid carcinoma of the Pancreas

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Background: Hepatoid carcinoma of the pancreas is extremely rare. This study summarized the clinical features and outcomes of pancreatic hepatoid carcinoma.

Methods: Data pool for analysis includes the case we encountered with hepatoid carcinoma of the pancreas and reported cases in the literature.

Results: Twenty-three cases of hepatoid carcinoma of the pancreas were recruited. Nausea/vomiting (62.5%) is more common for the tumors at pancreatic head, followed by jaundice and epigastric pain (50.0%). For those at pancreatic body-tail, 42.9% of the patients presented no symptom. Alpha-fetoprotein (AFP) was abnormally elevated in 60% cases. This tumor could be either pure or mixed form with other malignancy (40.9%), with the most common co-existed pathology of malignant neuroendocrine tumor (22.7%). Metastasis occurred in 36.4% cases at the diagnosis, including liver metastasis in 31.8% and lymph node metastasis in 21.1%. The overall 1-year survival was 71.1% and 5-year 40.4%, with a median of 13.0 months. Irresectability, hepatic and lymph node metastasis were associated with negative impact on survival.

Conclusions: Elevation of serum AFP may be a clue leading to the diagnosis of pancreatic hepatoid carcinoma. This tumor could be mixed form with other malignancy. Surgical resection should be the treatment of choice whenever possible.

Hepatic veno-occlusive disease related to tacrolimus after pancreas transplantation

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Introduction: Hepatic veno-occlusive disease (HVOD) describes the nonthrombotic, fibrous obliteration of the small centrilobular hepatic veins by connective tissue and centrilobular necrosis in zone 3 of the acini.

Materials: We describe a case of HVOD occurring after pancreas transplantation, in which tacrolimus might have played a causative role since complete recovery was observed after discontinuation of tacrolimus.

Results: A 25-year-old female with NIDDM and uremia. She underwent SPK transplantation. Nine months after transplantation, she reported development of fever, mild right abdominal pain and an increase in abdominal girth. The CT scan showed pictures of HVOD with hepatomegaly, massive ascites, periportal edema, diffuse mottled hepatic enhancement and patent hepatic veins (Fig. 1b). The periportal edema and diffuse mottled hepatic enhancement, in addition to the signs of portal hypertension, might suggest sinusoidal stasis. Tacrolimus was discontinued and replaced by cyclosporine. Three months after discontinuing tacrolimus, there was resolution of the patient HVOD demonstrated by CT scan (Fig. 1c).

Conclusion: This is the first case of HVOD after pancreas transplantation in the literature. HVOD should be suspected when a recipient presents with hepatomegaly, ascites or jaundice after pancreas transplantation under tacrolimus.

En bloc Simultaneous Pancreas and Kidney Composite Graft Transplant with Limited Vascular Access

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Introduction: We described modifications that facilitated an en bloc simultaneous pancreas and kidney (SPK) composite graft transplant in an obese type 2 diabetic patient with renal failure under hemodialysis.

Materials and Methods: At the back-table, the superior mesenteric artery and splenic artery of the pancreas graft were reconstructed with a long "Y" iliac artery graft. The smaller left renal artery is anastomosed end-to-side to the larger and longer common limb of the arterial Y graft and the shorter portal vein is anastomosed end-to-side to the longer graft left renal vein. Thus, this en bloc composite graft allowed to facilitate "real" SPK transplant using single common graft artery and vein for anastomosis to one recipient arterial and venous site. The en bloc pancreas and kidney composite graft was implanted by suturing the graft left renal vein to IVC and graft common iliac artery the recipient distal aorta.

Results: The operative time was 7 hours with cold ischemic time of 6 hours and 25 min. and warm ischemic time of 47 min. The patient was discharged with a serum creatinine level of 1.4 ng/ml and a blood glucose level of 121 mg/dL. He has not had any rejection episodes or postoperative complications in the following 12 months after the en bloc SPK transplant.

Conclusion: This technique (1) facilitates "real" simultaneous pancreas and kidney (SPK) transplant with only single common artery and vein for implanting the composite graft; (2) minimizes dissection of vessels and conserves recipient vessels.

Diabetes mellitus is associated with mortality in acute pancreatitis

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Background : Predicting severe pancreatitis is important for early aggressive management of patients with acute pancreatitis (AP). Despite the established role of diabetes mellitus (DM) in the risk of AP, the impact of DM on the clinical outcome in AP has not been fully elucidated. The objective of this study was to assess the risk of mortality and severity in AP among patients with type 2 DM.

Methods : Patients diagnosed with first attacks of AP were enrolled from January 2013 to June 2015.

Results : A total of 201 patients (63.2% male, mean age 59.4 years) with AP were included. Etiologies included gallstones (51.2%), alcohol (37.3%), hypertriglyceridemia (2%) and idiopathic causes (9.5%). There were 54 AP patients (26.9%) with type 2 DM. Severity indices in AP, such as Atlanta classification (severe), Ranson score, and Bedside Index of Severity in Acute Pancreatitis (BISAP), were higher in subjects with DM than those without DM. Prevalence of ICU admission and mortality were higher in AP patients with DM compared to those without DM. The association between DM and increased risk of mortality in AP remained statistically significant even after adjustments for confounding factors and Atlanta classification (odds ratio 7.76, 95% confidence interval 1.26-47.63, $P = 0.027$).

Conclusions : Type 2 DM was associated with severity and increased mortality in patients with AP. Our findings provide evidence of the potential role of DM in the pathogenesis and management of severe AP.

Pancreaticoduodenectomy for Pancreatic and Periampullary Lesions in the Young

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Purpose : The purpose of this study was to clarify surgical outcomes and to assess the biological behavior of periampullary malignancy after pancreaticoduodenectomy (PD) in the young. PD remains a formidable challenge to many pancreatic surgeons. There is no literature report regarding PD in the young.

Materials and Methods: Data on patients undergoing PD were retrieved for study between January, 1997, and December, 2010. Demographics, disease patterns, clinical presentations, operative findings, surgical risks, tumor pathologic characteristics, and survival outcomes were evaluated in the young patients less than 60 years old and compared with those in the older population.

Results: There were 585 patients in our study. Of there, 172 were patients 60 years or younger. Higher proportions of female patients were found in the young age group compared to old in regards to sex distribution. Young group had more benign tumor compared to the old, ex. neuroendocrine tumor. The surgical mortality rates are significant less in the Young group. However, there was no significant difference in surgical morbidity and pancreatic leakage. As for the initial presentations, young group patients are often asymptomatic (4.7%) when compared to the old (1.5%, $P=0.026$) but less jaundice and GI upset ($P=0.004$, $P=0.012$).

Conclusions: PD in the young did not carry more surgical morbidity or pancreatic leakage, but had less surgical mortality, as compared to the old. Young group patients after PD had better 5 year survival in periampullary malignancy and pancreatic head adenocarcinoma.

Choledochal injuries

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Choledochal injuries are the worst complication that a hepatobiliary surgeon can have. Here we evaluated 2 choledochal injuries of laparoscopic cholecystectomy operations. At choledochal injuries early intervention may decrease the morbidity and mortality.

Predictors of long-term survival after pancreaticoduodenectomy for adenocarcinoma

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Background: This study was to identify predictors for long-term survival and to compare survivals for periampullary adenocarcinomas after a pancreaticoduodenectomy.

Methods: Clinicopathological factors were compared between short-term (<5 years) and long-term (>5 years) survival groups. Both actuarial and actual 5-year survival, as well as actuarial 10-year survival for those that survived over 5 years, were determined.

Results: There were 109 (21.8%) long-term survivors. Most (76%) of the long-term survivors were those with ampullary adenocarcinoma. Long-term survival was highest for ampullary adenocarcinoma (32.8%) and lowest for pancreatic adenocarcinoma (6.5%). Jaundice, tumor size, and lymph node involvement were found to be independent predictors for long-term survival. Prognosis was significantly worse for pancreatic adenocarcinoma, which had an actuarial 5-year survival of only 6.7%. There was no difference in subsequent actuarial 5-year survival (actuarial 10-year survival) between pancreatic adenocarcinoma and other periampullary adenocarcinomas for patients surviving over 5 years after resection. However, there was a difference in actuarial and actual 5-year survivals.

Conclusions: Jaundice, tumor size, and lymph node involvement are independent predictors for long-term survival after pancreaticoduodenectomy. The biological factors of pancreatic adenocarcinoma no longer play a role in determining the prognosis for those who survive to the 5 year landmark.

Resection for Secondary Malignancy of the Pancreas

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Introduction: This study tried to clarify the role of pancreatic resection in treatment of secondary malignancy with metastasis or local invasion to pancreas in terms of surgical risk and survival benefit.

Methods: Data of secondary malignancy of the pancreas from our 19 patients and cases reported in the English literature were pooled together for analysis.

Results: There were 329 cases of resected secondary malignancy of the pancreas, including 241 metastasis and 88 local invasion. The most common primary tumor metastatic to the pancreas and amenable to resection was RCC (73.9%). More than half (52.3%) of the primary cancers with local invasion to the pancreas were colon cancer, and nearly half (40.9%) were stomach cancer. The median metastatic interval was 84 months (7 years) for overall primary tumors and 108 months (9 years) for RCC. The 5-year survival for secondary malignancy of the pancreas after resection was 61.1% for metastasis and 58.9% for local invasion, with 72.8% for RCC metastasis, 69.0% for colon cancer, and 43.8% for stomach cancer with local invasion to the pancreas.

Conclusions: Pancreatic resection should not be precluded for secondary malignancy of the pancreas since long-term survival could be achieved with acceptable surgical risk in selected patients.

Pancreatic resection versus bypass surgery for ductal adenocarcinoma in elderly patients: Short and long-term outcomes, is there difference?

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The proportion of elderly patients is growing rapidly. Knowing the results of pancreatic surgery in group of elderly patients would help surgeons to make therapeutic decision. In attempt to determine whether pancreatic resection is justified in elderly patients, this retrospective study compares postoperative and long-term outcomes of pancreatic surgery in elderly patients. Study including 90 patients older than 65 years undergoing surgery for pancreatic ductal adenocarcinoma during the period 2009-2015 in our institution. All patients had potentially resectable tumor based on abdomen CT scan. Patients were divided in two groups. G1: 42 patients with pancreatoduodenectomy and G2: 48 patients with palliative bypass surgery, due to their comorbidities or negative informed consent with radical

procedure. Patients in G1 had higher perioperative morbidity and post-operative length of hospital stay than patients in G2. On the other side G1 patients had higher perioperative mortality. Median survival in G1 was 18 months, in G2 10 months. In G1 there was used standardized pathology protocol to determine resection margin involvement. R1 is defined as a distance of the tumor from the resection margin of 1 mm. More than 50% patients had R1 according this protocol. The question remains if in some cases of elderly patients is really necessary to perform extensive surgery with high perioperative morbidity and uncertain possibility to obtain R0 resection however with higher survival rate. The second question is if these patients have better quality of life.

Comparison for hepatoprotective effect from ischemia-reperfusion injury of remote ischemic preconditioning of the liver vs. local ischemic preconditioning of the liver during human liver resections

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Prophylactic Pancreatectomies Carry Prohibitive Mortality at Low-Volume Centers

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Background: Pancreatectomy for malignancy is associated with improved outcomes when performed at high volume centers. The goal of this study was to assess pancreatectomy outcomes for premalignant cystic lesions as a function of hospital volume.

Methods: The Healthcare Cost and Utilization Project (HCUP) was queried for all pancreatectomies performed in California from 2003 to 2011. Cases were stratified, separating benign versus malignant disease. Hospitals were categorized as low (<25 pancreatectomies/year; LV) or high (>25; HV) volume centers. Perioperative morbidity, mortality, and length of stay were compared in HV vs. LV centers.

Results: There were 7,554 pancreatectomies performed in 201 hospitals during the study period, where 5,652 (75%) procedures were performed for malignancy, 338 (4%) for chronic pancreatitis and 1,564 (21%) for benign/premalignant cysts. The majority of pancreatectomies for cystic disease were performed at LV centers (65%). There were no significant differences in length of stay (7 vs. 8 days; $p=0.6$), or 90-day readmission rates (12.8% vs. 12.9%; $p=1.0$) in HV versus LV centers. However, there were higher surgical (46.2% LV vs.

41.1% HV, $p=0.05$) and medical (13.3% LV vs. 9.2% HV; $p=0.017$) complications at LV centers. Most importantly, there was a four-fold higher in-hospital mortality at LV centers (2.36% vs. 0.55%; $p = 0.007$).

Conclusion: Pancreatic resection for benign lesions at HV hospitals is associated with significantly lower morbidity and mortality, suggesting that when feasible, patients should seek care at high volume centers for these semi-elective surgeries.

A Novel Prediction Tool Identifies Patients at High Risk for Readmission after Hepatic Resection

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Background: In order to cut healthcare costs there is an ongoing effort to reduce readmissions after complex operations. The predictors of readmission after hepatectomy need to be better defined.

Methods: This is an observational study of a prospectively maintained institutional database. All patients undergoing liver resection with or without ablation from Jan 2009- Jun 2015 were included. A major hepatectomy was defined as resection of 3 or more segments. Complications are graded on the Clavien-Dindo Classification Scheme and scored using the Comprehensive Complication Index (CCI). Multivariate analysis is performed using logistic regression. Receiver-operating curve (ROC) characteristics were analyzed to optimize the Readmission Risk Index (RRI).

Results: Of the 258 patients that met the inclusion criteria, 26 (10%) were readmitted within 30 days of discharge after hepatectomy. The most common complication at the time of readmission was intra-abdominal infection (10, 28%). On stepwise multivariate logistic regression age >68 years (OR 3.76; 95% CI 1.47-9.63, $p=0.006$), CCI >15 (OR 3.65; 95% CI 1.39-9.56, $p=0.008$), maximum temperature within 48h of discharge (OR 3.02; 95% CI 1.17-7.75, $p=0.022$) and white blood cell count >10.2 billion cells/L within 48hours of discharge (OR 2.88; 95% CI 1.04-8, $p=0.043$) were independent predictors of 30-day readmission. These variables were used to develop the RRI (ROC area 0.80; 95% CI 0.70-0.9, $p<0.0001$). The RRI cut-off of 43.6 (Scale 0-100) accurately identified 27.5% of patients at highest risk of readmission.

Conclusion: We have developed a unique predictive tool that identifies patients at high risk of readmission within 30-days of discharge from hepatectomy. Readmission risk reduction efforts should focus on this subset of patients

Tumor response assessment after yttrium-90 radioembolization for colorectal liver metastases: Types of and time to progression

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Introduction: Intra-arterial hepatic radioembolization with radioactive microspheres is proven to be a safe and effective therapy for patients with unresectable colorectal liver metastases (CRLM). However, disease progression is a problem in patients with CRLM after treatment with resin microspheres 90Y-radioembolization (90Y-RE). The purpose of this study was to assess response patterns and the potential need for (neo)adjuvant therapy in combination with resin microspheres 90Y-radioembolization.

Methods: 38 Patients with unresectable chemorefractory CRLM were treated with resin 90Y-microspheres in a prospective phase II clinical trial. Response assessment was made based on RECIST criteria and metabolic tumor activity, defined as tumor lesion glycolysis (TLG*) on 18F-FDG-PET. Both were measured at baseline, 1 month (1m FU) and 3 months (3m FU) posttreatment. Progression profiles were analyzed at 1m FU and 3m FU. The relationship between RECIST and metabolic activity was assessed per patient using a one-way analysis of variance with post hoc analysis.

Results: Fourteen patients (37%) showed progression at 1m FU, and 4/21 (20%) patients at 3m FU. Progressive disease can be due to new intrahepatic lesions, new extrahepatic lesions or progression of known lesions. New intrahepatic lesions were, with 10 (71%) progressive patients at 1m FU and 3 (75%) at 3m FU, the main reason for post-RE disease progression. Interestingly, in 75% of the progressive patients, target lesions showed stable disease or response at 1m FU, both for RECIST and metabolic activity.

Conclusion: Main reason for disease progression in patients with CRLM after 90Y-RE is new intrahepatic lesions. In some cases disease progression can already be seen at 1m FU, which makes early adjuvant therapy possible. In these unresectable chemorefractive CRLM patients the biology underlying tumor progression post-RE needs to be clarified in order to design novel anti-tumoural strategies and/or targets.

Robot-assisted laparoscopy

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Introduction Robot-assisted laparoscopy has been introduced to overcome the limitations of conventional laparoscopy. This technique has potential advantages over laparoscopy, such as increased dexterity, 3-dimensional view and a magnified view of the operative field. Therefore, improved dexterity may make a robotic system particularly suited for liver resections, which require non-linear manipulation, such as curved parenchymal transection, hilar dissection and resection of posterosuperior segments.

Methods Between August 2014 and May 2016, 18 patients underwent robot-assisted laparoscopic liver resection at our institution for malignant and benign hepatic lesions.

Results 17 robot-assisted laparoscopic liver resections were performed in a minimally invasive manner. 1 procedure was converted. 8 patients underwent a resection of an anterior segment (2, 3, 4B, 5, 6). In 9 patients we performed a resection of a posterosuperior segment (segment 7 or 8). Median operating time was 137 (60-265) minutes and median blood loss was 150 (5-600) mL. 7 patients had a complication, from which 4 patients suffered from a Clavien-Dindo grade III complication. We observed no grade IV or V complications. Median length of stay was 4 (1-8) days. There was no mortality.

Conclusion: This prospective study reporting on our initial experience with robot-assisted laparoscopic liver resection demonstrates that this technique is easily adopted, safe and feasible for minor hepatectomies in selected patients. Moreover, it shows that the robotic platform also enables fully laparoscopic resections of the posterosuperior segments.

Correlation between NO-system and esophagogastric anastomosis in rats

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Aim: Esophagogastric anastomosis in human surgery is part of the surgical treatment of esophageal cancer. Anastomotic leak is responsible for third of all perioperative deaths. We suggest an enhanced healing of esophagogastric anastomosis, NO-system dependent, with stable gastric pentadecapeptide BPC 157 which improved healing of various intestinal anastomosis and which was proposed as a therapy in ulcerative colitis (Curr Med Chem 2012;19(1):126-32; Curr Pharm Des 2011;17(16):1612-32). Also, BPC 157 largely interacts with NO-system (Curr Pharm Des 2014; 20(7):1126-35).

Methods: Throughout 4 days after esophagogastric anastomosis creation, rats received medication (/kg ip once daily: BPC 157 (10 μ g, 10ng), L-NAME (5mg), L-arginine (100mg) alone and/or combined). Daily assessment includes damage in stomach (sum of longest diameters, mm), esophagus (esophagitis, scored 0—5), anastomosis (ml H₂O before leak), pressure in pyloric sphincter and in esophagus at anastomosis (cmH₂O), weight loss (g). The values of 68 – 76 cm H₂O for lower esophageal sphincter, and 68 – 74 cm H₂O for pyloric sphincter, were considered to be normal as determined before.

Results: Esophagogastric anastomosis in controls. As seen at the day 4, we noted progressing stomach damage (8.6 \pm 0.3), severe esophagitis (3/4/5), rapid anastomosis leak (6.5 \pm 1.3), decrease of pressure, severe in pyloric sphincter (27.2 \pm 1.3) as well as less pressure assessed in esophagus at anastomosis (50 \pm 1.3) alongside with prominent weight loss (47.5 \pm 2.8).

BPC 157. By contrast, BPC 157 rats treated with 10 μ g have almost no gastric lesions (0.2 \pm 0.1) or esophagitis (0/0/1); anastomosis sustains maximal water volume without leakage (20 \pm 1.0); higher pressure in pyloric sphincter (57.2 \pm 1.6), values in esophagus at anastomosis close to normal values in lower esophageal sphincter, alongside with markedly less weight loss (30.5 \pm 1.9)(Means \pm SD, Min/Med/Max, P<0.05, at least vs. control). Rats treated with BPC 157 smaller regimen (10ng daily dose) exhibited similar therapeutic effect.

L-arginine. We noted a beneficial effect comparable to that of BPC 157 regimens.

L-NAME. By contrast to BPC 157 and L-arginine beneficial effects, L-NAME rats exhibited all parameters of esophagogastric anastomosis course markedly aggravated.

Combinations. L-NAME+L-arginine-rats presented control values; L-arginine+BPC 157-rats presented a beneficial effect but no augmentation of the previous separate effects; L-NAME+BPC 157: BPC 157 completely counteracted L-NAME effects, and maintained its original beneficial effect. L-NAME+L-arginine+BPC 157: BPC 157 presented its original beneficial effect.

Conclusion: Failed esophagogastric anastomosis healing appears as a NO-system disturbance, and BPC 157 in interaction with the NO-system markedly improves the healing of the esophagogastric anastomosis.

Laparoscopic Pancreaticoduodenectomy For Extrahepatic Cholangiocarcinoma: How I do it

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Herein, I present my experience of laparoscopic pancreaticoduodenectomy. A 59-year-old woman consulted to our department for treatment of extrahepatic cholangiocarcinoma, detected on evaluation for jaundice. An abdominal CT scan and MRCP demonstrated thickened mid-CBD with one enlarged lymph node behind the pancreas head. Under an

impression of extrahepatic cholangiocarcinoma, a laparoscopic pylorus resecting pancreaticoduodenectomy was performed. After omentectomy, right gastroepiploic vein and artery was ligated and divided. The pyloric ring was identified and the distal stomach was divided just above the pyloric ring, using endo linear stapler. Pancreatic neck was dissected and tunneling was achieved. And then, pancreas neck was transected. After that, the common hepatic artery and gastroduodenal artery could be found easily. The gastroduodenal artery was divided, and the lymph nodes around CHA was dissected. Dissection of hepatooduodenal ligament was performed, and common hepatic duct was identified and cut. Dissection was proceeded along portal vein and SMV. Proximal jejunum was divided and the Treitz ligament was dissected. And then, the SMA margin of pancreas was divided from SMA. After removal of specimen, a pancreaticojejunostomy and a hepatojejunostomy was performed with interrupted suture, intracorporeally. The gastrojejunostomy was performed extracorporeally via extended umbilical port site incision. Pathologic examination revealed T2 adenocarcinoma of extrahepatic CBD. The number of harvested LNs was 16. There was one LN metastasis. After 14 days from the operation, the patient discharged without any event. In conclusion, laparoscopic pancreaticoduodenectomy could be performed safely.

Hepatic parenchymal resection with torsional ultrasonic scalpel in laparoscopic hepatectomy

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Laparoscopic liver resection is widely performed. Many surgeons are familiar to Cavitron ultrasonic surgical aspirator (CUSA). However, sometimes, it is difficult to control in laparoscopic surgery. It is sometimes short, and range and direction of movement is restricted in laparoscopic surgery. Ultrasonic scalpel can be used for parenchymal resection in laparoscopic hepatectomy instead of CUSA. It is very effective to dissect the vascular structures in liver and to coagulate and resect small vessels. Herein, I show my technique of liver resection with torsional ultrasonic scalpel (Lotus, South Devon, UK) without CUSA.

Acute necrotising pancreatitis, duodenal fistula and jejunal feeding: a case report

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Modern acute necrotising pancreatitis (ANP) management is done conservatively as long as possible and therapeutic approaches aim at volume resuscitation, pain management and early enteral nutrition (EN). CT scan with contrast helps to evaluate the extent of necrosis of the pancreas which correlates with the risk of tissue infection. In case of infected necrosis with antimicrobial treatment, an interventional or surgical approach is required to prevent systemic

septic progression of the disease. Minimally invasive necrosectomy and drainage with postoperatively lavage using the drains.

Establishing a safe and a reliable pathway of EN is of great importance ANP management. There are many techniques for placing feeding tube, such as blind placement at bedside, assisting by fluoroscopy and endoscopy, surgical.

We present a recent case of infected pancreatic/peripancreatic necrosis complicated by a duodenal enteric fistula on whom we establish the feeding pathway. Then, when we doing laparotomy for necrosectomy, a jejunal feeding tube was placed percutaneously, Also, we placement drains retroperitonealy and cavum Douglasi.

With the implementation of EN, duodenal fistula healed without surgical intervention. As EN is pivotal for the recovery of duodenal fistula, this novel approach could be beneficial in selected patients.

Intraoperative use of confocal laser microscopy in the diagnosis of pancreatic tumors

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In the years 2015-2016 we introduced peroperative use of confocal laser microscope in surgery for tumors of pancreas or bile duct. We investigated tissue of pancreas and bile duct during the surgical procedures with the probe of confocal laser microscope and we recorded video sequences and pictures from investigated tissue. These records were than compared to definitive histopathology of the specimen.

The goal of this microscopic examination was the attempt to describe typical signs of healthy, inflammatory changed and tumorous tissue. On this poster we present our first experiences with the confocal laser microscope in surgery of pancreas on a sample of the first 20 patients.

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Laparoscopic hepatic surgery

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Despite the existing evidence that laparoscopic hepatic surgery is safe, easy and it shows similar results on survival, less than 15% of liver resections are performed using this method. Nowadays, the lesions located in the anterior-lateral segments and left-sided sectionectomy should be systematically carried out by laparoscopy in benchmark centers. However, technical requirements, an adequate instrumental provision and extensive knowledge in liver and laparoscopic surgery make this difficult.

OBJECTIVE: To analyze the evolution of laparoscopic liver resections (LLR) over the last 10 years (2004-2015) in a benchmark Hepatobiliopancreatic Surgery Unit.

MATERIAL AND METHOD: We introduce a retrospective cohort study. 101 RHL were performed during two periods: 1st Period (1st P) from 2004 to 2009 which includes 43 RHL, and 2nd Period (2nd P) from 2010 to 2015 which includes 58 RHL. The following analysis were performed: demographic variables, surgical indication, size and number of the lesion, liver location, type of resection, number of trocars, operative time, need for transfusion and / or conversion, use of drains, histology, morbidity and mortality rate and postoperative hospital stay.

RESULTS: We found a 35% increase in LLR performed during the 2nd P. The average age of patients increased during this period (1st P:55 vs 2nd P 61, $p = 0.06$). ASA III-IV reached 53% in 2nd P. Likewise, we found a greater indication of malignant pathology (1st P 35% vs 2nd P: 65; $p = 0.03$), based mainly in liver metastases (1st P: 18% vs 2nd P: 41%, $p = 0.03$) and CHC (1st P: 14% vs 2nd P: 24%, $p = 0.03$). RHL were mainly minor liver resections but the number of nodules per surgery increased (1st P: 21% vs 2nd P: 36%). The only major resections were performed in the second period. Operative time was higher in 2nd P (1st P: 177 vs 2nd P: 211, $p = 0.08$). The need for transfusion was lower in the 2nd P, but the difference was not significant (1st P: 11% vs 2nd P: 7%). We did not find differences in conversions (1st P: 16% vs 2nd P: 14%) performed by bleeding or technical difficulties. Overall we found no differences in complications (1st P: 18% vs 2nd P:14%). However, \geq Clavien III decreased during the 2nd P (1st P: 7% vs 2nd P: 3.4%). No mortality found in the series. The average stay decreased during the 2nd P from 4.5 to 3.5 days.

DISCUSSION: Based on the data we can say that the laparoscopic method is becoming more used in our unit. Indications and types of resections have been extended without an increase in complications. Furthermore, we get all the advantages associated to the laparoscopic method.

Intra-incisional vs. intraperitoneal infiltration of local anaesthetic for controlling early post-laparoscopic cholecystectomy pain

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The study was designed to compare the effect of intra-incisional vs intraperitoneal infiltration of levobupivacaine 0.25% on postoperative pain in laparoscopic cholecystectomy. **MATERIALS AND METHODS:** This randomised controlled study was carried out on 189 patients who underwent laparoscopic cholecystectomy. Group 1 was the control group and did not receive either intraperitoneal or intra-incisional levobupivacaine. Group 2 was assigned to receive local infiltration (intra-incisional) of 20 ml solution of levobupivacaine 0.25%, while Group 3 received 20 ml solution of levobupivacaine 0.25% intraperitoneally. Postoperative pain was recorded for 24 hours postoperatively. **RESULTS:** Postoperative abdominal pain was significantly lower with intra-incisional infiltration of levobupivacaine 0.25% in group 2. This difference was reported from 30 minutes till 24 hours postoperatively. Right shoulder pain showed significantly lower incidence in group 2 and group 3 compared to control group. Although statistically insignificant, shoulder pain was less in group 3 than group 2. **CONCLUSION:** Intra-incisional infiltration of levobupivacaine is more effective than intraperitoneal route in controlling postoperative abdominal pain. It decreases the need for rescue analgesia.

Risk factors of hypercoagulable status

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Objective To explore the risk factors of hypercoagulable status in patients undertook laparoscopic cholecystectomy(LC). **Methods** 52 patients underwent LC were enrolled in Beijing Shijitan Hospital, Capital Medical University between November 2013 to January 2015. The LC procedures were performed by the same doctor under general anesthesia. The patients were divided into hypercoagulable group and non-hypercoagulable group (26 patients in each group). The clinic data including the demographic characteristics, past medical history, preoperative biochemical indicators and intraoperative conditions of two groups were compared and analyzed using Single factor analysis and multivariate Logistic regression. **Results** All patients undertook LC surgery successfully. There were no significant difference in the demographic characteristics in two groups($P>0.05$) The proportion of hyperlipidemia, the level of total cholesterol and low-density lipoprotein cholesterol (LDL-C) were

significantly higher and the level of high-density lipoprotein cholesterol (HDL-C) was significantly lower in hypercoagulable group compared to those in non-hypercoagulable group ($P < 0.05$). Single-factor logistic retrospective analysis showed that the age ≥ 57 years, preoperative systolic blood pressure ≥ 127 mmHg, history of hyperlipidemia, preoperative HDL-C ≤ 1.25 mmol/L and preoperative LDL-C ≥ 2.84 mmol/L were correlated with postoperative hypercoagulable status ($P > 0.05$). Multivariate Logistic regression analysis showed that preoperative systolic blood pressure ≥ 127 mmHg, history of hyperlipemia and preoperative LDL-C ≥ 2.84 mmol/L were the independent risk factors of postoperative hypercoagulable status ($P > 0.05$). Conclusion This study shows that preoperative systolic blood pressure, history of hyperlipemia and the LDL-C level are independent risk factors of hypercoagulable status in patients who undertook LC and we should pay more attention to these factors.

Quality standards in pancreatic surgery

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INTRODUCTION: Unlike breast surgery or colorectal cancer, pancreatic surgery had no clear quality standards (EC). Recent publications show limits of acceptable quality with confidence intervals at 99% -95% compared to results as: resectability, mortality, morbidity, pancreatic fistula, number of resected lymph nodes, positive margins and survival. EC are the parameters used to measure the quality of medical care and provide information on aspects of improvement in clinical practice.

OBJECTIVES: To audit if our results in pancreaticoduodenectomy (DPC) meet quality standards.

MATERIAL AND METHOD: We conducted a retrospective study including 146 DPC conducted from May 2009 to December 2015. We use the EC published by the group of the Clinical Hospital of Valencia (Fig. N1). In our series, the definition of pancreatic fistula was described by the ISGPF. Complications were measured according to the Clavien-Dindo classification

	99.8%	95%
Acceptable Quality Limit		
	Confidence Interval	Confidence Interval

Resectability >59%	59% - 92%	65% - 88%
Morbidity < 55%	35% - 55%	38% - 51%
Fistula < 16%	4% - 16%	6% - 14%
Mortality < 5%	0% - 5%	0% - 4%
Lymphadenectomy (mean) >15	15 - 23	17 - 21
R1 Resection < 46%	26% - 46%	29% - 42%
1-year Survival >54%	54% - 73%	57% - 69%
3-year Survival >19%	19% - 37%	22% - 34%
5- year Survival >8%	8% - 23%	11% - 21%

RESULTS: We obtained 76% of resectability. Global complications: 54.5%, only referred to the Clavien grade> III had 34%. The mortality of the series were 6 patients which is 4.8%. The presence of pancreatic fistula was overall 14.5%, but focusing only in B and C groups FIQA was 9.6%. The anumber of linfo nodes resected was 11 (r = 0 - 25) and the presence of positive margins was 28%. In 34% of cases a venous resection, of which 50% were positive was performed. Survival at 1, 3 and 5 years was 55%, 39% and 28%

CONCLUSIONS: After the data we can say that our unit, meets EC in pancreaticoduodenectomy surgery. Knowledge of and compliance with them can help us find areas for improvement and achieve greater excellence in our results.

Extra abdominal complications of pancreatitis

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Extra-abdominal complications of pancreatitis such as pancreatico-pleural fistulae are rare. A pancreatico-pleural fistula occurs when inflammation of the pancreas and pancreatic ductal disruption lead to leakage of secretions through a fistulous tract into the thorax. The underlying aetiology in the majority of cases is alcohol-induced chronic pancreatitis. The diagnosis is often delayed given that the majority of patients present with pulmonary symptoms and frequently have large, persistent pleural effusions. The diagnosis is confirmed through imaging and the detection of significantly elevated amylase levels in the pleural exudate. Treatment options include somatostatin analogues, thoracocentesis, endoscopic retrograde cholangio-pancreatography (ERCP) with pancreatic duct stenting and surgery. The authors present a case of pancreatic pseudo-cyst pleural fistula in a woman with gallstone pancreatitis presenting with recurrent pneumonias and bilateral pleural effusions.

Early recurrence after resection of CRC liver metastases

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Introduction: Liver resection is the only curative treatment of colorectal liver metastases. Unfortunately in most cases, despite an R0 resection of the tumor, recurrence in the liver occurs, mostly within the first 2 years after liver surgery. Early recurrence appears in the first 6 months after surgery.

Patients and methods: clinical data from patients with colorectal liver metastases after liver resection were analyzed. Inclusion criteria were: first liver resection, no 90 days mortality, at least 6 months follow up period.

Results: 192 patients were enrolled in this study. During a median follow up period of 25 months, 114 patients had recurrence (60%) and 27 had early recurrence (14%). In the early recurrence group primary tumor was stage I-II in 5 cases (20%), stage III in 8 cases (30%) and stage IV in 14 cases (50%). 11/27 (40%) of the early recurrence cases had solitary metastasis, 20/27 (74%) received preoperative chemotherapy. 6/27 (22%) patients had R1 resection. In the study, we try to identify factors predicting and influencing early recurrence.

Conclusion: Despite of resection of colorectal liver metastases, early recurrence is observed in about 10-15 % of the cases. There are many factors associated with early recurrence, but the selection of patients before resection who will have early recurrence is not clear. Repeat resection of early recurrence is an option with good results.

Use of natural user interfaces during laparoscopic hepatic resection

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Objective: In this study, we aim to test the feasibility of using a set of gesture control sensors combined with voice control to interact in a sterile way with preoperative information and an integrated operating room (OR) during laparoscopic hepatic resection.

Material and methods: Two hepatectomies were performed by three experienced surgeons (> 100 laparoscopic procedures) on an experimental porcine model. A pseudotumor made of alginate and saline was created for both hepatectomies and percutaneously injected in the superficial layer of left lobe of the liver. The location and extent of the pseudotumor as well as the identification of the hepatic vascular anatomy were carried out by contrast-enhancement CT. A 3D vision system (Image1 Spies 3D, Karl Storz) was used for laparoscopic visualization. During the course of the intervention surgeons interacted with the preoperative studies as well as settings of the integrated OR (OR1, Karl Storz) using a set of natural user interfaces (NUI): Kinect, Leap Motion, and MYO armband in combination with voice control. A set of gestures were defined for each sensor as well as voice commands through the TEDCUBE system (TedCas Medical Systems). After the intervention, surgeons completed a questionnaire about their experience with the system.

Results: Results confirmed the feasibility of using the three analyzed NUIs to interact in a sterile way with the integrated OR's functionalities as well as the preoperative imaging and 3D model of the patient during laparoscopic hepatectomies. This information was used to plan the tumor resection and guide the intervention. Surgeons did not need more than 10min training with each gesture sensor to learn how to use it. The pseudotumor creation and the subsequent performance of the hepatectomies were successfully completed without complications. Surgeons stated that NUIs improved the access of preoperative patient information in a sterile way and kept them more focused on the surgical site. They considered the Kinect as the most comfortable sensor and the MYO armband in combination with voice control commands the most intuitive and accurate NUI. Surgeons reported they may need 5-10 surgical procedures to become fluent using this technology. The main limitation reported was the requirement to release one of the laparoscopic instruments to use the NUIs.

Conclusions: The presented natural user interfaces allow surgeons to directly interact in a more intuitive and sterile manner with preoperative patient information, and control an integrated OR during hepatic surgery. The combination between MYO system and voice commands provided the most intuitive and accurate NUI, without making surgeons to leave the surgical place. Future studies will be necessary to validate the system with a greater number of participants as well as to increase the functionalities of the system for the interaction with the preoperative information.

Intraoperative fluorescence imaging to identify the biliary and pancreatic anatomy during pancreatic resection on a tumor animal model

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Aims: The goal of this study is to prove the feasibility of developing a pancreatic tumor animal model and to determine the usefulness of intraoperative fluorescence imaging to identify the biliary and pancreatic anatomy during laparoscopic pancreaticoduodenectomy and single-site distal pancreatectomy.

Methods: An artificial pancreatic tumor was created on the head and tail of the pancreas on two experimental porcine models, respectively. The tumors were created with a mixture of alginate and saline and percutaneously injected. Laparoscopic pancreaticoduodenectomy was performed for the tumor on the head of the pancreas and single-site distal pancreatectomy for the tumor on the tail. Indocyanine green (ICG) was used for fluorescence image enhancement. Two doses with different concentrations were intravenously injected 15 min prior to the intervention: a dose of 0.5 mg/kg and 5 mg/ml of concentration during the laparoscopic pancreaticoduodenectomy and a dose of 0.5 mg/kg and 2.5 mg/ml of concentration during the distal pancreatectomy. Image1 SPIES(TM) was used as imaging system. The patency of the hepaticojejunostomy was assessed by means of ICG excretion and fluoroscopic imaging. For fluoroscopy assessment, contrast agent was injected through the common bile duct.

Results: Both artificial pancreatic tumors were successfully developed and visible in CT imaging. All procedures were completed without complications. The dose of ICG with higher concentration allowed for a clearer fluorescence visualization of the cystic artery, cystic duct and pancreaticoduodenal artery. This provided crucial information for guidance during the resection task in both laparoscopic procedures. Patency test of the hepaticojejunostomy was clearer using fluoroscopic imaging.

Conclusions: The creation of artificial pancreatic tumors on the head and tail of the pancreas was feasible. Dose with higher concentration of ICG improved the fluorescence visualization of both biliary and pancreatic anatomy during pancreatic resection. This imaging technique could be beneficial during pancreatic surgery in cases where the surgical anatomy is difficult to identify. The next step should be the development of a multimodal pancreatic tumor, visible in ultrasound (US), CT and MRI, for image-guided pancreatic surgical applications.

Liver-first approach for synchronous CRC liver metastases. Own first experiences.

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Introduction: Two-thirds of patients with colorectal tumors develop distant metastases. Most of these appear in the liver. The curative treatment of CRC liver metastases is surgical resection. According to the traditional principle the primary tumor should be resected first. However, in 2006 Mentha suggested that this order can be reversed. Method: In our presentation we review and analyze the literature related to liver-first approach. We retrospectively analyze our patient's data between 01.01.2014-31.12.2015 who underwent liver resection because of metastatic CRC, especially those who were treated with first-liver approach. Patients and results: In the Department of Surgery and Surgical Oncology of Uzsoki Teaching Hospital 125 patients underwent liver resection during the observation period. Amongst them 80 patients were operated due to colorectal cancer liver metastases. 7 patients were treated according to the liver-first approach. Six of the seven patients were carried through the treatment plan, one patient developed progression after the liver surgery, he died before the planned bowel resection. The remaining 6 patients are alive, five of them are tumor free. Discussion: The liver-first approach is feasible and safe treatment option for patients with colorectal cancer with synchronous liver metastases. Further studies are required to identify those patients who benefit from this approach.

Redox factor-1 may mediate the repair of multiple organ injuries after liver transplantation

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Objective Apurinic apyrimidinic endonuclease/redox effector factor 1 (APE1/Ref-1) is an important enzyme in the repair of reactive oxygen species-induced DNA damage, and its expression/activation can be induced by reactive oxygen species. The aim of this research was to investigate the relationship between multiple-organ injuries and expression of Ref-1 in the early period after liver transplantation. Methods One hundred and fifty adult male Wistar rats were divided randomly into three groups: liver transplantation, sham surgery, and untreated control. After liver transplantation, animals were sacrificed at different time points. Hepatic and renal functions were analyzed by serology. Histology, apoptotic levels, and Ref-1 expression were examined by immunohistochemistry in the liver, kidneys, intestines, and lungs. Results Serum levels of alanine aminotransferase and aspartate aminotransferase peaked 6 hours after liver transplantation and decreased appreciably after 12 hours in the transplantation group ($P < 0.05$), suggesting that the degree of liver injury in the early period after transplantation peaked at 6 hours and then decreased. Pathological analyses showed that hepatic tissues were more severely injured in the transplantation group than in the sham and

untreated groups. A considerable number of infiltrating inflammatory cells was observed around the portal vein in the transplantation group. Injuries to the kidneys, intestines, and lungs were milder after liver transplantation. Apoptotic levels increased after liver transplantation in all four organs examined. Ref-1 expression was higher in the transplantation group in the early period after liver transplantation than in the sham surgery and untreated control groups. Conclusion Ref-1 expression induced by ischemia-reperfusion injury may have a critical role in repairing multiple-organ injuries after liver transplantation.

Tamoxifen safety in biliary surgery

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BACKGROUND: Cholecystectomy is one of the most commonly performed general surgery procedures worldwide. When the bile duct has lost continuity after injury from cholecystectomy or other biliary operations, surgical reconstruction is the best feasible treatment option. These injuries are important in terms of health care costs and are among the leading causes of negligence claims against surgeons. Breast cancer is the most common cancer in women in the Western world. Tamoxifen is a synthetic nonsteroidal antiestrogen agent used in the treatment of breast cancer that exhibits antifibrotic properties.

AIM: The aim of this study was to evaluate the effect of oral tamoxifen treatment on the collagen in the healing process after experimental bile duct anastomosis.

METHODS: Male pigs (*Sus scrofa domesticus*) of the Large White breed (n=26) were divided into three groups (Tamoxifen – 40 mg/day -, control and sham group). Complete transection and anastomosis of the common bile ducts were performed in the first two groups. In the Sham group there was only dissection, but no procedure was made to the biliary tract itself. The animals were sacrificed after 60 days and the tissue of the anastomotic area was harvested for analysis. Picrosirius red and Masson's Trichromic histochemical technique were used for quantitative and qualitative analysis of collagen fibers and quantitative analysis of connective tissue, respectively. We used the point-counting method (Image J 1.37, National Institutes of Health, USA) to analyze the surface density of collagen and connective tissue on common bile duct. The qualitative analysis was performed by double-blind study through polarized light on slides stained with Picrosirius Red. On operative and sacrifice days, the animals were weighed and the common bile duct diameters were measured to assess their variations. All statistical analyzes were performed by t-test.

RESULTS: The morphometric analysis showed that collagen surface density values increased 137% in the control group compared to the sham group (p=0.0034). The Tamoxifen group increased 130% of collagen on common bile duct wall in comparison to Sham group

($p=0.0157$) and showed no difference when compared to the Control group ($p=0.5779$). The connective tissue analyzes presented no alterations. The qualitative analysis showed higher amount of thinner collagen fibers in Sham and Tamoxifen groups. The Control group presented higher amount of thick collagen fibers. There was no statistical difference in variation of weight and common bile duct diameter between groups ($p>0.05$).

CONCLUSION: In Control group the predominance of thick collagen fibers suggests tissue fibrosis. The Tamoxifen promoted a turnover in collagen fibers, however it was not efficient to decrease collagen in the Tamoxifen group. Most likely, collagen fibers are not the only one altered in the connective tissue as we could not identify any alterations on Masson's Trichromics technique, which lead us to suppose that other components of this tissue might be altered. These data suggest that Tamoxifen is safe to be used in patients who needs a biliary tract anastomosis.

Rarely occurring pancreatic tumors in our Department

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Introduction: 85% of the pancreatic tumors are ductal adenocarcinoma (PDAC) while 15% is other types such as IPMN, cystic lesions, neuroendocrine tumor and metastatic malignancy. The use of biopsy for preoperative identification in resectable disease is not recommended. Malignancies require surgical intervention but - based on the guidelines - surveillance is adequate in some cases.

Patients/Method: Between May 2011 and March 2016 150 curative operation were performed for pancreatic tumors by the Department of Surgery and Surgical Oncology at Uzsoki Teaching Hospital. These patients were evaluated in aspect of rarely occurring pancreatic tumors. Based on the pathological examination 36 patients were found with following types: 10 NET, 9 cystadenoma serosum, 4 IPMN, 4 metastatic hypernephroma, 3 mucinous cystadenoma, 1 PanIN, 1 Non-Hodgkin lymphoma, 1 metastatic synovial sarcoma, 1 metastatic NET from coecum, 1 solid psudopapillar neoplasm and 1 peripancreatic ganglioneuroma. Complications and survival were assessed for both open and laparoscopic approaches.

Result: 7 laparoscopic and 29 open operation were performed. The laparoscopic interventions were distal resections while open ones were PPPD-s, Whipple-s, distal or segmental resections and total pancreatectomy. Correlation between the preoperativ and histological diagnosis was 78%. In the perioperative period one patient passed away due to small intestinal necrosis. Major complication was found in 9 cases. Mortality during long-term follow up was 4 caused by the existing malignant disease.

Conclusion: At certain types of rarely occurring pancreatic tumors close observation is sufficient. The enormous and complicated or those with malignant potential require surgical

intervention. Endoscopic Ultrasonography (EUS) could be helpful in both imaging and biopsy. In high volume centers the pancreatic operations are performed with acceptable mortality and morbidity rates. Laparoscopic approach provides further benefits for the patient.

Management of Mirizzi Syndrome in Emergency.

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Introduction: Mirizzi Syndrome (MS) is a rare complication of cholelithiasis. In spite of the success of laparoscopic cholecystectomy as a minimally invasive approach to gallstone disease, MS remains a challenge, also for open and robotic approaches, due to the subverted anatomy of the hepatocystic triangle. Moreover, when emergency surgery is needed, the optimal preoperative diagnostic assessment could not be always achievable. We aim to analyze our experience of MS treated in emergency and to assess the feasibility of a diagnostic and therapeutic decisional algorithm.

Methods: From March 2006 to February 2016, all patients with a preoperative diagnosis, or an intraoperative evidence of MS, were retrospectively analyzed at our Academic Hospital, including patients operated on in emergency or in deferred urgency. 18 patients were included in the study using as exclusion criteria patients treated in elective surgery.

Results: The patients were distributed according to modified Csendes' classification: type I in 15 cases, type II in 2, type III in 0, type IV in 1, type V in 0. In type I group, diagnosis was intraoperatively performed. Laparoscopic approach was performed with cholecystectomy or subtotal cholecystectomy, when the hepatocystic triangle dissection was hazardous. Patients with preoperative diagnosis of acute abdomen, and MS type IV were directly managed by open approach.

Conclusions: Diagnosis of MS and the therapeutic management of MS is still a challenge, mostly in emergency setting. Waiting for standardized guide-lines, we propose a decisional algorithm in emergency, especially in non-specialized centres of hepatobiliary surgery.

Drainage in laparoscopic cholecystectomy. Laparoscopic elective cholecystectomy with and without drain: A controlled randomised trial

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BACKGROUND: Laparoscopic cholecystectomy is the main method of treatment of symptomatic gallstones. Routine drainage after laparoscopic cholecystectomy is an issue of considerable debate. Therefore, a controlled randomised trial was designed to assess the value of drains in elective laparoscopic cholecystectomy. **MATERIALS AND METHODS:** During a twoyear period (From April 2008 to January 2010), 80 patients were simply randomised to have a drain placed (group A), an 8mm pentose tube drain was retained below the liver bed, whereas 80 patients were randomised not to have a drain (group B) placed in the subhepatic space. End points of this trial were to detect any differences in morbidity, postoperative pain, wound infection and hospital stay between the two groups. **RESULTS:** There was no mortality in either group and no statistically significant difference in postoperative pain, nausea and vomiting, wound infection or abdominal collection between the two groups. However, hospital stay was longer in the drain group than in group without drain and it is appearing that the use of drain delays hospital discharge. **CONCLUSION:** The routine use of a drain in noncomplicated laparoscopic cholecystectomy has nothing to offer; in contrast, it is associated with longer hospital stay.