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Pancreas surgery: Clinical

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300 Laparoscopic Pancreatic Resections The Largest European Single Centre Experience

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Background
Laparoscopic pancreatic resections (LPR) have become a routine procedure, but large single series are still lacking. Our aim was to analyze our large European single center series.

Methods
Between January 2008 and September 2015, 300 LPR were performed and including 165 (55%), distal pancreatectomies, 68 (23%) pancreateodudodenectomies (PD), 30 (10%) enucleations, 35 (11%) central pancreatectomies and 2 (1%) total pancreatectomies.

Results
Mean age was 54 years old (17-87) and most patients were women (58%). LPR was performed for malignancy (46%), low potential malignant (44%) or benign (10%) diseases. Surgery lasted a mean 211 min (30-540) and 351 (240-540) min for PD, and decreased with the learning curve. Mean blood loss was 229 ml (0-1500) and 13 patients (4%) were transfused. Conversion was required in 12 patients (4%). Mortality occurred in 4 (1.3%) patients and only after PD (5.8%). The most common complications were pancreatic fistula (n=124.41%), bleeding (n=35,12%) and reoperation (n=28,9%). The postoperative outcome was less favorable in procedures with a reconstruction phase (n=105) than in those without (n=195) with increased
90-day mortality (3.8% vs 0%, \( p=0.04 \)), overall morbidity (76% vs 52%, \( p<0.001 \)) and hospital stay (26 vs 16 days, \( p<0.001 \)).

**Conclusion**

This large study shows that LPR are safe with a low mortality and an acceptable morbidity. However, PD is associated with an increased rate of mortality and morbidity, thus limiting the benefits of this laparoscopic approach.
A case of metastatic carcinoid tumor of the pancreas resected by laparoscopic distal pancreatectomy.

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Background
Surgery for metastatic tumor of the pancreas has increased. However, rectal carcinoid tumor is considered to be quite uncommon as primary tumor. We reported a case that metastatic pancreatic tumor of rectal carcinoid tumor was successfully resected by laparoscopic distal pancreatectomy.

Methods
The patient was a 70-year-old woman who underwent local excision of rectal submucosal tumor, which was pathologically diagnosed as a so-called carcinoid tumor, at another hospital in 2003. In 2009 and 2012, she received two times of hepatectomies for liver metastases of rectal carcinoid tumor at our hospital. In 2013, abdominal computed tomography revealed a 1 cm hypovascular tumor in the pancreatic body. We suspected the metastatic pancreatic tumor of rectal carcinoid and performed laparoscopic spleen-preserving distal pancreatectomy subsequently. Pathological examination of the resected specimen demonstrated that the tumor was metastatic carcinoid tumors of the pancreas.

Results
Three years and 6 months have passed since pancreatic resection was performed and the patient is now still alive. Unfortunately, liver and bone metastases present, however, her quality of life has been very good under administration of octreotide once a month in the outpatient.

Conclusion
We reported a rare case of metastatic carcinoid tumor of the pancreas. Laparoscopic distal pancreatectomy for metastatic tumor of the pancreas is thought to be feasible and acceptable.
A comparison of transverse and midline incisions for pancreaticoduodenectomy

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Background
Various technical aspects of pancreaticoduodenectomy (PD) contribute towards the significant morbidity and mortality associated with this procedure. One aspect is the type of incision utilised. PD may be performed via a transverse subcostal or a midline incision. We sought to evaluate the clinical outcomes amongst a consecutive cohort of patients undergoing PD at our unit, stratified by incision type.

Methods
Consecutive patients undergoing PD were identified from a prospectively maintained database from January 2012-May 2015. Patient variables, intraoperative data, analgesic usage, pain scores and post-operative complications (including incisional hernia) were obtained from electronic hospital records, and compared between the incision types.

Results
Amongst 231 patients undergoing PD, 160 and 71 patients underwent PD via transverse and midline incisions respectively. There was no significant difference between the incision types for any patient or peri-operative variable considered, including post-operative physiological parameters. The incision type was not found to have a significant effect on the reporting of severe pain postoperatively (p=0.642), with an odds ratio for midline relative to transverse of 1.10 (95% CI: 0.73–1.66). There was no significant difference in the development of incisional herniae between the 2 groups (p=0.247).

Conclusion
This study found no evidence to suggest that the type of incision used to perform PD has any significant impact on the development of post-operative complications.
A matched survival analysis of patients treated with neoadjuvant FOLFIRINOX prior to pancreatic surgery: prognosis changes with downstaging of disease

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Background
There is a paucity of data relating to the oncological behaviour of pancreatic tumours following neoadjuvant FOLFIRINOX.

Methods
Patients with pancreatic adenocarcinoma who received neoadjuvant FOLFIRINOX chemotherapy (FOLFIRINOX group) in a single centre were matched by age, sex, type of surgery, performance status and post-operative histological stage with a group who did not receive neoadjuvant therapy prior to pancreatic surgery (MATCH group). Statistical methods included Kaplan-Meier survival estimates with log-rank test and Cox proportional hazard regression. Co-variates included: age, sex, performance status, type of surgery, PV resection, Ca19-9, presentation & pre-op radiological stage, histological stage, tumour differentiation, lymphovascular or perineural invasion, and neoadjuvant radiation therapy.

Results
Fourteen patients in the FOLFIRINOX group (median age 60; 8F) were identified from a prospectively managed database and were matched 1:1 using described criteria. Mean overall survival for FOLFIRINOX and MATCH were 37.4 (95% CI 20.3 - 54.4) and 40.8 (95% CI 29.4 - 52.2) months respectively (p=0.459). There was no difference in disease free survival (22.2 v 29.8; p=0.259). Cox regression analysis identified only margin status (p=0.008) as a prognostic indicator for overall survival.

Conclusion
In this series prognosis following neoadjuvant FOLFIRINOX appears similar to the stage of disease achieved following treatment rather than at presentation.
A multicentre, prospective, randomized trial evaluating the effect of matrix-bound sealant on pancreatic fistula after partial pancreaticoduodenectomy

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Background
In pancreatic surgery a significant number of complications result from insufficient pancreato-enteric anastomoses. The aim of this study was to evaluate whether the use of fibrin-coated collagen reduces pancreatic fistula and complications in patients undergoing pancreatic head resection with pancreato-enteric anastomoses.

Methods
In a prospective multicentre trial, patients undergoing pancreato-duodenectomy with pancreato-jejunostomy were included and randomized intraoperatively into either the “patch group” or the “no patch group. The incidence and severity of pancreatic fistula and complications were assessed postoperatively and compared together with length of hospital stay and days until drain removal between the groups.

Results
Overall, 142 patients, 71 in each group, were included. 45 (63.4%) in the patch group and 40 (56.3%) in the no patch group developed pancreatic fistula (p=0.392) with 16 (22.9%) and 10 (14.5%) in each group classified as clinically relevant B/C (p=0.534). Similarly, there were no differences in the incidence and severity of postoperative complications, time until drains removal and length of hospital stay. Obesity, soft pancreatic tissue and a small pancreatic duct were identified as significant independent risk factors for pancreatic fistula in both groups.

Conclusion
This study demonstrates no protective effect of matrix-bound sealant on the occurrence of pancreatic fistula and the postoperative complications after partial pancreaticoduodenectomy with pancreatojejunostomy.
A new scoring system to predict recurrent disease in grade 1 and 2 non-functional pancreatic neuroendocrine tumors

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Background
Surgical resection is the preferred treatment for non-functioning pancreatic neuroendocrine tumors (NF-pNET), however recurrence still occurs frequently after curative surgery, worsening prognosis of patients. We present the recurrence-score to predict recurrence after curative resection of NF-pNET.

Methods
Retrospectively patients with grade 1 or 2 NF-pNET without distant metastases or hereditary syndromes were included. Local or distant tumor recurrence was scored. The recurrence-score was developed using independent predictors for recurrence to predict recurrence within 5-years after curative resection.

Results
With a median follow-up of 51 months, 211 patients were included. Thirty-five patients (17%) developed recurrence. The 5- and 10-year disease specific/overall survival was 98%/91% and 84%/68%, respectively. Predictors for recurrence were tumor grade 2, lymph node metastasis, and perineural invasion. With these predictors, the recurrence-score was made. Discrimination (c-statistic 0.81) and calibration (Hosmer Lemeshow Chi-square p=0.258) indicated that the ability to identify patients at risk for recurrence is good.

Conclusion
The recurrence-score could predict recurrence after curative resection of grade 1 and 2 NF-pNET. A less extensive follow-up could be proposed for patients with low recurrence-risk. For high-risk patients clinical trials should be initiated to investigate whether adjuvant therapy might be beneficial.
A new single-loop omega-shaped reconstruction after pancreaticoduodenectomy reduces severity of postoperative pancreatic fistula in high-risk patients

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Background
This matched-pairs analysis aimed to investigate the feasibility of a new reconstruction method combining the advantages of double-Loop with the simplicity of single-Loop (SL) reconstruction in patients with high-risk pancreas undergoing pancreaticoduodenectomy (PD).

Methods
A modified single-loop (mSL) reconstruction was used in 80 patients with a soft pancreatic remnant and a pancreatic duct smaller than 3 mm undergoing PD: the loop between the pancreatic and the biliary anastomoses was left longer and a side-to-side jejunojejunal anastomosis was performed between them at the lowest point to divert biliary from pancreatic secretion. Results were compared to 80 patients with conventional SL. Pairs were matched for sex, age, diagnosis, tumor stage, pancreatic texture and duct diameter, surgeon’s experience, ASA class and BMI. Primary end-points were rate and severity of POPF. Secondary end-points included mortality, duration of surgery, and POPF-associated morbidity.

Results
Rate of POPF (34% vs 36%) and duration of surgery (352 min vs 348 min) were the same in both groups. Grade C POPF (6% vs 25%), major complications (15% vs 40%), reoperations (4% vs 20%) and mortality (1% vs 15%) were significantly lower in the mSL Group, p<0.01 in all cases.

Conclusion
The new mSL reconstruction was safer and as fast as conventional SL reconstruction in patients with a high-risk pancreas. It didn't influence the rate of POPF, but reduced significantly its severity, leading to less major morbidity and mortality.
A new, simple and safe pancreaticojejunal anastomosis. Three Grade B pancreatic leaks after 100 consecutive procedures.

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Background
Postoperative pancreatic fistula (POPF) is the main cause of fatal complications after pancreatoduodenectomy. There is still no universally accepted technique for pancreaticojejunal anastomosis (PJA), especially in patients with soft and fragile pancreas.

Methods
Pull-through M- with locking U-sutures and internal STent one-layer invaginated end-to-end PJA (MUST) has become a main anastomotic technique in our department. Postoperative morbidity and 90-days mortality were evaluated in 100 consecutive patients who underwent PJA using the MUST technique between November 2014 to September 2016. The results were compared with the historical data from patients operated previously in our department by the modified Cattell–Warren (MCW) method.

Results
The rates of clinically relevant POPF and fistula-related mortality were significantly lower in the MUST group vs. CWA group (3% grade B and no grade C POPFs vs. 6% grade B and 4% grade C POPFs). The duration of postoperative hospital stay was significantly shorter in the MUST group.

Conclusion
A retrospective analysis confirmed the efficacy of MUST technique for any type of pancreatic parenchyma and any duct size. For its ultimate approval as a standard PJA technique, it should be further evaluated in prospective randomized trials.
A Rare but Curable Pancreatic Tumor

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Background
Pancreatic cystic neoplasms are rare, comprising 1% of all pancreatic neoplasms. Mucinous cystic neoplasms are rare, usually solitary, ranging between 5 and 35 cm and mainly affect women. Despite the possibility of malignant transformation (invasive carcinoma incidence varies between 6% and 36%), they are potentially curable pancreatic tumors and should be operated.

Methods
The authors present a clinical case report

Results
35-year-old woman presenting with epigastric abdominal pain. She has done a ultrasonography and a CT scan that showed a pancreatic cystic neoplasm (15x13cm – body and tail of pancreas), cholelithiasis and choledocholithiasis. To clarify this lesion an echoendoscopy with puncture was performed – non-filling liquid; negative cytology for neoplastic cells and CEA of 8584 ng/mL.

The case was discussed in a multidisciplinary meeting and decided with surgery – performed a distal splenopancreatectomy, cholecystectomy, intraoperative cholangiography and transcystic exploration of the biliary tract without incidents.
Histological examination showed a mucinous cystic neoplasm with low and intermediate grade degree dysplasia (without invasive carcinoma).

Conclusion
Because at present we are unable to identify the benign mucinous cystic neoplasms that will progress into invasive carcinoma, all should be resected, regardless of size, in patients who are fit for surgery, because surgery is routinely curative in cases of non-invasive tumor.
Accuracy and predictive value of the “worrisome features” for the management of Branch duct intraductal papillary mucinous cystic neoplasms

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Background
The incidence of intraductal papillary cystic mucinous neoplasm (IPMN) of the pancreas is rapidly increasing. While the surgical indications for main duct (MD) and mixed type (MT) neoplasms are considered straightforward, the management of branch duct (BD) IPMN is still controversial.

Methods
A database of 256 patients (mean follow-up 54.4 months) undergoing imaging surveillance for BD-IPMN at our Centre was searched: in accordance with updated management guideline recommendations, 12 patients who underwent surgery were compared with 24 who had similar demographic characteristics, but still under surveillance. A case/control study was performed.

Results
The incidence of non-enhancing mural nodules (MN), dilatation of the main pancreatic duct (MPD) between 5-9 mm and the evidence of thickened/enhanced cyst walls proved to be higher in the surgery group, and the difference was statistically significant. In addition, cases of abrupt changes in the mean cyst diameter over time were more often reported in the surgery group. The presence of MN on preoperative imaging investigations was found correlating with intermediate and high-grade dysplasia.

Conclusion
Although the reliability of the updated consensus guidelines in detecting patients who really need to be operated is well assessed, decisions concerning the type and timing of surveillance examinations’ schedule need to be evaluated using a case by case method and a multidisciplinary approach (tailored therapy).
Accuracy comparative analysis between two scores for predicting postoperative complications in pancreatic surgery

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Background
Different scores have been described to predict post-pancreatectomy major morbidity (Clavien≥III). Preoperative pancreatic resection (PREPARE) was described for any kind of pancreatic resection and is based only in preoperative variables. Braga score that includes intraoperative items but was defined only for pancreateoduodenectomy (PD).

Aim: To compare both scores and indentify the most accurate.

Methods
Comparative prospective study of 6 patients undergoing pancreaticoduodenectomy from Jun to Dec 2016. PREPARE and Braga scores were calculated: physiologic variables were registered upon patient admission, blood analysis was obtained immediately before surgery and intraoperative data was requested from first surgeon. Postoperative complications have been registered up to discharge.

Results
Age: 60±16 years old, 67% female.
PREPARE grades: low risk=33% patients, intermediate=33%, high=33%.
Braga grades: low risk=33% patients, mid-low=50%, mid-high=0%, high=17%.
Overall complications=100%, Clavien≥III=50%.
Distribution of Clavien≥III according to PREPARE: low risk=0%, intermediate=50%, high=100%, p=0.06.
Spearman correlation 0.8, p=0.047. AUC=0.94, p=0.08.
Distribution of Clavien≥III according to Braga: low risk=50%, mid-low=67%, high=0%, p=0.42. Spearman correlation -0.2, p=0.7. AUC=0.39, p=0.6.

Conclusion
Our results are not statistically significant and size sample is extremely short. However, there is a trend supporting PREPARE as a more accurate score compared to Braga in patients undergoing PD.

References:
Acute Pancreatitis and the Risk of Pancreatic Cancer

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Background
Pancreatic adenocarcinoma (PC) is an aggressive cancer with a dismal prognosis. Detection at early stage, when surgery is still possible, is essential to improve survival. To achieve this, knowledge on risk factors and populations at increased risk is needed. We investigated the association of acute pancreatitis (AP) with risk of PC.

Methods
Using nationwide registries, we identified a cohort of all AP patients admitted to Danish hospitals during 1977-2012. For each patient, we identified up to five age- and sex-matched controls without AP. We excluded patients with chronic pancreatitis. Using Cox proportional hazards regression model, we computed hazard ratio (HR) for PC in patients with AP compared with the matched comparison cohort (MCC). HRs were adjusted for age, gallstone, Charlson Comorbidity Index, alcohol- and smoking-related diseases.

Results
We identified 38,618 AP patients; 34,834 had a single admission for AP and 3,784 patients had more than one admission for AP. The MCC included 189,413 persons. Median age was 58.1 and 58.4 years in the AP group and MCC respectively; 52.3% of the study cohort were male. Median follow-up was 8.5 years. During follow-up, 117 pancreatic cancers occurred in the AP group (0.3%) and 643 in the MCC (0.3%). Adjusted HR of PC for patients with one attack of AP was 0.96 (95% CI: 0.76-1.22), and for recurrent AP 1.05 (95% CI: 0.59-1.87).

Conclusion
Findings from our large population-based matched cohort study suggest that AP is not a risk factor for pancreatic cancer.
Addition of Braun Enteroenterostomy – Impact on early outcomes in Pancreaticoduodenectomy

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Background
Morbidity following Pancreaticoduodenectomy still remains high. Few studies have shown decrease in morbidity with the addition of Braun enteroenterostomy (BE). Our aim was to determine any possible benefit with addition of BE to the standard reconstruction after pancreaticoduodenectomy.

Methods
All patients who underwent pancreaticoduodenectomy from Feb 2011 to July 2016 were included. They were randomized to undergo either Standard reconstruction (Group A) or with addition of Braun enterostomy (Group B). Outcomes were compared between 2 groups and the results were analyzed. P value of <0.05 was considered significant.

Results
104 patients were included. Group A included 56 patients who underwent standard reconstruction and Group B had 48 patients with addition of Braun enterostomy. The demographic profile, tumor characteristics, and biochemical profile were similar in 2 groups. Mean operating time, intraoperative blood loss and requirement for transfusion were similar. The incidence of pancreatic fistula (POPF) did not differ significantly in 2 groups (14/56, 25% in group A vs. 8/48, 16.6% in group B; p = 0.42). The incidence of DGE was not statistically different in 2 groups (20/56, 35.7% in group A vs. 12/48, 25% in group B; p = 0.77). Infection rates were similar in two groups. Mean hospital stay was similar in both groups (11.2 in group A vs. 10.7 days in group B; p = 0.68).

Conclusion
The outcomes of patients after pancreaticoduodenectomy were not altered by addition of Braun enterostomy.
An extremely rare localization of Echinococcus Alveolaris; pancreas

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Background
Echinococcus alveolaris causes a zoonotic infestation and behaves like a malignant tumor. Here, we present a case of pancreatic echinococcus alveolaris.

Methods
A 29-year old young woman was admitted to the clinic with abdominal pain, distention and nausea. Bilirubin level was slightly high. Abdominal sonography and contrast enhanced abdominal computed tomography revealed a pancreatic head mass 6 cm in diameter, compressing portal vein, arteria hepatica propria and vena cava inferior. Fine needle aspiration biopsy using endosonography was performed but the biopsy was not diagnostic. Pancreaticoduodenectomy was planned. Frozen section biopsy was performed during the surgery. The results were consistent with E. alveolaris infestation. Pancreaticoduodenectomy was performed. Postoperative period was uneventful, and the patient was discharged on postoperative 8th day.

Results
Echinococcus alveolaris can be seen in liver, lung, brain. There is only one case report of isolated pancreatic infestation due to E. alveolaris. The infestations by E. alveolaris resemble neoplastic diseases but show comparatively slower progression. The disease mimics a slow-growing tumour. For the diagnosis, serological procedures, ultrasonography, CT and MRI scans are helpful.

Conclusion
Alveolar echinococcus infestation is not so common compared to E. granulosus. The most common localization is the liver. It can be concomittantly seen in any other organ with liver. Isolated pancreatic infestation is extremely rare.
Anastomoses between major hepatic arteries. How one can use this knowledge in pancreatic and liver surgery? Experience of 9 cases

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Background
The resources of anastomoses between major hepatic arteries are underestimated and do not used by HPB surgeons. It is supposed that this is only theoretical knowledge.

Methods
Analysis of 9 cases of liver survival due to communicating interlobar artery after major pancreatic and gastric resections and hepatic artery embolization, accompanied by dearterialization of one of the liver lobes. Monitoring of liver arterial supply intraoperatively was carried out by US Doppler of liver parenchima, and after surgery - by CT angiography(CTA) and angiography.

Results
Distal pancreatectomy with celiac (CA) and gastroduodenal artery resection (Michels IV), total duodenopancreatectomy with CA resection (Michels III), pancreaticoduodenectomy with common hepatic artery resection (Michels IX), total gastrectomy with resection of right hepatic artery originated from the CA (Michels I), total duodenopancreatectomy with resection of the left hepatic and embolization of the right hepatic artery and embolysatioembolization of the right hepatic arteries for multiple gunshot injuries (Michels I) and for huge hepatocellular carcinoma (Michels I) were performed without vascular reconstructions and ischemic sequelae. Postsurgical CTAs have shown that arterial supply is provided through the anastomoses between major hepatic arteries.

Conclusion
Capability of anastomoses between major hepatic arteries allows to resect the main feeding lobar hepatic artery without reconstruction under intraoperative monitoring by ultrasound Doppler.
Appleby procedure – a challenging interdisciplinary treatment for extensive pancreatic body cancer

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Background
Locally advanced pancreatic body cancer with invasion of the celiac axis is a severe finding that only rarely can undergo curative resection.

Methods
We here present a video highlighting the crucial steps of a modified Appleby procedure. A 52-year old patient presented with a mass in pancreas body and infiltration of the celiac axis (CA) and splenic artery (SA).

Results
Preoperative angiography and embolization of the common hepatic artery (CHA) is imperative to assure an adequate retrograde hepatic blood inflow via the gastroduodenal arcade. Occasionally, it is necessary an additional embolization of a hypertrophic right gastric artery to avoid flow steal phenomenon, as in this case. The patient underwent radical curative resection after neoadjuvant chemoradiation. Surgery started with mobilization of the tail of the pancreas and spleen. Dissection of hepatoduodenal ligament and identification of the junction of gastroduodenal artery (GDA) and hepatic artery is of utmost importance. For safety reasons, it is recommendable to preliminary clamp the common hepatic artery and to prove a sufficient hepatic arterial flow by Doppler ultrasound. The common hepatic artery is then divided proximal of the junction with the GDA. CA was ligated at the level of the aorta and resected en-bloc with the specimen of distal pancreas and spleen.

Conclusion
The intra- and postoperative course was uneventful; the patient could be discharged on postoperative day eleven. The histopathological findings showed an R0 resection.
Arterial reconstruction due to intraoperative arterial injury or arterial tumor involvement during pancreatectomy—Single centre experience in 35 cases

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Background
The incidence of iatrogenic intraoperative arterial injury (AI) during pancreatectomy is not well described. Arterial resection and reconstruction (AR) due to arterial tumor involvement (ATI) is controversial. This study aims to evaluate the incidence of AI during pancreatectomy and the outcome of pancreatectomy with AR due to ATI or AI.

Methods
All consecutive patients undergoing pancreatectomy between 2006 and 2016 were included.

Results
Of a total of 1526 patients, AI was diagnosed in 13 patients (0.85 %). AI occurred in 10 of 922 pancreatoduodenectomies, 2 of 509 distal pancreatectomies (1 of 22 open, 1 of 488 laparoscopic), 1 of 43 total pancreatectomies, and 0 of 51 enucleations (1 open, 50 laparoscopic). AR was performed due to ATI in 22 patients and AI in 12 patients. AI was associated with aberrant arterial anatomy, peripancreatic inflammation or a combination of the two in all cases. Estimated blood loss for AR-ATI and AR-AI was median 900 ml and 1100 ml. Rate of severe complications (≥ Clavien grade 3) was 11/22 (50 %) and 6/13 (46 %). Ninety-day mortality was 4.5 % (1/22) in AR-ATI and 7.7 % (1/13) in AR-AI. Estimated median overall survival in patients with pancreatic and periampullary adenocarcinoma (n=15) undergoing AR due to ATI was 21 months.

Conclusion
The incidence of AI during pancreatectomy was 0.85 %. AR due to ATI or AI is associated with a high rate of severe complications, but an acceptable mortality rate.
Arto-mesenteric by-pass: an alternative reconstruction technique to resect pancreatic tumors with long SMA involvement

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Background
We report the first case of aortomesenteric by-pass for the treatment of a pancreatic neuroendocrine tumor (NET) with extensive involvement of Superior Mesenteric Artery (SMA).

Methods
A 68 year-old woman was referred with a CT-scan showed a 11 x 12 cm and very vascularized mass arising from the pancreatic head abutting portal vein, superior mesenteric vein (SMV), inferior vena cava, common hepatic artery and SMA. Laparoscopic biopsy was performed and showed a NET. At laparotomy, SMV and SMA were largely involved by the tumor. To achieve a complete tumor excision, VMS was stapled laterally and a 4 cm SMA segment was resected. Because of the distance between the two arterial stumps, an aortomesenteric by-pass was performed with a 6mm PTFE interposition graft between the anterior surface of infrarenal aorta and the SMA distal stump. Graft and SMA patency were checked by intraoperative Doppler-US.

Results
A CT scan was performed 48 hours later to confirm by-pass and SMA patency. Postoperative course was uneventful. At 12 months follow-up, there are no signs of recurrence and the by-pass keeps patent.

Conclusion
Several cases of SMA implantation on the aorta or SMA end-to-end anastomosis (either direct or by mean of an interposition graft) have been reported in other studies; this is the first case describing use of aortomesenteric by-pass for pancreatic tumors. This technique can be very helpful in case of long SMA involvement when other reconstructive techniques do not seem feasible.
Assessing surgeons performance using CUSUM analysis of risk adjusted POPF occurrence

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Background
Pancreatoduodenectomy is associated with high levels of morbidity and mortality. Many variables affect perioperative mortality which detract from using this outcome as a marker of surgeons performance. Observing surgeons postoperative pancreatic fistula (POPF) rates, with risk adjustment using a predictive score of POPF, may provide a method of comparing surgical performance.

Methods
POPF was observed among consecutive patients and risk adjustment performed using a validated score to predict POPF upon patients treated by 4 surgeons. CUSUM analysis was used to compare performance.

Results
Some 55 POPF occurred among 257 patients (21.4%). The occurrence of POPF was significantly different between the surgeons (p=0.002) being lowest for the experienced surgeon (6/78, 8%). The median POPF risk score for each surgeons patient cohort varied between 0.22 and 0.34 (p=0.076). Following risk adjustment surgeons observed 12.9 fewer to 4.3 excess POPF than predicted. Analysis of the CUSUM plots demonstrated the experienced surgeon performed steadily with a gradual reduction in observed POPF compared to what was predicted. The three new surgeons performance was less consistent and effects of a total of 8 different techniques of pancreatic reconstruction were observed.

Conclusion
Risk adjusted assessment of POPF demonstrates differences between experienced and less experienced surgeons. In this way pancreatic surgeons could assess their performance. This tool could be used for surgical audit and self assessment.
Best methods to minimize pancreatic fistula after pancreateoduodenectomy: 15 years experience

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Background
Postoperative pancreatic fistula (POPF) remains the most life-threaten major complication after pancreateoduodenectomy (PD). Despite numerous trials comparing anastomosis method and duct stent type, there are no consensus regarding the ideal surgical technique. In this study, we retrospectively analyzed the surgical outcomes after PD at single center.

Methods
Between June 2001 and May 2015, 500 consecutive patients received PD at Gangnam severance hospital. All patients received same procedure. Duct to mucosa Pancreateicojejunostomy with internal stenting was performed. We analyzed operative time, estimated blood loss, length of hospital stay and complications.

Results
Operation time, estimated blood loss, length of hospital stay and clinical relevant POPF rate decreased steadily and first plateau was noted after 100 cases. After 100 cases, Average clinical relevant POPF rate was 6.75%.

Conclusion
Consistent practice of standardized technique may decrease the rate of clinical relevant POPF. It is important to stabilize surgical methods before comparing new anastomosis methods.
Background
Preoperative biliary drainage (PBD) causes bacteribilia and increases the risk for infectious complications. Therefore, PBD should be avoided. Nonetheless, even in pancreatic centers more than 50 % of patients undergo PBD before a surgeon is involved.

Methods
To present the current situation at a high volume pancreatic center in Germany we retrospectively reviewed 1000 consecutive intraoperative bile duct cultures that were taken after bile duct transection during pancreatic surgery.

Results
During a period of nine years 1004 patients had a bile duct transection during pancreatic surgery (pancreatic head resection n=710; palliative hepaticojejunostomy n=294). An infected bile duct culture was found in 61,5 % (617/1004). The most frequent microorganisms were enterococcus spp. in 37,8 % (380/1004). Multidrug resistant microorganisms with resistance against at least three antibiotic classes were present in 24,6 % (247/1004). Among patients with bacteribilia with resistant microorganisms the rate of wound infections was 12,6 % (31/247), vs. 4,5 % (34/757) among the other patients (p ≤ 0.001).

Conclusion
Today pancreatic surgeons must be aware, that more than 50 % of patients who undergo surgery for periampullary lesions have infected bile. Twenty-five percent have bacteribilia with resistant microorganisms, which increases the risk for wound infections. Surgeons must adjust their antibiotic treatment according to the hospital specific surveillance data to reduce the risk for wound infections.
BioGlue® sealed fish-mouth closure of the pancreatic remnant as a feasible alternative to stapler closure during laparoscopic distal pancreatectomy

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Background
Postoperative pancreatic fistula formation (POPF) remains the main problem after distal pancreatectomy (DP). Stapler closure of the pancreatic remnant is considered the standard technique during laparoscopic DP but is limited especially in “hard” pancreatic tissue remnants. After promising results during open DP we have now developed a novel BioGlue® sealed hand sutured fish-mouth closure technique of the pancreatic remnant during laparoscopic DP.

Methods
14 patients underwent BioGlue® sealed hand sutured fish-mouth closure of the pancreatic remnant during laparoscopic DP at our institution. Perioperative and postoperative results were analysed with regard to clinically relevant POPF and overall postoperative morbidity. Essential technical steps will be demonstrated as a video presentation.

Results
Indications for distal pancreatectomy included pancreatic adenocarcinoma, IPMN, MCN, chronic pancreatitis, neuroendocrine tumor and SPN. 4 out of 14 patients (29%) developed a grade B pancreatic fistula, which could all be treated conservatively. There was no postoperative mortality. The median length of hospital stay was 11 days.

Conclusion
The performance of a BioGlue® sealed hand sutured fish-mouth closure of the pancreatic remnant during laparoscopic DP was shown to be technically feasible and may thus be considered as a safe alternative to standard stapler closure especially in patients with a “hard” pancreatic tissue remnant.
Blood fibrinogen levels discriminate low- and high risk intraductal papillary mucinous neoplasms (IPMNs)

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Background
The risk assessment of intraductal papillary mucinous neoplasms (IPMN) to either guide patients to surgical resection or watchful waiting is still under debate. Additional markers to better separate low and high-risk lesions would improve patient selection.

Methods
Patients who underwent pancreatic resections for IPMNs between January 2008 and December 2012 with available blood samples were selected and retrospectively assessed. Data on cyst characteristics such as cyst size, duct relation and main-duct dilatation were collected and plasma fibrinogen levels were measured.

Results
A total of 73 patients fulfilled the inclusion criteria by pancreatic resection for pathologically confirmed IPMN and available blood sample. Histologically, IPMNs were classified as low-grade and borderline in 52 (71.2%, group 1) and as high-grade and invasive in 21 (28.8%, group 2) of all cases. Fibrinogen levels showed significant differences between the two groups (group 1: mean 3.62 g/L (SD ± 1.14); group 2: mean 4.49 g/L (SD ± 1.57); p= 0.027). A ROC-curve analysis calculated a cut-off value of 4.71 g/L separated groups 1 and 2 (p= 0.008). Fibrinogen levels remained as the only significant factor in multivariable analysis, cyst size and duct relation were not significant.

Conclusion
Blood fibrinogen differed between low and high risk IPMNs and therefore, the use of fibrinogen as an additional discriminator in the pre-operative risk assessment of IPMNs should be further evaluated.
Body composition change during chemotherapy for Borderline Resectable Pancreatic Cancer

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Background
Neo-adjuvant chemotherapy is recommended for patients with Borderline Resectable Pancreas Cancer (BRPC). Malnutrition affects up to 80% of pancreatic cancer patients, and is a recognised prognostic factor in resectable and unresectable disease. We sought to determine the prevalence of sarcopenia in BRPC patients at diagnosis, and quantify body composition change during chemotherapy.

Methods
The diagnostic/restaging CT scans of 79 BRPC patients were analysed. Skeletal muscle and adipose tissue were measured at L3 using Tomovision Slice-O-Matic™. Total muscle and adipose tissue mass were calculated using validated regression equations. Sarcopenia was defined as per gender specific Lumbar Skeletal Muscle Index reference values.

Results
All patients received neo-adjuvant chemotherapy and underwent restaging CT at which point 38% patients were deemed resectable. A majority (65%) were sarcopenic at diagnosis, increasing to 70% post chemotherapy. Sarcopenia was equally prevalent across all BMI categories at diagnosis. Skeletal muscle and adipose tissue (intra-muscular, visceral and sub-cutaneous) area all decreased during chemotherapy (p<0.0001), while mean adipose and muscle losses experienced were 2.8kg and 2.4kg respectively.

Conclusion
These data indicate a high prevalence of sarcopenia exists in BRPC patients at diagnosis, independently of BMI. Further deterioration occurs during chemotherapy. Future studies should evaluate the impact of nutrition and exercise strategies on body composition in BRPC.
CA19-9 response and CT-imaging predict resectability of locally advanced pancreatic carcinoma following neoadjuvant chemotherapy

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Background
Neoadjuvant chemotherapy, especially FOLFIRINOX, has the ability to downsize locally advanced pancreatic cancer (LAPC). Unfortunately current radiological modalities are unable to distinguish between fibrosis and viable tumor. As a result, patients can be considered unresectable if the tumor response is underestimated. Therefore, more accurate predictors for resectability of LAPC are of interest. We hypothesize that decreasing CA19-9 serum levels combined with CT imaging in response to chemotherapy may be useful prognostic tools to predict resectability.

Methods
LAPC patients following neo-adjuvant FOLFIRINOX/gemcitabine treatment were prospectively registered. Inclusion criteria were; PA proven LAPC, availability of CA19-9 serum levels and CT-imaging pre- and post-neoadjuvant therapy. All imaging was analyzed by a specialized radiologist according to the RECIST-criteria.

Results
36 out of 54 patients underwent exploratory laparotomy. Eleven patients (20%) underwent a resection. All but one of these had decreasing CA19-9 serum levels (median 83%, interquartile range 38%). The PPV of both CT-regression and a decrease in CA19-9 levels of ≥30% in the total cohort was 100%, with an equal specificity of 100%. The negative predictive value of an increase in CA19-9 of ≥30% is 94%.

Conclusion
Patients with decreasing CA19-9 levels following neoadjuvant chemotherapy have a higher likelihood of resectability. Increasing CA19-9 levels could therefore be a relative contra-indication for surgical exploration.
Careful approach to the treatment of injuries of the pancreas

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Background

algorithm that facilitates choosing the method of surgery pancreas injuries.

Methods

The examination of 41 patients with pancreas traumas was carried out. The patients: male – 34, female – 7. Age from 20 to 67 year old.

The patients were divided into two groups. The first group included 27 patients was examined from year 1989 to 1999 and the second one included 14 patients – from 2008 to 2012. Beginning from year 2000, on choosing the method of operation, the severity of organ injury, ductal system, the duodenal wall and bile ducts.

Results

in the first group of 27 patients 8 patients died. Beginning from year 2000 the application of the algorithm based on evaluation of the severity of the organ injury made it possible to only three types of operative intervention: external drainage, distal resection of the pancreas and pancreatoduodenectomy in some special cases. With the use of the proposed algorithm 14 patients have been operated on without lethal and serious complications.

Conclusion

Conclusion: the proposed algorithm makes it possible to simplify and justify the choice of the method of the operative treatment of pancreatic injuries.
Celiac artery compression in case of pancreatic surgery – experiences at the surgical department at the Landesklinikum Wiener Neustadt (Austria)

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Background
Celiac artery compression due to the median arcuate ligament is a rare but not an uncommon finding in patients undergoing pancreaticoduodenectomy. Due to the interruption of the collateral pathways during surgery, it may be associated with fatal complications.

Methods
From 02/2013 to 04/2015 forty patients underwent pancreaticoduodenectomy. Three of them had a median arcuate ligament.

Results
In two patients, celiac artery compression was noticed during primary surgery; in one patient the compression was not recognized during initial surgery, this in turn caused complications and a prolonged hospital stay. Diagnosis was made either by intraoperative angiography or identified due to a missing pulsatile flow within the common hepatic artery. In each case division of the fibrous structure was performed. Two patients had no further complications; one patient died four months after initial surgery due to a sepsis by an ongoing infection with klebsiella. Histological findings: 1x IPMN, 1x PanIN-1, 1x adenocarcinoma

Conclusion
Although celiac artery compression is a rare condition, it is possible and you should be aware of it. A preoperative abdominal CT scan (3-phase CT scan) should be carefully evaluated. During surgery the absence or limitation of blood flow within a common hepatic artery after ligation of the gastroduodenal artery should lead one to suspect compression of the celiac artery. Surgical decompression involves division of the fibers of the median arcuate ligament.
Circumportal pancreas: A diagnostic and therapeutic challenge

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Background
Circumportal pancreas or portal annular pancreas, is a rare congenital fusion anomaly of the dorsal and ventral pancreas in which the pancreatic tissue encases the portal and/or superior mesenteric vein. The prevalence of this rare and overlooked anomaly is 1.4 to 2.5% on multidetector computed tomography series. Altough it is usually asymptomatic and incidentally detected, it can complicate cancer diagnosis and surgery of the periampullary region. On the diagnostic side it might look like tumor extension around major vessels imitating locally advanced cancer. On the surgical side, it necessitates complete resection of the posterior portion, complicating the surgery and likely increasing the fistula rate.

Methods
Herein, we present a case of ampullary cancer accompanied by by circumportal pancreas, preoperatively diagnosed on radiological examination using ceCT and MRI and confirmed by intraoperative pancreaticography during surgical resection. A pylorus preserving Whipple operation was performed with resection of the aberrant portion of the pancreas. The merging of the anomalous duct was identified and sewn on the inferior portion of the pancreas.

Results
Pathologic analysis of the specimen confirmed the diagnosis of circumportal pancreas and a pT2N1M0 ampullary tumor. Postoperative period was complicated with a Grade B/C pancreatic fistula that was managed by percutaneous drainage of the fluid collection.

Conclusion
Circumportal pancreas is a rare anomaly complicating pancreatic surgery.
Clinical Impact of Nonselective Beta-Blockers on Survival in Patients with Pancreatic Cancer- Revival of well known drugs?

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Background
In preclinical animal studies it has been shown that stress stimulates PDAC growth and increases catecholamines, VEGF and NGF. Here the impact of beta-blockers in resected PDAC patients was investigated.

Methods
PDAC patients from two European centers between 2002 and 2012 (n=595) were studied. 159 patients received beta-blockers (BB). 17 patients with non-selective BB (NSBB) were compared to 85 receiving no BB (NBB) using a matched-pair analysis. 142 patients with beta1 selective agents (SB1B) were also analyzed. Univariate and multivariate survival analysis (Cox) was performed. Organoids from PDAC specimen were treated with B1SB, B2SB, NSBB and GEM.

Results
Median age of patients was 70 y (22-88 y). Patients with any BB, had median OS of 25 mo vs. 21 mo with NBB (p=0.0084). Median OS of NSBB was 40 mo vs. 23 mo for NBB (p=0.0007) and 21 mo for SB1B (p=0.0396). Hypertension (HPT) was associated with lower OS compared to no HPT. Even among patients with HPT, a longer median OS was observed among NSBB compared to NBB (40 vs 19 mo; p=0.041). Organoids showed fewer RLU when treated with NSBB or SB2B in addition to GEM compared to GEM alone (p=0.032). SB1B did not reveal any difference.

Conclusion
For the first time a matched pair analysis comparing NSBB to SB1B and NBB in PDAC patients is presented. NSBB almost doubled the OS in PDAC patients in an adjuvant setting. SB1B did show little differences regarding OS. Taken together, targeting the adrenergic beta2-pathway might be a therapeutic strategy.
Correlation of specific post-pancreatectomy morbidity and postoperative plasmatic biomarkers (BM) and inflammatory scores (IS)

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Background
There are few reports evaluating changes of postoperative BM and IS (neutrophil-lymphocyte ratio NLR, platelet-lymphocyte ratio PLR) associated with specific morbidity after pancreatic surgery.

Methods
Prospective case-control study of major pancreatic resection (n=33) from Jan 2015 to Dec 2016. Specific complications (pancreatic fistula PF, delayed gastric emptying DGE, hemorrhage PH) and surgical site infection (SSI) were registered. BM (lactate, reactive C protein) and IS were systematically obtained on 1st, 2nd and 5th postoperative day (POD) and were compared between cases (patients with complications) and controls.

Subgroup analysis of 24 pancreatoduodenectomy (PD).

Results
Sex: 60.6% males. Age: 62±11 yo. DGE 31%, PF 24%, PH 21%, SSI 18%.
PF associated with higher value of POD1-PLR (409.2 vs 208.9 p=0.034), POD2-lactate (1.6 vs 1.1 p=0.007), POD2-PLR (421.9 vs 229 p=0.02), POD2-RCP (335.2 vs 185.3 p=0.002).
DGE associated with higher value of POD2-RCP (267 vs 165.7 p=0.001)
SSI associated with higher value of POD2-NLR (15.9 vs 12.8 p=0.01).
Whipple series: Similar results were obtained except for POD2-NLR (18.7 vs 12.1 p=0.029) and POD5-PLR (366 vs 205.3 p=0.005) higher value in patients with SSI.

Conclusion
According to our results, there are some BM and IS which are associated to complications after major pancreatectomy, particularly higher POD2-lactate and POD2-RCP seem to be correlated to PF due to an hypothetical hipoxia in the anastomosis site.

References:
Cross-sectional imaging, margin status and survival in pancreatic cancer – proposal of refined criteria for borderline resectable pancreatic cancer

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Background
Borderline resectable pancreatic cancer (BRPC) is defined as pancreatic cancer with a local extension which, despite technical resectability, is likely to result in margin positive resection. The aim of the current study was to investigate the correlations between the current ISGPS BRPC criteria, alternative refined BRPC criteria, margin status according conventional (zero distance) and CRM rule (1mm), and survival in pancreatic carcinoma.

Methods
Retrospective evaluation of preoperative imaging, histopathology, and survival in patients resected in curative intent for pancreatic ductal adenocarcinoma, following statistical analysis with R.

Results
N = 78 patients operated from 2013 to 2015 were included. BRPC status according to the ISGPS definition was not significantly predictive of conventional margin status or survival after resection. However, refined BRPC criteria and CRM margin status, lymphangiosis, lymph node and distant metastases were significant predictors of survival in univariate and multivariate analysis. The refined BRPC criteria correlated significantly with CRM margin status and categorized only about 40% of tumors as resectable. Median survival in this resectable subgroup was not reached during the observation period, whereas patients with BRPC suffered from significantly reduced survival (9 to 21 months, depending on BRPC criterion, p < 0.01).

Conclusion
We propose refined radiologic BRPC criteria to predict margin status and survival after resection of pancreatic cancer.
Cystic Lymphangioma of the Pancreas

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Background

Background: Cystic lymphangioma of the pancreas is extremely rare, accounting for less than 1% of pancreatic tumors. Herein, we present several cases of patients with huge cystic lymphangioma of the pancreas and a review of the literature.

Methods

We report four unusual cases of cystic lymphangioma of the pancreas in adult patients (three female and one male), presenting with poor appetite and body weight loss. Abdominal sonography and computed tomography showed a huge lobulated, hypodense mass in the head (n=3) or neck (n=1) of the pancreas, measuring 12×22cm (case 1), 18-22cm (case 2), 15-23cm (case 3) and 8-9cm (case 4). The patients smoothly underwent a complete surgical resection (3 patients - pancreaticoduodenectomy and 1 patient - spleen-preserving distal pancreatectomy).

Results

The patients are well and free of disease 12 months after surgery. Based on the results of the microscopic and immunohistochemical findings (positive reaction to CD31 and D2-40 and a mild positive response to CD34), a diagnosis was made for a cystic lymphangioma consisting of lymphatic endothelial cells. Cystic lymphangioma of the pancreas is particularly rare, with only 90 cases reported so far world-wide.

Conclusion

Pancreatic lymphangioma should be kept in mind when a huge, multiloculated mass is encountered in the abdomen, especially in adult women. Although lymphangioma is considered a benign tumor, involvement of adjacent organs sometimes occurs and extended resection is required to obtain a radical treatment.
Deep cross pancreatic necrosis and viable parenchyma distal to it determine the development of local complications and mortality in acute pancreatitis

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Background
It is known that disconnected pancreatic duct (DPD) typically complicates acute necrotizing pancreatitis (ANP) but there are no early diagnostic criteria of this. It is important to identify early predictors of DPD in ANP.

Methods
Contrast-enhanced CT was made to 204 patients with AP in terms of 2-11 days from ANP onset. Features of pancreatic necrosis (PN) were assessed for its configuration (C): relation of deep cross necrosis (DCN) and viable parenchyma (VP). Necrosis was considered deep when occupy more than 50% of the cross-section of pancreas. Local complications (LC) were determined by the classification K. Ishikawa et al. (gradation from 1 to 5).

Results
PN were revealed in 140 (68 %) pts. In 114 pts they were located in head, neck or body and the VP was distally to PN (C type 1), in 26 pts with tail PN VP was not located distal to it (C type 2). The main problem zone for C type 1 is neck of pancreas, DCN formed in 95 % of pts. LC gradation was 2,5 ± 0,1 (C type 1) vs 1,3 ± 0,3 (C type 2), p <0.05. Forming acute necrotic collections with high α-amylase activity in fluid were observed in 55 % (C type 1) vs 16 % (C type 2) of pts, p = 0,002. The mortality rate was 23 % (C type 1) vs 3,7 % (C type 2), p<0.05.

Conclusion
Pancreatic DCN and VP distal to it (type 1 of necrosis configuration) are predictors of DPD, internal pancreatic fistula, LC and high mortality rate. They determine the indications for early interventions in order to turn internal pancreatic fistula into external one.
Diagnostic value of ultra-deep targeted next-generation sequencing in patients with suspect pancreatic and periampullary lesions

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Background

Radiologic imaging and morphological cytology assessment have limitations for preoperative classification of pancreatic and periampullary lesions, often resulting in surgical resection without definitive diagnosis. Our study aims to define the diagnostic value of targeted Next-Generation Sequencing (NGS) of DNA in cytology material.

Methods

Cytology material (brush/fine-needle aspirate) of patients with a suspect pancreatic or periampullary lesion was analyzed with NGS, in which 50 genes were deep sequenced for the presence of pathogenic variants. Results were discussed by the multidisciplinary team and changes to treatment plan noted. Diagnostic accuracy of NGS analysis was calculated.

Results

In total, 70 consecutive patients were included. The integration of NGS results led to a change in treatment plan in 7 patients (exploration to follow-up n=4; follow-up to resection n=2; palliation to resection, n=1), and supported the treatment plan in 59 patients. In 4 patients, the NGS results were negative but did not influence the treatment plan as sampling error of cytology was suspected; NGS analysis on resection material revealed pathogenic variants in all 4 patients. Diagnostic accuracy of NGS analysis was 94% (sensitivity=93%; specificity=100%).

Conclusion

In our study, NGS analysis changed the treatment plan in 10% of the patients. Application of in-depth preoperative molecular analysis can optimize treatment selection and can conversely diminish unnecessary resections in patients with a benign disease.
Differential radiology diagnostics of rare cystic masses of the pancreas

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Background
To define the possibilities of differential diagnostics of rare cystic pancreas lesions (RCPL).

Methods
117 patients with RCPL were examined (ultrasound, CT and MRI with bolus contrast enhancement) and treated. Morphology: intraduct papillary mucinous tumor (IPMN) – 35(30,0%), solid-pseudopapillar tumor (SPPT) – 26(22,2%), cystic form of duodenal dystrophy (CDD) – 52(44,4%), cystic teratoma (1(0,85%), cystic lymphangioma (1(0,85%), echinococcus cyst (2(1,7%).

Results
IPMN: 57,1% male. Radiology criteria: advanced duct, fusiform with lesions of main pancreatic duct (MPD) or cystic cluster structures in bransh-ducts and mixed; seal duct/ducts walls; parietal papillary growths, there may be a single extended bransh-ducts and tumor masses around MPD. IPMN preoperative verification 80,0%. Priority - MRI.
SPPT: 92,3% female. Radiology criteria: type 1: heterogeneous solid structure with a very small cystic inclusions, fluid-filled with a hemorrhagic component; type 2 and 3: cystic inclusions or cystic structure with a slightly pronounced parietal solid component. SPPT preoperative verification 46,1,%. Priority - MRI.
CDD: 90,4% male. Radiology criteria: thickening of the duodenum wall with cystic formation, varying degrees of duodenal stenosis. CDD preoperative verification 96,2%.

Conclusion
The knowledge of RCPL possible presence in the pancreas in combination with characteristic symptoms of disease allows to make the correct diagnosis. MRI should be preferred in the algorithm of the survey at suspicion of RCPL.
Domino compensation of the external iliac vein using an ePTFE graft after its procurement for portal vein reconstruction in pancreatic surgery

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Background
Portal vein (PV) resection followed by interposition graft repair is sometimes necessary to complete radical resection in pancreatic malignancies. Autologous external iliac vein (EIV) has been a good candidate for this graft, but harvesting the EIV has caused, in turn, critical venous congestion and thus the swelling of the affected lower extremity. To prevent that, we have reconstructed 13 EIVs using a ringed ePTFE vascular graft followed by postoperative anticoagulation therapy. This time, we retrospectively evaluated a clinical significance of this strategy.

Methods
Size and length of the graft, patency, thigh girth, time for surgery, and graft infection were evaluated. Graft histology was also examined in an autopsy case due to recurrence death.

Results
ePTFE grafts of 8 mm were used in 3 patients and 10 mm in 10 patients. The length used was 4.4 ± 0.5 cm. Time for reconstruction was 29.5 ± 6.8 minutes. Graft infection did not occur in any patients. Graft patency was maintained in 10 of 13 patients (76.9%). Acute obstruction occurred only in 3 patients of 10-mm graft, in whom the right thigh girth increased by about 10 cm. A layer of newly developed endothelial cells was confirmed on the surface of neointima of the graft 8 months after implantation.

Conclusion
Domino compensation of the EIV using a ringed ePTFE graft seems to be a feasible choice for preventing critical swelling of the lower extremity in case that the EIV is used for repairing PV defect.
Duodenum-preserving pancreatic head resection and resection of the head of the pancreas combined with segmental duodenectomy

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Background
To estimate results of the organ-preserving pancreatic resections.

Methods
Duodenum-preserving pancreatic head resection (DPPHR) was performed in 24 pts with serous (6) and mucinous (6) cystadenomas, branch-duct intraductal papillary mucinous tumors (7), neuroendocrine adenoma (4) and metastatic renal cell carcinoma (1). Alimentary tract reconstruction was performed by pancreatojejunostomy (Roux-en-Y) (21) or pancreatogastrostomy (3). Laparoscopic approach was chosen in 7 cases.
Pancreatic head resection combined with segmental duodenectomy (PHRSD) was performed in 22 pts with chronic pancreatitis complicated by duodenal dystrophy (20) and with large serous cystadenoma (2). Alimentary tract reconstruction was performed by duodenoduodenostomy combined with pancreaticojejunostomy and choledochojejunostomy (Roux-en-Y) (7); pancreatogastrostomy and choledochoduodenostomy (13); pancreaticoduodenostomy duct-to-mucosa and choledochoduodenostomy (2).

Results
Ischemia of duodenum didn't note in one case. Postoperative complication constituted the following: bile duct stricture (3) and postoperative bleeding (1) in DPPHR, delayed gastric emptying (2) and postoperative bleeding (1) in PHRSD. Newly developed diabetes mellitus occurred in 2 pts. Exocrine pancreatic insufficiency was observed in 2 pts with chronic pancreatitis. There was no hospital mortality.

Conclusion
DPPHR is recommended for a benign pancreatic head lesion. PHRSD can be an option for a lesion of the duodenal area and the pancreatic head.
Early Enteral Versus Total Parenteral Nutrition in Patients Undergoing Pancreaticoduodenectomy: A Randomized Multicenter Controlled Trial (Nutri-DPC)


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Background
Current nutritional guidelines recommend the use of enteral over parenteral nutrition after gastrointestinal surgery. However, the nasojejunal early enteral nutrition (NJEEN) remains controversial in patients undergoing PD. We aimed to compare NJEEN with total parenteral nutrition (TPN), after pancreaticoduodenectomy (PD), in terms of postoperative complications.

Methods
Multicenter, randomized, controlled trial was conducted between 2011 and 2014. 9 French centers analyzed 204 patients undergoing PD to NJEEN (n = 103) or TPN (n = 101). Primary outcome was the rate of postoperative complications according to Clavien-Dindo classification.

Results
Postoperative complications occurred in 77.5% ((95% CI) 68.1–85.1) patients in the NJEEN group versus 64.4% (95% CI 54.2–73.6) in TPN group (p = 0.040). NJEEN was associated with higher frequency of postoperative pancreatic fistula (48.1% vs 27.7%, p = 0.012) and higher severity (grade B/C 29.4% vs 13.9%; P = 0.007). There was no significant difference in the incidence of post-pancreatectomy hemorrhage, delayed gastric emptying, infectious complications, the grade of postoperative complications, and the length of postoperative stay. A successful NJEEN was achieved in 63% patients.

Conclusion
In patients undergoing PD, NJEEN was associated with an increased overall postoperative complications rate. The frequency and the severity of POPF were also significantly increased after NJEEN. In terms of safety and feasibility, NJEEN should not be recommended.
Pancreas surgery: Clinical
P22.08

Early surgery with a ‘fast track’ pathway for periampullary malignancy is associated with an increased rate of pancreateoduodenectomy and reduced costs

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Background
Pancreateoduodenectomy (PD) for cancer typically follows preoperative biliary drainage (PBD) for jaundice. However randomised trials show that PBD is potentially harmful. This study evaluated a pathway to avoid PBD within the framework of the UK’s NHS.

Methods
A prospective observational study of jaundiced patients undergoing PD for periampullary cancer. A pathway to provide early surgery without PBD was introduced at the start of the study period.

Results
Over 12 months 61 and 32 patients underwent surgery with and without PBD respectively; 95% of patients in the PBD group had been stented before referral. The time from CT scan to surgery was shorter in the no PBD group (16 vs 65 days, p<0.0001). Significantly more patients underwent PD in the no PBD group (31/32 vs 46/61, p=0.009) and venous resection (10/31 vs 4/46, p=0.014). The sensitivity of initial CT scan to define borderline resectable disease was worse in the PBD group (91 vs 50%, p=0.042). Costs of treatment between diagnosis and surgery were £3,178 (3,814 euro) less in the group without PBD.

Conclusion
Early surgery to avoid PBD is possible within the NHS. By reducing the time to surgery it appears that more patients undergo potentially curative resection and costs of treatment are reduced. It is desirable to understand why surgery without PBD is not performed routinely as are the development of strategies to support its more widespread practice.
Economic impact of postoperative pancreatic fistula in pancreatic surgery.

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Background
Postoperative pancreatic fistula (POPF) is the most important complication after pancreatic surgery and is associated with major morbidity, increased use of resources, and prolonged hospital stay. The true economic impact of POPF is unknown.

Methods
We evaluated the economic impact of POPF based on a full cost analysis of hospital expenses and reimbursements for all patients discharged after pancreatic resections at our center in 2015 with billing through the G-DRG-System. For definition and grading of POPF the 2016 update of the international definition was used. Uni- and multivariable analyses of factors associated with a deficit of >1000€ per case were performed.

Results
Of 505 patients with pancreatic resections, 78 (15.4%) developed POPF. The occurrence and the grade of POPF were significantly associated with increased treatment costs in all cases and in subgroups of different resections (e.g. mean costs of 15,741.51€ without and of 54,023.20€ with POPF after pancreatoduodenectomy; p< 0.0001). DRG reimbursements significantly increased in parallel but failed to cover the cost increase. POPF resulted in uncovered costs and was associated with a deficit in total, after different resections, and within single DRGs. POPF was the dominant independent risk factor for deficits >1000€/case.

Conclusion
POPF has considerable economic impact and results in highly increased treatment costs that are currently not covered by reimbursements through the G-DRG system.
Effective treatment technique of pancreatic fistula grade C after gastropancreatoduodenal resection

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Background
Pancreatic fistula incidence among patients after gastropancreatoduodenal resection (GPDR) occurs in 20-30% cases. Mortality in pancreatic fistula grade C reaches 80%.

Methods
30 cases of pancreatic fistula grade C among 380 patients after GPDR were studied. All 380 patients were made non stenting pancreatodigestive anastomoses. 30 patients had recurrent operations for arrosive hemorrhage or generalized enzymatic peritonitis. The surgical approaches were different. 22 patients (group 1) were re-operated: they underwent sanitation and additional drainage of the focus of infection. In 8 patients (group 2) there was formed pancreatojejunal re-anastomosis on external transintestinal Wirsungostomy drainage using a closed jejunum loop.

Results
The treatment results in each group were analyzed by arrosive hemorrhage incidence and mortality. The incidence of recurrent arrosive hemorrhage in group 1 was 53.4%, while group 2 patients had no recurrent hemorrhage. Total mortality in group 1 patients appeared to be higher than in group 2 patients (63.6% versus 25%). The mortality rate in patients with arrosive hemorrhage in group 1 was 92.3%, and in group 2 - 33.3%.

Conclusion
In grade C pancreatic fistula, the re-formation of pancreatojejunal anastomosis on external transintestinal Wirsungostomy drainage using a closed jejunum loop has its advantages due to less recurrent arrosive hemorrhages and fatal cases. In addition, the technique enables to avoid emergent pancreatectomies.
Effects of preoperative biliary stenting on surgical outcomes after pancreatoduodenectomy: a prospective cohort analysis

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Background
An updated Cochrane Review in 2016 found no enough evidence favouring preoperative biliary stent (BS) in order to improve outcomes after pancreatoduodenectomy (PD).

Aim: to analyze postoperative morbidity among patients with and without internal BS.

Methods
Prospective cohort study of 24 patients undergoing PD (preferred technique: duct-to-mucosa pancreatojejunostomy with tutor, single bowel loop reconstruction without Braun). Palliative procedures excluded. Postoperative complications (registered up to discharge) and length of stay (LOS) were compared between patients with BS versus non-BS.

Study period Jan 2015 - Dec 2016.

Statistics SPSS 18.

Results
Age= 62.2±11 years old, 67% males, BMI= 25.9±4.4 Kg/m2. Cohorts of BS (n=19) and non-BS (n=5) were comparable.

Overall complications 87.5% (BS=89.5%, non-BS=80%, ns)
Clavien ≥III 41.7% (BS=42.1%, non-BS=40%, ns)
Reoperation 25% (BS=21%, non-BS=40%, ns)
Mortality 8.3% (BS=10.5%, non-BS=0%, ns)
Gastroparesis 46% (BS=52.6%, non-BS=20%, ns)
Fistula 25% (BS=21%, non-BS=40%, ns)
Hemorrhage 29.2% (BS=15.8%, non-BS=80%, p=0.013, RR=5.1, 95%CI=1.6-15.6)
Infection 21% (BS= 15.8%, non-BS= 40%, ns)

LOS (excluded dead patients): 22±15.8 days (BS=20.2, non-BS=27.2 days, ns).

Conclusion
Despite a short PD series, non-BS patients have 5-fold increased risk for hemorrhage, possibly explained due to coagulopathy in the context of cholestasis and impaired liver function. Besides, in this cohort there is a non-significant trend for increased LOS as well as some other complications.

References:
Effects of preoperative immunonutrition on surgical outcomes after major pancreatic resections: a non-randomized controlled analysis

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Background
Despite publications are still scarce, preoperative immunonutrition (PIN) in patients undergoing pancreatectomy seems to be effective, even in well-nourished ones.
Aim: to compare post-pancreatectomy outcomes in two groups of patients with and without PIN.

Methods
Prospective non-randomized study.
Complications and length of stay (LOS) after major pancreatectomy were compared between 10 patients who received oral PIN (Impact®, Nestlé, 7 days prior to surgery, irrespective of nutritional status) and 23 control patients (CP).
Study period January 2015-December 2016.
Subgroup analysis according to high-risk category of PREPARE score.
Statistics: SPSS 18.

Results
Sex: 60.6% males, age: 62±11.1 years old, BMI: 25.6±4.1 Kg/m2 (no differences between groups).
Neither complications rates (Clavien ≥III morbidity, post-pancreatectomy specific complications, wound infection) nor LOS showed statistical differences. However, there was a trend to fewer hemorrhage cases in PIN (10% vs 26%, p=0.4).
Subgroup analysis in high-risk patients (3 PIN vs 7 CP, no differences in sex, age and BMI): PIN presented non-statistical fewer rates of Clavien ≥III morbidity (33.3% vs 71.4%), gastroparesis (33.3% vs 66.7%), fistula (0% vs 28.6%), hemorrhage (0% vs 57.1%) and wound infection (0% vs 28.6%).

Conclusion
PIN has not improved outcomes, though there is a trend to fewer complications particularly in high-risk patients according to PREPARE score.
Enlarging sample size of PIN patients may probably obtain statistical favourable results.

References:
Effects on nutritional parameters and inflammatory scores in a cohort of major pancreatic resections receiving preoperative immunonutrition

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Background
In patients undergoing pancreatectomy, improvement of inflammatory scores (IS) (Neutrophil-Lymphocyte Ratio NLR, Platelet-Lymphocyte Ratio PLR, Glasgow Prognostic Score GPS, Prognostic Nutritional Index PNI) has not been reported to date after preoperative immunonutrition (PIN).

Aim: to evaluate nutritional parameters (NP) and IS before and after PIN.

Methods
Prospective study of 10 patients receiving Impact®, 7 days prior to major pancreatectomy, irrespective of nutritional status.
NP and IS were compared between first blood sample (obtained before PIN) and second sample (immediately before surgery).
Study period February-December 2016.
Statistics: SPSS 18.

Results
Age: 66.2±10.5 years old, 60% males. Mean number of PIN packs: 22.6.
Before and after PIN, non-statistical differences were found for total plasmatic proteins (6.9±0.9 vs 6.3±0.5 g/dL), albumin (3.7±0.5 vs 3.4±0.3 g/dL) and prealbumin (26.7±12.6 vs 23.0±9.8 mg/dL).
NLR and PLR statistically decreased after PIN (2.6±0.9 vs 1.9±0.7, p=0.005, and 136.1±31.6 vs 97.6±18.0, p=0.001). No statistical differences found for PNI (45.8±6.6 vs 44.1±3.9) (lower figure reflects worse inflammatory state for PNI) nor for GPS: 4 patients did not modified initial score after PIN, 2 ones decreased category (inflammatory improvement) and 4 increased it (worsened inflammation).

Conclusion
Some IS (NLR and PLR) have decreased after PIN, demonstrating a partial inflammatory state improvement. However, increase in NP has not been achieved probably due to low sample size.
Electrochemotherapy in advanced pancreatic adenocarcinoma

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Background
Electrochemotherapy (ECT) is effective in treatment of various cutaneous tumors and could be translated into treatment of deep seated tumors. A prospective phase I/II study was conducted to evaluate feasibility, safety and efficacy of intraoperative ECT for locally advanced pancreatic adenocarcinoma. Secondary endpoint was to evaluate treatment response in terms of quantitative morphological and functional criteria based on Magnetic Resonance Imaging (MRI)

Methods
12 consecutive patients were enrolled. ECT with bleomycin was performed during open surgery, by insertion of electrodes into and around the tumor according to the individualized treatment plan. All patients underwent MRI and CT scan, before and after ECT treatment, using morphological and functional imaging. RECIST criteria were used to evaluate ECT response on CT and quantitative parameters were used to evaluate ECT response on MRI

Results
No acute and/or postoperative serious adverse events related to ECT were observed; no clinically significant electrocardiographic, hemodynamic, or serum biologic changes were noted. No clinically relevant elevation of amylase or lipase levels was observed in any patient and no bleeding or damage to surrounding viscera occurred. Functional imaging based on MRI has shown more suitable to evaluate ECT response than CT

Conclusion
ECT of locally advanced pancreatic adenocarcinoma proved to be feasible, safe and effective. Dynamic and diffusion MRI seemed to be more suitable to assess ECT response than CT imaging
Elevated NLR predicts poor prognosis after resection of pancreatic ductal adenocarcinoma and it is superior to PLR as an adverse prognostic factor.

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Background
Recent evidence indicates that inflammation is an essential component of pathogenesis and progression of cancer. In this study, we analysed two indexes of systemic inflammation, the neutrophil-lymphocyte ratio (NLR) and platelet-lymphocyte ratio (PLR), with overall survival (OS) in pancreatic ductal adenocarcinoma(PDAC) treated with resection following or not neoadjuvant chemotherapy/chemoradiation.

Methods
In this retrospective analysis, 127 patients were enrolled. The NLR and PLR were calculated on the basis of pre-treatment blood cell count. An NLR>4 and a PLR >120 were considered to be elevated. Overall survival (OS) was analyzed in relation to NLR and PLR values by using both Kaplan-Meier and multivariate Cox-regression methods.

Results
Both high NLR and high PLR were associated with decreased OS (HR 2.51; 95%CI, 1.42-4.45; P=0.001, and HR 1.63; 95%CI, 1.02-2.59; P=0.038 respectively) in univariate analysis. In multivariate analysis, high NLR, but not high PLR, was an independent predictor of decreased OS (HR 2.05; 95%CI, 1.11-3.78; P=0.043.) When we divided patients into three groups (group 1: normal both NLR and PLR, group 2: high NLR or high PLR, group 3: high both NLR and PLR) the three-years OS rates for these groups were 48%,32%,7%(P=0.001) respectively.

Conclusion
In this study, we indicate that pre-treatment NLR is an independent adverse prognostic factor in patients who undergo resection for pancreatic ductal adenocarcinoma following or not neoadjuvant chemotherapy/chemoradiation.
Encouraging observed 5-year survival with upfront resection and adjuvant therapy for pancreatic ductal adenocarcinoma in a large contemporary series

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Background
The rate of actual 5-year survival (5YS) in pancreatic ductal adenocarcinoma remains controversial. Available data is restricted to series including patients over several decades and one series with neoadjuvant therapy. The actual 5YS rate and prognostic factors after upfront resection remain unknown.

Methods
From a prospective database all patients undergoing upfront resection for PDAC from 10/2001 to 12/2010 were identified. Follow-up data included postoperative tumor-directed therapy, disease status, and survival.

Results
Of 912 eligible patients 3.8% with perioperative mortality and 6.2% lost to follow-up were excluded from the analysis of five-year survival. In 823 patients median survival was 22.5 months and actual 5YS was 17.1% (n=141) including 87 (10.6%) patients without evidence of disease. 5YS in patients with adjuvant therapy was 18.6% vs. 13.3% in patients without adjuvant therapy or with missing data (p<0.0001). By multivariable analysis tumor grading, extent of lymph node metastasis, IPMN context, and vascular resections were independently associated with overall and disease-free 5YS. Observed 5YS in patients with pN0R0 and in patients with only positive characteristics was 35.3% and 58.8%, respectively.

Conclusion
With a strategy of upfront resection an encouraging actual overall 5YS of 17.1% (18.6% in patients receiving adjuvant therapy) and a disease-free 5YS of 10.6% can be achieved. In favorable subgroups observed 5YS approaches 60%.
Endoscopic methods of internal drainage of pancreatic pseudocysts.

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Background
A steady increase in the incidence of chronic pancreatitis and its complications has been registered over the decade. Application of EUS-guided drainage has improved the results of treatment of this group of patients.

Methods
In the period from 2007 to December 2016, 263 patients were treated for chronic pancreatitis at Botkin Clinical hospital, 211 of which were operated in the HPB department of the hospital. All the patients underwent ultrasound examination, CT with oral and intravenous contrasting, MRCP, tumor marker analysis. In questionable tumor cases an EUS examination was conducted with fine needle biopsy. The patients’ age averaged 51 (20 to 70 years old), with 211 male (80.2%) and 52 female patients (19.8%).

Internal EUS-guided drainage of pseudocysts was performed in 28 cases. The average size of the cysts was 55 ± 6 mm. In 18 cases (8.5%) a nitinol stenting was performed, in 10 cases (4.7%) – a double-pigtail stenting was performed. Stents were removed 4-6 weeks after the introduction depending on the control CT results.

Results
The clinical effect was obtained in 100% of the cases. Complications were diagnosed in 2 patients who had plastic stents (cyst recurrence, abscess) and in one patient with a nitinol stent (stent dislocation). No cases of mortality were registered.

Conclusion
The employment of EUS-guided drainage of the pancreatic pseudocysts can improve treatment results and helps avoid major surgical procedures in such cases.
Enveloped double curse-string versus conventional pancreatico-gastrostomy: comparative study

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Background
Pancreatico-gastrostomy (PG) is widely applied for restoration of connection between the distal pancreatic remnant and digestive tract. So far, comparative studies on the clinical outcome of various PG techniques are scarce.

Methods
EDPS-PG entails telescoping the pancreatic remnant into the interior of the stomach via posterior gastrostomy. The telescoped pancreatic stump is encircled by two purse-string sutures which are tied in opposite directions at 180 degrees angle. The purse-string sutures are enveloped inside two layers of transfixing sutures.

Results
Thirty-three patients (22 conventional PG and 11 EDPS-PG) with operable pancreatic head cancer (31) or traumatic pancreas transection (2) were enrolled. Grade C postoperative pancreatic fistula occurred only in the conventional PG group. Patients in the EDPS-PG group needed significantly shorter time before removal of the abdominal drains (p< 0.05), significantly reduced length of hospital stay (p<0.05) and significantly lower grades of postoperative complications (p< 0.05) compared with the conventional PG group. Postoperative death occurred only in one patient in the control group. No significant difference could be found regarding operative time, postoperative bleeding delayed gastric emptying or bile leak.

Conclusion
EDPS is simple and safe technique for PG. EDPS-PG is associated with significant reduction in postoperative pancreatic fistula and overall complications.
Enzymatic mediastinitis: case description and review of literature.

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Background
Several types of thoracic complications can be associated with severe acute pancreatitis. Some of them are very common, such as pleural effusion, whilst some others are very rare but life threatening, such as enzymatic mediastinitis (EM).

Methods
We present the first case of EM occurring following pancreatic surgery and review the available literature.

Results
We describe the case of a 76 year-old female patient with necrotizing pancreatitis who was treated for an EM following a pancreatic necrosectomy. We review eleven cases of EM reported in the literature and describe treatment strategies and outcome.

Conclusion
EM is a very uncommon complication of acute pancreatitis. Surgical management is recommended.
EUS guided management of pancreatic related fluid collections

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Background
This study evaluated the early experience of a tertiary referral hepatopancreaticobiliary unit in endoscopic-ultrasound (EUS) initiated management of pancreatic related fluid collections.

Methods
A retrospective review of all consecutive patients referred for intervention to treat symptomatic peri- and intra-pancreatic fluid collections arising as a result of either acute or chronic pancreatitis was performed. Collections were evaluated using a linear endoscope and access obtained using a 19G hollow needle. Collections were initially managed either by aspiration only, placement of single / dual plastic pigtail catheters or fully covered self-expanding metal stents. Data was evaluated with respect to demographic data, aetiology of the collection, technical success of the initial procedure, early and late complications and subsequent course and outcome.

Results
Between February 2011 and February 2017, 70 patients were referred for endoscopic management of peri-pancreatic fluid collections. Seventy-one procedures were attempted with initial technical success achieved in 66 (93%). Thirty patients developed a total of 18 early and 26 late complications over the course of their management. Nine patients ultimately required surgery resulting in an overall success rate for endoscopic therapy of 87%.

Conclusion
EUS guided endotherapy of peri-pancreatic fluid collections is feasible and effective but accompanied by a significant complication rate necessitating repeat interventions and multi-disciplinary care.
Evaluation of preoperative CT parameters associated with postoperative pancreatic fistula after pancreaticoduodenectomy

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Background
Various CT parameters have been evaluated to predict postoperative pancreatic fistula (POPF) after pancreaticoduodenectomy (PD), but a standard core outcome set has not yet been agreed. The aim of the present study is to investigate the correlation of four widely reported preoperative CT-based parameters with the occurrence of POPF.

Methods
Patients who underwent PD with pancreaticojejunostomy were retrospectively included. Main pancreatic duct size (M-PDS), pancreatic gland density (PGD), perirenal fat density (FD) and fat thickness (FT) were assessed on preoperative portal phase CT and correlated to the occurrence of POPF according to ISGPF definition.

Results
POPF affected 20 of 88 patients (22.7%), of which 6 (6.8%) were grade C. M-PDS (median 4.3 mm, IQR 2.3 – 7.7) was associated with POPF of any grade (p=0.009). Median M-PDS was 1.6 mm (IQR 0.75 – 4.5) in the group with grade C-POPF and 4.8 mm (IQR 2.5 – 8) in the no-POPF group (p=0.036). Median PGD was 60 HU (IQR 49.7 – 91.7) and 83.5 HU (IQR 72.7 – 103.7) in the grade C and in the no-POPF groups, respectively (p=0.026). The area under the ROC curve for M-PDS and PGD were 0.758 (p=0.038) and 0.773 (p=0.028), respectively.

Conclusion
M-PDS and PGD assessed in the portal phase CT correlate with POPF. To the best of our knowledge, the present study is the first to assess PGD in preoperative CT portal phase. In particular, low PGD was associated with Grade C POPF and may estimate individual patient’s risk of life-threatening POPF.
Evaluation of the Clavien-Dindo classification in pancreatic surgery

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Background
The Clavien-Dindo (CDC) scoring system of postoperative complications was published in 2004. This grading system is established in many surgical disciplines. However, data on the use in pancreatic surgery is heterogeneous. The aim of this study was to evaluate this scoring system in pancreatic surgery with objective parameters.

Methods
We retrospectively studied all medical records of patients who underwent surgery between 2009 and 2014 in our hospital. 309 patients received a pancreatic head resection, a pancreatectomy or a left pancreatic resection. We performed an univariate analysis of the correlation between the CDC-score with objective parameters length of postoperative stay (LOS) and costs of stay. Furthermore we performed a subgroup analysis by means of chi-square test, fishers- and kruskal-wallis-test of demographic, clinical and operative data. The local ethics committee gave approval for this study.

Results
The objective parameters LOS and costs of stay correlated significantly with the different grades of the CDC-score. Further parameters that correlated significantly were number of reoperations, transfused RCC and the severity of post pancreatectomy hemorrhage, postoperative pancreatic fistula and delayed gastric emptying. Factors that were predictive for the different grades of the CDC-score were ASA-Score (p=0,0014), intraoperative blood loss (p=0,0016) and the number of RCC(p=0,0008).

Conclusion
The CDC-scoring system seems to be an good grading system after pancreatic surgery.
Pancreas surgery: Clinical
P15.05

Evaluation of the Modified CT Severity Index (MCTSI) and CT Severity Index (CTSI) in Assessing Severity And Clinical Outcomes in Acute Pancreatitis

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Background
The aim of our study was to compare the MCTSI, CTSI and APACHE II indices for predicting local complications and severity in acute pancreatitis (AP).

Methods
Clinical data of 71 patients enrolled prospectively at our institution were analysed; they underwent contrast-enhanced CT within the first week of symptom onset. Parameters evaluated were: local complications (pancreatic necrosis infection, need for invasive procedures against necrosis) and AP severity (persistent organ failure, admission to intensive care unit (ICU), AP severity according to the Atlanta Classification) and mortality. Chi-square and area-under-the-curve receiver-operating characteristics (AUC) were applied.

Results
For local complications, the MCTSI index showed superiority over the CTSI and APACHE II index in predicting an invasive procedure (AUC 0.819, CI: 0.69 – 0.95) and pancreatic necrosis infection (AUC 0.824, CI: 0.73 – 0.92). For severity prediction of AP, APACHE II showed superiority over MCTSI and CTSI for persistent organ failure (AUC 0.746, CI: 0.62 – 0.88) AP severity (AUC 0.746, CI: 0.62 – 0.87). CTSI predicted death better than the other indices (AUC 0.771, CI: 0.56 – 0.99) and MCTSI index forecasted better the need for ICU (AUC 0.692, CI: 0.54 – 0.85)

Conclusion
The MCTSI index more accurately predicts local complications than CTSI. MTCSTI is also a good predictor of death (even though the CTSI index showed a slight superiority) and need for ICU.
Extended pancreatectomy in patients with locally advanced pancreatic cancer

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Background
Extended pancreatectomy (EP) is the only potential cure for patients with locally advanced pancreatic cancer.

Methods
In the period 2011-2016 we performed 407 resections in pancreatic adenocarcinoma: distal pancreatectomy – in 98 (24%), pancreaticoduodenectomy – in 295 (72,5%), total pancreatectomy – in 14 (3,5%) patients. EP were performed in 88 (21,6%) patients. Extended pancreaticoduodenectomy – in 46 (52,3%), extended distal resections – in 35 (39,8%), extended total pancreatectomy – in 7 (7,9%). EP with arterial resections were performed in 4 patients, with venous resections - in 68.

Results
One or more postoperetive complications occurred in 57 patients (17,9%) in the standard resection group and in 13 (14,8%) in the group with EP. 13 (3,2%) patients died: 4 (4,5%)– after EP and 9 (2,8%)– after standart pancreatectomy. Median survival and 5-year overall survival rate were reduced in patients having EP compared with those undergoing a standard resection (18 months 15%, and 16 months and 13%, respectively).

Conclusion
The present results suggest that morbidity and mortality after EP are comparable with standart pancreatectomy. Long term results of EP are worse, comparable with standard.
External validation of the MDACC clinical classification system for pancreatic cancer in a European multicenter cohort

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Background
Evaluation of a clinical classification system for PDAC introduced by the MDACC. (Type A: resectable/borderline tumor anatomy, Type B: resectable/borderline resectable tumor anatomy with clinical findings suspicious for extrapancreatic disease, Type C: marginal performance status/severe pre-existing comorbidity profile, age>80).

Methods
Evaluated based on a multicenter database of patients undergoing surgery from 2005 to 2016 due to PDAC (n=1157). Complications were classified using the Clavien-Dindo classification. Chi-square test, Kaplan-Meier estimator and Cox regression hazard model were used for statistical analysis.

Results
Most patients (55.1%) were classified as type A, followed by type C (35.4%) and type B patients (9.4%) respectively. Regarding postoperative morbidity, 20.1% of all patients developed a relevant surgical complication (Grade III-V), 90 days' mortality rate was 3.8%. Type B patients had a significant worse disease free survival (10.5 month, p<0.001) and overall survival (24 month, p=0.001), while no difference was evident between type A and C patients. Multivariate analysis identified the type B classification as a negative prognostic marker for disease free survival (p=0.001, HR 1.53).

Conclusion
Type C patients did not show a higher morbidity and mortality rate. No difference in survival was seen. The prognosis seems to be related to the presence of findings suspicious for extrapancreatic disease, not to a marginal performance status or a severe pre-existing comorbidity profile.
Feasibility and Outcomes of Laparoscopic Enucleation

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Background
With the advancement of laparoscopic techniques and instruments, laparoscopic approach for the pancreatic lesions has become an increasingly used procedure. But, there are few limited studies about laparoscopic enucleation (LE) for the pancreatic lesions. Therefore, the purpose of this study was to present our experience and to evaluate the clinical outcome of LE for pancreatic benign or borderline malignant tumors.

Methods
Between May 2005 and December 2011, 11 patients who underwent LE were analyzed. Candidates for LE had following criteria: (1) benign or borderline malignant pancreatic tumor, (2) no involvement of main pancreatic duct, and (3) outwardly growing tumor with small tumor bed.

Results
All 11 patients (10 women and 1 man with a mean age of 43.1 ± 11.9 years) who underwent LE were completed laparoscopically without conversion. The mean diameter of tumor was 4.0 ± 3.3 cm and all cases had benign tumors at the final pathologic diagnosis. One patient (9%) developed pancreatic fistula and mean postoperative hospital stay was 5.5 ± 1.7 days. During follow-up period (mean; 44.3 ± 23.9 months), all patients were alive with no recurrence or new onset of diabetes.

Conclusion
LE is a safe and effective procedure, and should be considered as a treatment option for pancreatic lesions which do not involve the main pancreatic duct and have an outgrowing aspect with small tumor bed.
First results from the Swedish National Pancreatic and Periampullary Cancer Registry.

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Background
Despite improvement in the perioperative care and adjuvant chemotherapy regimens over the past decades, pancreatic cancer still has a poor overall survival. Specific cancer registries are set up in various nations to elucidate regional differences and hopefully enable larger prospective trials. The Swedish registry here presents its first results.

Methods
Since 2010 all patients with pancreatic and periampullary cancer should be registered in the Swedish National Periampullary and Pancreatic Cancer registry. The registry has a coverage ratio close to 90% and almost 100% for operated patients. The registry includes some 258 parameters from referral to 1-year follow-up.

Results
7048 patients with malignant periampullary cancer are entered in the registry. 2760 patients have had resection performed. Resection rates increased in Sweden doubled since 2010. 30-day and 90-day mortality after pancreaticoduodenectomy was 1.6% and 3.5% respectively. The overall 3-year survival for resected pancreatic ductal adenocarcinoma is 35%. The rate of negative explorations and length of stay (LOS) decreased over time. Regional variations seem to decrease but still exists. The validation of the registry confirmed good data accuracy.

Conclusion
Results from the Swedish National Registry are satisfactory and comparable to international standards. Trends over time show increasing resection rates and some improved results. Better collaboration and openness within pancreatic surgeons is an important side effect.
Pancreas surgery: Clinical
P60.04

Fistula risk-based use of external pancreatic drainage and modified Blumgart anastomosis minimize the postoperative fistula risk in high-risk patients

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Background
Fistula risk scores are barely used for decision-making and are not validated for different surgical techniques. We studied the use of modified Blumgart anastomosis associated to a selective external pancreatic duct drainage in high-risk duodenopancreatectomy patients.

Methods
64 consecutive patients from a prospectively maintained database were included and distributed into 3 groups according to the risk score developed by Callery et al. and the selective use of external pancreatic drainage as follows: Group 1: Negligible/low risk + anastomotic stent (n=32), Group 2: Intermediate/high risk + anastomotic stent (n=19) and Group 3: Intermediate/high risk + external pancreatic drain (n=13).

Results
The applied risk score kept its fistula predictive value for patients with modified Blumgart anastomosis (p<0,001). There were significantly less clinically relevant fistulas (7,7% vs 47,7%, p<0,001) in Group 3 compared to Group 2, and these were less severe according to the Clavien-Dindo complication scale. Among the intermediate/high-risk patients, Group 3 had shorter median postoperative length of stay (14 vs 19 days) and lower clinically relevant complication rate than Group 2 (15,4% vs 47,4%).

Conclusion
Selective external pancreatic drainage in intermediate/high-risk patients associated to a modified Blumgart anastomosis mitigates the fistula risk after duodenopancreatectomy. Fistula risk scores should be used for decision-making purposes in the perioperative period.
Frey operation for chronic pancreatitis

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Background
Chronic pancreatitis is a debilitating disease, and pain is its most severe symptom. For pancreatic head inflammatory mass with pancreatic duct dilatation, the Frey procedure can be used. The purpose of the video is to describe effective treatment of this condition by the Frey procedure in a patient previously submitted to pancreatic debridement.

Methods
A 44-year-old male patient was initially treated for recurrent acute pancreatitis, one of the episodes being a severe acute pancreatitis that required pancreatic debridement for infected necrosis, laparostomy and lengthy ICU stay. During the following 30 months, the patient was admitted several times because of recurrent episodes of pain, and lastly with jaundice due to CBD compression. Increasing doses of opioids were warranted, eventually becoming insufficient to manage pain. CT showed pancreatic head inflammatory mass and pancreatic duct dilatation. Thereafter, local resection of the pancreatic head combined with lateral pancreaticojejunostomy was performed, with no complications.

Results
After 10 months of follow-up, the patient had a 10Kg weight gain, demonstrates normal glucose metabolism, with slight need for enzyme supplementation, and he is jaundice and pain-free, not using any analgesic drugs.

Conclusion
Local resection of the pancreatic head combined with lateral pancreaticojejunostomy (Frey procedure) offers a advantageous outcome, even after history of pancreatic debridement for infected necrosis.
Gastrointestinal bleeding due to choledocho-duodenal fistula in a PAVM treated with transarterial embolization

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Background
Pancreatic arteriovenous malformation (PAVM) is an extremely rare disease. Less than 100 cases have been reported. This rare anormal vascular network can be presented as epigastric pain or with severe complications, like massive gastrointestinal bleeding due to different mechanisms: bleeding from pancreatic duct, from the bile duct (hemobilia), from a duodenal ulcer or esophageal varices rupture if the patient had developed portal hypertension. The management of PAVM is unclear. Some cases reported were surgically treated (pancreateico-duodenectomy); other authors attempted transarterial embolization before the surgery or like a definitive treatment. We report a case successfully treated with transarterial embolization.

Methods
A 61-year-old male was admitted due to epigastric pain and melena. The laboratory test results were as follows: Hb 10, serum amylase 1.042, GGT 1.060; GOT, GPT and Bil normal. A MR was performed and it revealed a bile duct blood clot. A CT scan demonstrated a PAVM. Arterial flow came from some superior mesenteric artery branches and the PAVM drained into the portal vein.

Results
A transarterial embolization was performed successfully and melena and epigastric pain disappeared. The patient was discharged asymptomatic on the 17th day after the admission.

Conclusion
Despite the absence of agreement in management, transarterial embolization could be performed as a definitive treatment in symptomatic PAVM.
Haemoconcentration on admission is a predictor of pancreatic necrosis: the association with BUN rising at 24h predicts severity in acute pancreatitis

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Background
The aim of our study was to compare admission haematocrit, blood urea nitrogen (BUN) and variations in their levels over 24 h with acute physiology and chronic health evaluation II score (APACHE II) in order to determine the most accurate laboratory test for predicting pancreatic necrosis and persistent organ failure in acute pancreatitis (AP).

Methods
Clinical data of 127 AP patients, prospectively enrolled for study at our institution, were analysed. The predictive accuracy of the laboratory test was measured using area-under-the-curve receiver-operating characteristics (AUC) analysis and sensitivity and specificity tests.

Results
Haematocrit ≥ 44% on admission was the only accurate test predicting pancreatic necrosis (AUC: 0.714 CI: 0.574-0.853) outperforming other laboratory parameters and APACHE II. For persistent organ failure, APACHE II was the most accurate test in the whole population (AUC: 0.812 CI: 0.697-0.927). In a secondary analysis of patients with haematocrit ≥ 44% on admission rising in BUN over 24 h, the rate of persistent organ failure rose compared with patients with no rise in BUN over 24 h (46.2% and 4.4%, respectively), with superiority over APACHE II score (AUC: 0.805, p=0.005 vs AUC: 0.798, p=0.007 respectively).

Conclusion
Haematocrit ≥44% on admission plays a role in the prediction of pancreatic necrosis. Additionally, haematocrit ≥ 44% on admission with rising in BUN over 24 h correlates well with the persistent organ failure rate.
Hemobilia as a rare condition after Whipple procedure. A case report

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Background
Hemobilia in general is a rare condition and can occur as a complication after intra-arterial hepatic chemoradiation therapy.

Methods
We report on a 73 year old male who underwent a pancreatic head resection for therapy of distal bile duct cancer.

Results
Eight days postoperatively the patient presented with an upper GI hemorrhage. The cause of the hemorrhage seemed to be bleeding from inside the bile duct itself. No bleeding from the anastomoses could be determined in an esophagastroduodenoscopy. The CT scan then showed a rare condition of a hepatic arteriobiliary fistula being the cause of blood loss.

Conclusion
We report successfully performing a coil embolization of a segmental hepatic artery. Subsequently no further bleeding occurred.
Hepatobiliary and pancreatic surgery in a low budget country: experience from Ayder Referral Hospital, Northern Ethiopia.

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Background
Ayder Referral Hospital is located in Northern Ethiopia, rendering service to a population of over 8 million people. Up to 2013 HBP surgery in Ethiopia was restricted mainly to Addis Abbeba, located 800 km from Ayder.

Methods
Starting in 2012 a team of German doctors regularly visited Ayder and established a HBP surgery training program. In addition, they provided equipment for the operating rooms and the intensive care unit. HPB training commenced in 2013 with external support by one experienced HBP surgeon (MWH). It was the aim to establish a self-sustaining HBP surgical program.

Results
HBP training included lectures, hands-on surgical training as well as clinical pathways for HBP procedures and complication management. One surgeon (RE) received additional training in Germany and India to advance HBP surgical skills. To date 3 liver resections and 11 pancreatic head resections (10 without external support) were performed with one patient death from PTE two months postoperatively.

Conclusion
A training program and clinical knowledge transfer have successfully been established at Ayder hospital. Complex HBP procedures are now being performed independently by a local team of surgeons. Further efforts strive to increase patient numbers, as well as to improve postoperative patient care in the intensive care unit and after discharge from the hospital. Our experience demonstrates that advanced HPB procedures can safely be performed after training “on the spot”.
High grade of neural invasion is the strongest predictor for local recurrence in pancreatic cancer

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Background
Pancreatic ductal adenocarcinoma (PDAC) is characterized by devasting poor survival, even with curative intended resection. Almost 100% of the resected patients have a neural invasion of the tumor [1]. The aim of this study is to estimate the impact of the degree of neural invasion on survival and tumor recurrence in PDAC.

Methods
Neural Invasion was assessed in tumor tissue of 225 patients, who were resected at our Department between 07/2007 and 10/2014 for histological confirmed PDAC. A Neural Invasion Index (NII) based on the Neural Invasion Severity Score: 1x epineural invasion+2x perineural invasion+3x endoneural invasion was calculated [1].

Results
96.3% of all included patients had a neural invasion. A higher NII was significantly associated with advanced tumor disease, as indicated by larger tumor size, lymph node metastases and extended resections. Multiple Cox proportional hazard model revealed NII as strongest independent predictor for local recurrence (p<0.0001) and also as an independent predictor for overall survival (p=0.001) and distant metastases (p=0.04).

Conclusion
Number and invasiveness of neural invasion assessed with NII is a very important and valid prognostic marker, especially for local recurrence.

References:
Pancreas surgery: Clinical
P56.01

HIV positive vs. HIV negative acute pancreatitis: etiology, severity and outcomes in the post ARV era.

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Background
HIV positivity and antiretroviral (ARV) treatment have been described as significant causes of acute pancreatitis (AP) prevalence and predictors of poor outcomes. This data is prior to the universal roll out of ARVs and newer agents. This study assessed if there is still a significant difference between HIV positive (HIV+) and negative (HIV-) patients in AP.

Methods
A retrospective review of a prospectively collected clinical database.

Results
HIV status was known in 110 patients, 35 HIV+ and 75 HIV-. There were no significant differences in age, gender or race. Median BMI was 24 (HIV+ vs. HIV- p=0.65).

Predominant etiology was alcohol (48.1%) and gallstones (33.3%) (HIV+ vs. HIV- p=0.62). ARV’s were not a significant etiology in HIV+ patients.

Admission modified Marshall score showed organ failure in 33.8% , 34.8% HIV+ and 33.3% HIV- (p=0.99). Admission median CRP in all patients was 30 , 48 in HIV+ and 24.5 in HIV- (p=0.6). Length of stay did not differ significantly; all patients were 13 (3-166) days; HIV+ 12(3-140) days and HIV- 13 (5-166) days (p=0.40).

HIV+ CD4 counts were median 259(3-911), viral load was lower than detectable limits in 3 patients. The treatment status was known on 35 patients, 20 were on ARVs. CD4 count of these patients ranged from 28 to 668.

Conclusion
In the present era of ARV treatment there is no significant difference between HIV+ and HIV- patients in the presentation, etiology and outcomes of AP.
How to perform laparoscopic duct-to-mucosa pancreatojejunostomy in high-risk score patients

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Background
According to prospective validated study score for pancreatic fistula, the main risk factors are gland texture, pathology, duct diameter and blood loss. While major blood loss usually is not an issue in laparoscopic surgery, we present our technique to safely perform pancreatojejunostomy in patients with soft gland and extremely small pancreatic ducts.

Methods
This video presents laparoscopic duct-to-mucosa pancreatojejunostomy in different scenarios. Small and extremely small pancreatic ducts, odd position of the pancreatic duct (position from posterior edge <3 mm) in patients with soft texture of pancreas are shown.

Results
In most cases there is a difficulty in finding the main duct. The duct located near to the posterior edge needs pancreatic stump posterior face dissection in order to allow duct-to-mucosa anastomosis without compromise external layer. Internal stents are used for extremely small ducts (1 mm). Sometimes even pediatric feeding tubes are not small enough to be introduced and venous catheter may be used. Interrupted sutures are usually necessary. Forty-seven patients with high-risk score submitted to laparoscopic duct-to-mucosa pancreatojejunostomy after pancreatoduodenectomy or central pancreatectomy were studied. Pancreatic fistula occurred in 15 patients (35%) but only two patients with grades B and C.

Conclusion
Laparoscopic duct-to-mucosa pancreatojejunostomy is feasible and safe even in patients with high-risk score for developing postoperative pancreatic fistula.
IL-6 and CRP are superior in early severity stratification of acute pancreatitis

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Background

The revised Atlanta classification (RAC) on acute pancreatitis (AP) presents distinct criteria for severity categorization.[1] Currently all patients with AP are hospitalized and managed identically. As incidence, and subsequently financial costs, is rising the necessity of early differentiation in AP will increase. This study aimed to investigate the capacity of biomarkers to stratify AP patients early in the course of the disease.

Methods

Patients with AP were consecutively enrolled and dichotomized into mild versus moderately severe plus severe AP (non-mild) according to the RAC. Serum samples taken within 13-36 hours after onset of disease were analyzed for 20 biomarkers. Through receiver operating curves cut-offs were set for the biomarkers that differed significantly between the mild and non-mild group. Patients were additionally classified according to the harmless acute pancreatitis score (HAPS).[2]

Results

Among the 175 patients, 70.9 % had mild and 29.1 % non-mild AP. CRP and IL-6 combined, with the cut-off levels 57.0 and 23.6 respectively, demonstrated superior discriminative capacity with an area under the curve of 0.803, sensitivity 98%, specificity 54% and a positive and negative likelihood ratio of 2.1 and 0.06 for the non-mild group. Regarding the mild cases, the identification potential of the HAPS was generally inferior compared to CRP plus IL-6.

Conclusion

In this study CRP and IL-6 demonstrate a clinically relevant capacity to differentiate mild from non-mild AP early in the course of AP.

References:


Impact of abdominal composition CT-profile on postoperative complications after curative resection for pancreatic cancer

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Background
This study aimed to reveal if preoperative CT-based measurements of abdominal composition profile may predict the risk of major morbidity and mortality after curative resection for pancreatic cancer.

Methods
CT-Images of 120 patients, curatively resected for pancreatic cancer were retrospectively analysed. Total Psoas Area (TPA) as a measure of sarcopenia, Pancreatic Attenuation Index (PAI) as a measure of soft pancreatic tissue, pancreatic duct diameter, amount of visceral and subcutaneous fat were quantitatively determined. Primary endpoint was 60-day mortality. Secondary endpoints included rate of pancreatic fistula and overall complications.

Results
There were 74 PD, 21 DP and 25 TP. Mean age was 68 years, mean BMI 24.9 kg/sqm. 29/120 patients were sarcopenic according to TPA, 17 of them had sarcopenic obesity. POPF rate was 15%, major complications Dindo>3 25%, mortality 2.5%. None of the studied CT-parameters were determinants of mortality. Sarcopenic obesity, low PAI <65 HU and pancreatic duct diameter <3mm were the sole independent risk factors for POPF and Major morbidity in the multivariate analysis.

Conclusion
Preoperative CT allows easy quantitative assessment of sarcopenic obesity, pancreatic texture and duct diameter and thus may reliably identify high-risk patients with respect to postoperative complications following resection of pancreatic cancer.
Impact of Diabetes Mellitus on The Outcomes After pancreaticoduodenectomy for Pancreatic Ductal Adenocarcinoma

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Background
Pancreatic ductal adenocarcinoma (PDAC) is a life-threatening health problem that poses substantial challenges in its management. Radical surgical excision is the principal step of multimodal treatment, but it is technically demanding, with high morbidity and mortality, and poor survival outcomes. The role of pre-operative diabetes mellitus (DM) on the outcomes after pancreaticoduodenectomy is still unclear.

Methods
We reviewed the data of patients who underwent PD for pathologically confirmed PDAC at Gastrointestinal Surgery Center, Mansoura University, during the period between 1993 and 2016. Patients were divided into 2 groups according to presence or absence of preoperative DM.

Results
451 patients underwent PD for PDAC and were included in this study. DM group included 113 patients (25.1%), and Non-DM group included 338 patients (74.9%).

- More firm pancreas was found in DM group (p=0.001), and more clinically relevant POPF was found in Non-DM group (p=0.018).
- There was more delayed gastric emptying, especially grade C, in DM group (p=0.02), which required longer nasogastric tube decompression (p=0.005). Also, there was more wound infection rate in DM group (p=0.001).

- The long-term oncological outcomes were comparable between groups regarding the OS (p=0.55) and DFS rates (p=0.972).

Conclusion
Preoperative DM did not significantly affect the perioperative outcomes after PD for PDAC patients, however, certain morbidity is more affected by preoperative DM.
Implementation Of Continuous Wound Infiltration In Pancreatoduodenectomy Reduced Hospital Stay as well as Fluid Resuscitation

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Background
There is no consensus regarding the optimal analgesic modality in pancreatoduodenectomy (PD). Continuous wound infiltration (CWI) with local anesthetics through pre-peritoneal catheters seems equally effective as epidural analgesia. We hypothesized CWI might reduce hospital stay since less fluid resuscitation is required.

Methods
A total of 257 consecutive patients undergoing PD in the University Hospital Southampton NHS between January 2009 and February 2015 were analyzed. Patients received perioperative analgesia with epidural analgesia (n=70), and after implementation patients received CWI (n=187).

Results
After implementation of continuous wound infiltration a shorter length of hospital stay was observed (15 days [12-22] vs 11 [8-14], p<0.001). Postoperative IV-fluid requirement [day 1-5] was lower (15 liter [14-16] vs 13 [12-14, p<0.001], whereas intraoperative fluid requirement was similar. No difference in the incidence of anastomotic leakage or delayed gastric emptying was observed. In a multivariable logistic regression model, CWI remained a significant predictor of reduced hospital stay and fluid resuscitation.

Conclusion
Implementation of CWI after PD was associated with reduced hospital stay and less postoperative fluid resuscitation.
Implementation of enhanced recovery program after surgery (ERAS) in patients undergoing pancreatectomy: a controlled before and after study

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Background
Implementation of ERAS program after pancreaticoduodenectomy was associated with decreased length of hospital stay (LOS) without compromising morbidity. However, there were only retrospective uncontrolled study and care protocols were heterogeneous. We aimed to evaluate the impact of ERAS program on post-operative outcomes after pancreatectomy through a prospective controlled study.

Methods
A before/after study with a contemporary control group was undertaken in patients undergoing pancreatectomy. ERAS program was implemented in the intervention hospital in September, 1st 2013, while the control hospital managed patients according traditional care. A difference-in-differences approach was used to evaluate whether implementation of ERAS program was associated with improved post operative outcomes.

Results
Respectively, 97 and 75 patients were included in intervention and control hospital. In multivariate analysis, implementation of ERAS was associated with a significantly shorten LOS (HR=1.61; 95% CI, 1.07-2.44) and higher compliance rate (OR = 1.34; 95% CI, 1.18–1.53). Difference-in-differences analysis revealed a non significant trend in favor of ERAS program with shorten LOS (RHR 1.18, 95% CI 0.62-2.23), higher compliance rate (ROR 1.22; 95% CI 0.97-1.54), morbidity and readmission rate remain stable.

Conclusion
Implementation of ERAS program was safe and effective in patients undergoing pancreatectomy with high compliance rate. LOS was significantly reduced without compromising morbidity.
Importance of intraoperative laparoscopic sonography in pancreatic surgery: turning a pancreaticoduodenectomy into a laparoscopic uncinatectomy

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Background
The pancreatic uncinatectomy is a more conservative approach than a pancreaticoduodenectomy and an adequate procedure to treat benign lesions and low grade malignancies. Despite the fact that it has some advantages as lower postoperative morbidity and parenchymal preservation, it is a rarely reported surgery.[1] [2]

We report a patient in which preoperative image studies showed a neuroendocrine tumor of the uncinate process of the pancreas with close relation to the pancreatic head and Wirsung. Initial idea was to perform a laparoscopic pancreaticoduodenectomy, but an intraoperative sonography showed that the tumor was a few milimeters away from the Wirsung duct. Option was to perform a laparoscopic uncinatectomy.

Methods
A 62 year old patient with a 2,4 cm lesion on the uncinate process with close relation to Wirsung duct on MRI. Endoscopic sonography guided biopsy disclosed a neuroendocrine tumor. Patient was submitted to laparoscopy with intent of performing a pancreaticoduodenectomy but an intraoperative sonography showed that the tumor was a few milimeters away from the Wirsung duct. Option was to perform a laparoscopic uncinatectomy.

Results
Operative time was 220 minutes. Estimated blood loss was 80 ml. Discharged at fourth postoperative day. Developed a grade A fistulae and the drain was removed two weeks after the surgery.

Conclusion
The use of intraoperative laparoscopic sonography in pancreatic procedures may add important additional anatomical information that can make possible parenchymal sparing procedures and avoid unnecessary extended surgeries.

References:
Improved Lymph Node Yield In Laparoscopic Distal Pancreatectomy Specimens In Patients With Pancreatic Adenocarcinoma

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Background
Lymph node yield (LNY) is an indicator of oncological adequacy of surgery for pancreatic adenocarcinoma (PAC). However, it is unclear if a standardized pathological examination (SPE) aimed at accurate staging can increase the LNY. If SPE cannot achieve a higher LNY, there is an argument for re-evaluating and modifying the surgical technique (ST) to increase its radicality. If, however, SPE increases the LNY, this may indicate appropriate ST, but previously improper pathology work-up.

Methods
After the introduction of SPE at Oslo University Hospital, data were collected prospectively on patients with PAC undergoing laparoscopic distal pancreatectomy. Results were compared with retrospective data from the specimens examined in a non-standardized way (NSPE). Patients undergoing en-bloc resection of adjacent organ(s), conversion to open surgery and those with IPMN-carcinoma were excluded.

Results
SPE and NSPE were applied to 16 and 33 specimens, respectively. SPE was associated with a higher LNY and higher median number of positive lymph nodes (p=0.001 and p=0.03, respectively). In the stepwise regression model, SPE and younger age resulted in an increased LNY. In the logistic regression model, LNY and tumor size positively correlated with N1 stage.

Conclusion
SPE is associated with higher LNY in patients with PAC, which increases the likelihood of detecting positive lymph nodes and reduces the risk of understaging. These findings also indicate that ST is adequate.
Improved telescopic pancreatojejunostomy in pancreatic surgery

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Background
A improved method of pancreatojejunostomy allowing to reduce the incidence of pancreatic fistula and associated severe postoperative complications.

Methods
Since 2015 till 2016 years 42 pancreateoduodenectomy for different biliopancreatoduodenal zone diseases were done. In all cases, the telescopic pancreatojejunostomy were formed.
A method of forming improved telescopic pancreatojejunostomy includes 5 stages:
1. two sutures equidistant from each other at the pancreatic capsule from the edge up to 0.5 cm by two needle thread.
2. sutures between the back of mobilized pancreas and the edge of the jejunum
3. two previous sutures with two needles suture the small intestine from the inside outward through all layers, exercising the exit of the needle approximately 4.0 cm from the edge of the jejunum
4. invagination pancreas inside the small intestine with subsequent fixation sutures
5. sutures between the front surface of the pancreas and the edge of the jejunum

Results
Postoperative complications occurred in 14 (33%) patients and pancreatic fistula in 7 (16.6%) patients.
Fistula grade A - 5 cases, two patients – grade B and were not fistulas grade C. One patient died due to non-surgical complications.

Conclusion
This method allows to make technical not difficult pancreatojejunostomy, which reduces the incidence of pancreatic fistula and associated with fistula postoperative complications.
Innovative laparoscopic distal pancreatectomy with splenic preservation mimicking the advantages of a robotic approach

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Background
In laparoscopic distal pancreatectomies with splenic preservation (LDPSP) it is crucial to establish a wide and stable operative field[1]. One potential advantage of the robotic approach is that a forth robotic arm operated by the surgeon allows to place retraction in a desired position that remains completely stable[2]. We describe a LDPSP in which a tape retraction of the stomach and a suture retraction of the pancreatic tail allowed an excellent operative field with the use of only three laparoscopic ports mimicking the robotic approach without its additional costs[3].

Methods
Female patient with a 3 cm intraductal pancreatic mucinous neoplasia of the pancreatic body. Three laparoscopic ports were used on the lower left quadrant. A tape was passed around the gastric body and fixed to the falciform ligament to expose the retroperitoneum. A silk suture with straight needle was inserted in the abdomen though a predetermined place in the skin, passed in the pancreatic tail and exteriorized again. It allowed efficient and safe retraction and mobilization of the pancreatic tail from the splenic vessels.

Results
Operative time was 170 minutes. Estimated blood loss was 30 milliliters. Postoperative period was uneventful. Patient was discharged on the fourth postoperative day.

Conclusion
A tape retraction of the stomach with suture retraction of the pancreatic tail allowed an wide and stable operative field that mimicked the operative field of a robotic procedure. Also allowed to perform a LDPSP with only three ports.

References:
Internal pancreatic fistula with pancreatic ascites in chronic pancreatitis: diagnosis and surgical management

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Background
Internal pancreatic fistula with pancreatic ascites (IPF PA) is an uncommon but well-known complication of chronic pancreatitis (CP) followed by significant morbidity and mortality [1, 2]. The aim of the present study is to evaluate the efficiency of different ways of diagnosis and surgical management in patients with IPF PA.

Methods
We have prospectively analyzed 29 patients with IPF PA who underwent surgical treatment. Patients’ data, diagnostic’s findings, surgical procedures, postoperative complications and survival have been analyzed. Additionally, quality of life has been assessed using the MOS SF-36 questionnaire.

Results
The current study has revealed a good performance (93.1%) of diagnostic algorithm (laparocentesis, CT, MRCP, ERCP) for determination of IPF PA. 25 patients underwent Frey’s procedure, 3 – cystopancreatojejunal anastomosis using Roux-en-Y loop, 1 - combination of Frey’s procedure and cystopancreatojejunal anastomosis using the same Roux-en-Y loop. Total morbidity and mortality were 10.3% and 3.5% respectively. We admitted improvement in comparison of life quality before the surgery and after 12 - 24 months (p < 0.01). Mortality and relapse of ascites weren’t observed during this period; the endocrine insufficiency was revealed in one patient.

Conclusion
Surgical treatment proves to be the effective and safe option for patients suffering from CP with pancreatic ascites with the significant subsequent improvement in their quality of life.

References:
Intraabdominal vacuum therapy with postoperative pancreatic fistula after pancreaticoduodenectomy

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Background
The life-threatening postoperative pancreatic fistula (POPF) is a feared complication after pancreaticoduodenectomy (PD). Nowadays there exist modern intraabdominal vacuum techniques as an option of therapy besides the pancreatectomy of the rest.

Methods
In our hospital we have treated two patients with type C POPF with intraabdominal vacuum bandages. For this we intraabdominally placed a silicone-coated (Mepithel®) polyurethane sponge (V.A.C.® GranuFoam™) under a continuous suction of between 75 and 125 mmHg at the target place. One of the applications was carried out via open surgery while the other one was done laparoscopically. In both cases the vacuum bandages have been repeatedly changed and finally an open wound management via wound tamponade was applied until the wounds healed definitely.

Results
From January 2013 to December 2016 161 pancreatic surgeries have been carried out in our hospital. 100 cases thereof were PD with a total fistula rate of 16% (16/100). Among these there have been two cases of type A POPF (2%), 11 cases of type B POPF (11%) and three cases of type C POPF (3%). Two cases of type C POPF could be treated successfully by the use of intraabdominal vacuum bandages. No rest pancreatectomies have been necessary.

Conclusion
The experiences in our hospital have shown that the above intraabdominal vacuum technique represents a sensible therapy option in the treatment of type C POPF and that by the use of a rest pancreatectomy can be avoided.
Intraductal papillary mucinous neoplasm A Swedish nationwide register-based study on 238 patients

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Background
Intraductal papillary mucinous neoplasms (IPMN) have an adenoma-carcinoma sequence but to date the impact of the different dysplastic grades on survival is not thoroughly explored. Studies often tend to classify high-grade dysplastic lesions as malignant together with invasive lesions when performing comparative subgroup analyses.

Methods
A retrospective review of prospectively collected data was performed using a nationwide register on histologically diagnosed IPMNs resected in Sweden during 2011 - 2016. Patients with a histological staging of the dysplastic grade, from low-grade to invasive carcinoma were included.

Results
A total of 238 patients were included (211 noninvasive and 27 invasive). There was no difference in survival between low-grade, intermediate-grade and high-grade dysplastic lesions (p=0.722) and they had similar 3-year survival 83%, 89% and 92%, respectively. However, once invasive the prognosis was severely impacted (p<0.001). One-year survival was 41% for invasive IPMN and 94% for noninvasive IPMN. Survival was slightly better but still worse in lymph node negative invasive IPMNs compared to noninvasive lesions (p=0.026). There was no age difference between the different dysplastic grades. Diabetes mellitus and a CA19-9 ≥37 U/ml were more often seen in patients with invasive IPMN.

Conclusion
High-grade dysplastic IPMN should not be considered a malignant disease, a finding that is consisting with previous work. Invasive IPMN has a poor prognosis even when lymph node negative.
Intraoperative Fistula Risk Score (iFRS) In Pancreatoduodenectomy: Development and Validation in Three Datasets


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Background

Postoperative pancreatic fistula (POPF) remains one of the most threatening complications after pancreateoduodenectomy (PD). Current risk scores, such as the Fistula Risk Score, predict the risk of POPF after surgery, whereas decisions on drain placement and the use of somatostatin analogues have to be made intraoperatively. We therefore aimed to develop an intraoperative fistula risk score (i-FRS).

Methods

We included patients after PD from three databases. The nationwide Dutch Pancreatic Cancer Audit (18 centers) between 2014-2016, the University Hospital Southampton NHS between 2007-2016, and an international database (17 centers, between 2001-2016). POPF was defined as ISGPF grade B/C fistula. Missing data were imputed with multiple imputation (five times). A prediction model was developed by multivariable logistic regression modelling.

Results

3,955 patients were included with 640 (16%) patients developing POPF. Three predictors were strongly associated with POPF: soft pancreatic texture (odds ratio: 3.88), small pancreatic duct diameter (continuous, odds ratio 0.77), and high Body Mass Index (BMI) (continuous, odds ratio 1.05). Discrimination of the model showed a c-statistic of 0.72. Cross-validation revealed the following C-statistics: 0.72 (DPCA), 0.74 (Southampton), 0.71 (international). An online calculator is available at pancreascalculator.com.

Conclusion

The i-FRS allows for intraoperative prediction of POPF based on pancreatic texture, ductal diameter, and BMI.
Intraoperatively diagnosed median arcuate ligament syndrome during pancreaticoduodenectomy

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Background
Median arcuate ligament syndrome has been reported in a small amount of patients undergoing pancreaticoduodenectomy. Most of the patients have been diagnosed preoperatively.

Methods
A 43-years old man diagnosed with pancreatic head adenocarcinoma using computed tomography (CT) and endoscopic ultrasonography guided fine needle aspiration biopsy, underwent laparotomy for pancreaticoduodenectomy. In preoperative radiologic evaluation any vascular abnormalities or invasion were not reported. The head of the pancreas and duodenum were mobilized using Kocher maneuver and the gastroduodenal artery (GDA) was ligated and transected. After transection of the GDA, absent hepatic artery, splenic artery and left gastric artery pulsations were recognized. After re-evaluation of the preoperative CT images, almost total celiac artery occlusion caused by median arcuate ligament was identified. After division of the median arcuate ligament, pulsatile blood flow was obtained in celiac artery and its branches. Pylorus preserving pancreaticoduodenectomy was performed. Postoperative period was uneventful and the patient was discharged on postoperative seventh day.

Results
After pancreaticoduodenectomy in patients with celiac axis stenosis or obstruction, it becomes problematic to maintain the upper abdominal organ blood flow, especially to the liver.

Conclusion
Preoperative meticulous evaluation of the celiac trunk and its branches is important, in pancreatic surgery, especially before pancreaticoduodenectomy.
Irreversible electroporation (none-thermal ablation) in treatment of locally advanced pancreatic cancer.

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Background
Local destruction now a day are not widely spread in treatment of pancreatic cancer because of characteristics of blood supply, anatomic and histologic structure of pancreas and high rate of complications and recurrence. The method if irreversible electroporation (IRE) is a new unique technology of non-thermal ablation directed to destruction of cancerous cells by subjecting them to a series of short electrical pulses using high-voltage direct current. This creates multiple holes in the cell membrane, irreversibly damaging the cell's homeostasis mechanisms and leading to cell death.

Methods
Aim of the study: to estimate the possibilities of IRE in treatment of locally advanced pancreatic cancer (LAPC). Materials and methods. 23 patients underwent IRE for unresectable LAPC with “Nanoknife” surgical system.

Results
Our experience shows the following advantages of IRE: comparable technical simplicity, safety for vascular and duct structures, minimal impact on the pancreas. The efficacy of IRE proved with ultrasound, CT and histologic (biopsy) investigation in postoperative period. The maximal period of supervision was 18 months. In one case acute pancreatitis noticed on the 8th day after the procedure with following successful conservative treatment.

Conclusion
Our own experience permit to acknowledge the efficacy and safety of IRE in palliative surgical treatment of LAPC.
Is the involvement of the hepatic artery lymph node a poor prognostic factor in pancreatic adenocarcinoma?

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Background
The aim of this study was to describe the predictive value of hepatic artery lymph node (HALN) metastasis compared to peripancreatic lymph node (PPLN) in overall survival (OS) and disease-free survival (DFS) of those patients who underwent pancreaticoduodenectomy (PD) for pancreatic adenocarcinoma (PA).

Methods
A single-center retrospective study which analyze prospectively those patients who underwent PD for PA between 2003 and 2014. Patients were included if during PD the HALN was submitted for pathologic evaluation and with at least one year of follow-up. Patients were excluded if margins were macroscopically positive. The median follow-up was 21 months.

Results
Of the 125 who underwent PD for PA, HALN status was analyzed for 64 patients. HALN was positive in 12 patients (19%), HALN and PPLN were negative in 12 patients (19%) and 40 patients (62%) were HALN-/PPLN+. The OS at 1, 3 and 5 years was: HALN+ group 72%, 9% and 9%; HALN-/PPLN- group 91%, 70%, 47% and HALN-/PPLN+ group 68%, 29%, 17% respectively (p = 0.015). The DFS at 1, 3 and 5 years was: HALN+ group 45%, 9% and 0%; HALN-/PPLN- group 81%, 38%, 38% and HALN-/PPLN+ group 43%, 17%, 10% respectively (p = 0.05). In multivariable model, the main risk factor for OS and DFS was the PPLN involvement (HR 2.7; CI 1.05-6.93) and the adjuvant chemotherapy the main protective factor (HR 0.13; CI 0.05-0.31).

Conclusion
Despite OS as DFS are significantly reduced in patients with positive HALN, multivariate model showed the PPLN status as the main factor of poor prognosis in our series.
KRAS and TP53 mutations are correlated with lower survival rate in resected pancreatic ductal adenocarcinoma

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Background
Factors responsible for long-term survival of patients with pancreatic ductal adenocarcinoma (PDAC) underwent surgical procedure are poorly understood. Aim of the present study was to clarify the clinical implication of the molecular status of the four genes (KRAS, TP53, p16 and SMAD4), and of other molecular markers, as IDH1 mutation gene, MSI and MGMT promoter methylation status.

Methods
In this study, 30 PDAC were analyzed. Fifteen patients had a survival rate higher than 53 months from surgery (LS) and 15 patients died for disease before than 24 months from surgery (NLS). The samples were analyzed for KRAS, TP53, NRAS and BRAF mutational status using Next Generation Sequencing.

Results
NLS group had a higher frequency of cases mutated for KRAS (86.7%) and TP53 (46.7%) if compared to LS patients (60.0% p= 0.2148 and 33.3% p= 0.7104, respectively). Intriguingly, when we compared the survival of both “KRAS+TP53” mutated patients with that of “WT/WT” subjects we observed that the survival time of the second group was more than twice higher than the one of “double-mutated samples” (81.0 months vs 35.8 months, p=0.0825).

Conclusion
Our data strongly support the fact that KRAS and TP53 mutations identify a subset of PCs with worst behaviour: patients with a KRAS/TP53 mutations had a survival rate less than half if compared with that of KRAS/TP53 wild-type subjects. These molecular markers could be analysed in preoperative material (e.g. EUS-FNA), allowing to provide prognostic information for tailored treatment.
Laparoscopic anterior RAMPS for pancreatic ductal adenocarcinoma

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Background
Radical antegrade modular pancreatosplenectomy (RAMPS) for pancreatic body or tail adenocarcinoma has been designed to increase the rate of negative margin and to obtain better N1 nodes clearance. However, laparoscopic RAMPS has been rarely reported.

Methods
Herein, we describe our technique for laparoscopic RAMPS. Following dissection of the gastro-colic ligament, proximal and distal control of the mesenteric-portal confluence is obtained and a retropancreatic tunnel is developed. Common hepatic artery is dissected from right to left until identification and dissection of celiac axis and of splenic artery, which is ligated. The pancreatic neck is transected, the splenic vein is dissected and divided. At this point, Treitz dissection is performed in order to identify the left renal vein, representing the posterior margin of dissection and the left side of superior mesenteric artery and of celiac axis, which represent the left dissection margin. The splenic artery is then divided and the dissection is continued posteriorly until distal pancreatosplenectomy is completed.

Results
The operative time was 368 minutes, estimated blood loss 150 cc. The postoperative period was uneventful and the length of stay was 10 days. Pathologic exam showed complete resection of a pT3N1 (n+ 2/tot 20) adenocarcinoma, all resection margins were >1mm.

Conclusion
RAMPS procedure with laparoscopic approach seems to be safe, feasible and effective.
Laparoscopic central pancreatectomy for IPMN

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Background
Central pancreatectomy (CP) is an excellent indication to the laparoscopic approach because theoretically is performed for low potential malignant diseases and therefore there is no technical or oncological contraindication. We illustrate our experience in this video.

Methods
Pure laparoscopic approach was performed with 5 trocars. Hanging of the stomach was done for safe dissection and to expose the posterior aspect of the stomach to achieve the one layer pancreatoco-gastric anastomosis. Our detailed surgical technique is illustrated in this video. This video illustrate our technique in a young patient who had suspected branch duct IPMN.

Results
Surgery lasted < 3 hours with minimal blood loss. The post operative course was uneventful with 14 days of hospital stay. Histology showed moderate grade IPMN with negative margins.

Conclusion
The laparoscopic approach should be the gold standard for central pancreatectomy because high applicability rate, preservation of the pancreatic function and parietal advantages because these procedures are mainly performed in young with excellent long-term prognosis.
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Laparoscopic cystogastrostomy

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Background
Pancreatic pseudocyst is a known complication of acute or chronic pancreatitis as well as pancreatic trauma. They are organized collections of fluid, related to the pancreas, without a true capsule. Pseudocyst drainage, whether percutaneous, endoscopic or surgical is indicated for symptomatic lesions, over 6cm in diameter and over 6 weeks old. Laparoscopic drainage has become a safe approach for when surgical treatment is indicated.

Methods
We present the case of a 54 year-old lady admitted for acute biliary pancreatitis. Over an 8-week period she developed a retrogastric giant pseudocyst, 22cm long, as seen on CT scan. She developed abdominal pain, dyspepsia and early satiety, and so surgical intervention was proposed.

Results
She was submitted to laparoscopic cystogastrostomy associated with cholecystectomy with intraoperative cholangiography that occurred with no complications. Discharged on the 5th postoperative day.

Conclusion
Pseudocyst formation occurs in 2 to 10% of patients with acute pancreatitis. Approach to this lesion must take various factors into consideration. When surgical drainage seems the best option, and the pseudocyst is in intimal relation to the posterior gastric wall, laparoscopic cystogastrostomy appears to be a valid approach, with low morbidity and efficacious drainage.
Laparoscopic Distal Pancreatectomy For Pancreatic Ductal Adenocarcinoma: Long-Term Oncologic Outcomes Following Standard Resection

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Background
Oncologic outcomes of laparoscopic distal pancreatectomy remain unclear. This study aimed to examine the oncologic adequacy of standard laparoscopic distal pancreatectomy (SLDP) in patients with pancreatic ductal adenocarcinoma (PDAC).

Methods
From January 2002 to March 2016, 207 patients underwent SLDP for PDAC at Oslo University Hospital - Rikshospitalet (Oslo, Norway) and Asan Medical Centre (Seoul, South Korea). After applying exclusion criteria, 186 patients were eligible for the analysis. Perioperative and oncologic variables were analyzed for association with recurrence and survival.

Results
Median overall and recurrence-free survival (OS and RFS, respectively) were 32 and 16 months, while 5-year OS and RFS rates were 38.2% and 35.9%, respectively. Ninety-six (51.6%) patients developed recurrence - 56 (30.1%) extrapancreatic, 27 (14.5%) locoregional and 13 (7.0%) combined locoregional and extrapancreatic. Thirty-seven (19.9%) patients had early recurrence (within 6 months of surgery). In the multivariable analysis, tumor size > 3cm and no adjuvant chemotherapy were associated with early recurrence (p=0.017 and p=0.015, respectively). The Cox regression model showed that tumor size > 3cm and lymphovascular invasion resulted in decreased RFS and OS.

Conclusion
SLDP is associated with satisfactory long-term oncologic outcomes in patients with PDAC. Tumor size > 3cm, no adjuvant chemotherapy and lymphovascular invasion are linked to poor prognosis.
Laparoscopic distal pancreatectomy should be the standard for neuroendocrine tumors. Analysis of a comparative study.

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Background
Although neuroendocrine tumors (NET) are an excellent indications for laparoscopic left pancreatectomy (LLP), however few studies are available comparing LLP to open left pancreatectomy (OLP) for NET. Our aim was to compare both approaches.

Methods
Between January 2008 and October 2015, 26 patients underwent LLP for NET. The laparoscopic approach (LA) was decided according to the surgeon expertise in laparoscopy but patients with very large tumor, adjacent organ invasion, and tumoral thrombus were excluded from the LA. These 26 were compared to 26 patients who underwent OLP and matched mainly on demographics data and the tumor size. LLP was compared to OLP.

Results
No difference regarding age (54 vs 50; p = 0.34), BMI (25 vs 23; p = 0.26), female gender (69% vs 60%; p = 0.44), mean operative time (177 vs 172; p = 0.81), mean blood loss (244 vs 243; p = 0.98), transfusion (4% vs 7%; p = 0.57) but less splenectomies (36% vs 78%; p = 0.002). No mortality. No difference in overall morbidity (65% vs 52%; p = 0.31), pancreatic fistula (50% vs 44%; p = 0.68), re-intervention (4% vs 7%; p = 0.55) and hospital stay (18 vs 20; p = 0.62). Pathology showed no difference in the size (3.4 vs 2.9; p = 0.55), the number of resected (7.4 vs 8.7; p = 0.48) or invaded LN (0.23 vs 0.44; p = 0.30). The mean survival was 44 (1-92) and 54 (1-172) months, and 5 year overall survival was 100% and 90% (p = 0.43). Recurrence was observed in 1 (4.2%) and 5 (18.5%) patients (p = 0.112).

Conclusion
This retrospective study shows that LLP should be the standard for the treatment of left sided NET.
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Laparoscopic distal pancreatectomy with preservation of splenic vessels. Lateral to medial aproach

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Background
Distal pancreatectomy with preservation of splenic vessels is a technique described by Kimura in 1996. It is indicated for the treatment of benign or potentially malignant lesions confined to the body or tail of pancreas. Like the Warshaw technique, it allows preservation of the spleen in cases of left pancreatectomy, but the incidence of vascular complications (splenic infarction) is lower with the Kimura technique, specially in the surgery of elderly patients.

Methods
We present in the video the case of a 72-year-old female patient with an intraductal mucinous secondary branch neoplasia, which had increased size and associated cytology with atypia.

Results
The patient was placed in the right lateral semidecubitus position and the intervention was performed using four trocars. The very caudal location of the lesion, as well as its size, allowed the easy identification of the splenic vein in its extrapancreatic segment next to the splenic hilum, reason why the pancreatic dissection was developed in lateral to medial sense. The parenchyma section was performed by applying an Echelon stapler ® with jaws protected with Seamguard ®. Surgical time was 180’, with minimal blood loss. The patient was discharged 48 hours after the procedure. He did not present any postoperative complication

Conclusion
Kimura's technique is appropriate for the treatment of distal pancreatic lesions. In such cases a lateral to medial approach may be helpful in order to minimize the risk of intraoperative hemorrhagic complications.
Laparoscopic doudenopancreatectomy (LPD) - our approach. How to do it?

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Background
PD still remains a challenging procedure even in the hand of experienced laparoscopic surgeons. LPD is hampered by the friable nature of the gland and the difficulty of its exposure, advanced technology and surgeons experience are leading to development of minimally invasive pancreatic surgery. LPD are advocated to improved perioperative outcomes, including decreased blood loss, shorter length of stay, reduced postoperative pain and expedited time to functional recovery.

Methods
The steps of LDP procedures are similar to the open procedure. For the period 2014-2016, we have been perform 46 PD, 14(30%) we have done with laparoscopic approach. 4(28,5%) of patients were operated totally laparoscopic and 10(71%) of patients were operated by hand-assisted techniques.

Results
We found longer operative time in laparoscopic group, 385min. vs 210 min in open group. Mean blood loss was 260ml in laparoscopic operated patients and 430 ml in open group. Mean length of stay was 8 days in laparoscopic group vs 14 days in open group. Overall morbidity in laparoscopic group was 21%. One patient with superior mesenteric vein thrombosis (Clavien-Dindo-II), One patient with postoperative acute necrotizing pancreatitis (Clavien-Dindo-IVa), a patient with low debit pancreatic fistula (Clavien-Dindo-II). Mortality rate was 7%(1 p.)

Conclusion
LPD can be done laparoscopically in selected patients by experienced surgeons (in laparoscopic and open surgery too), but clear advantages remain to be defined.
Laparoscopic enucleation of Branch Duct IPMN of the head of the pancreas

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Background
Enucleation is a sparing parenchyma procedure for benign lesions or low grade malignant tumors of the pancreas, and when performed for lesions on the head of the pancreas it presents the advantage of avoidance of reconstruction of pancreatic or biliary duct. Most of reports on laparoscopic enucleation are of solid tumors or cystic tumors non communicated with the main pancreatic duct. IPMN's remains controversial in laparoscopic enucleation. Our aim is to show our results in laparoscopic enucleation of BD IPMN of the head of the pancreas.

Methods
A retrospective study from 2012 to 2015 was performed recollecting laparoscopic enucleations of BD IPMN. 5 Patients were included. Surgery indication was made according Sendai Criteria.

Results
The mean age of patients was 53 years old. Most indications of surgical intervention were increase in size and pancreatitis. All Cysts were located in the head/uncinated. Malignancy was ruled out by CT scan, MRI and EUS. Frozen section was routine. Final pathology showed mild and moderate side-branch IPMNs. Two patients developed pancreatic leaks (grade A and B), and one patient acute pancreatitis with posterior bleeding that required an angiography. No patients had recurrent cysts or adenocarcinoma with a follow up to present day.

Conclusion
In our experience laparoscopic enucleation for BD IPMN's of the head of the pancreas is feasible and safe in selected cases, avoiding large resections with their respective consequences.
Laparoscopic longitudinal pancreateico-gastrostomy with gastric bipartition for chronic pancreatitis

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Background
Longitudinal pancreateico-gastrostomy with gastric bipartition (LPGD) has been proposed by the author’s as a new technique for reconstruction of digestive tract after a Modified Partington-Rochelle (MPR) for the treatment of selected cases of chronic pancreatitis.

Methods
We present our technique of the laparoscopic approacha for longitudinal pancreateico-gastrostomy with gastric bipartition

Results
Two patients suffering from chronic pancreatitis and dilatation of the main pancreatic duct were operated of laparoscopic LPGD. Main indication was uncontrollable visceral pain. No postoperative complications were detected. Both patients experienced immediately relief of the pain and remain asymptomatic without the need for analgesia.

Conclusion
Laparoscopic LPGD is a novel, safe and effective technique for the treatment of pain in patients with chronic pancreatitis, dilated duct and no mass effect on the head of the pancreas. The results in the short to medium term are excellent, although, as a new technique, we do not yet have long-term results in terms of pain relapse.
Laparoscopic multivisceral distal pancreatectomy

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Background
Laparoscopic distal pancreatectomy (LDP) with multivisceral resection can be a challenging procedure.

Methods
This is the case of a 79 years old lady who presented with a 35 mm part cystic pancreatic tail mass with evidence of splenic vein occlusion and pancreatic tail atrophy, in keeping with pancreatic adenocarcinoma. A LDP and splenectomy was planned, however the intraoperative findings were of a mass in the body of pancreas invading into transverse mesocolon and posterior wall of the stomach.

Results
A LDP with an en bloc wedge resection of the stomach and partial excision of the transverse mesocolon was performed. The operative time was 180 minutes, with 300 ml blood loss. The patient was discharged on postoperative day 3 with the drain in situ, which was removed 7 days after the operation in clinic. Histopathology showed well differentiated ductal adenocarcinoma pT3N0R0. We also present our results in 15 similar cases showing good short and long term outcomes.

Conclusion
Laparoscopic multivisceral distal pancreatectomy is feasible and safe in expert hands even for oncological resections.
Laparoscopic pancreaticoduodenectomy with reconstruction of the mesentericoportal vein with the falciform ligament

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Background
Although laparoscopic pancreaticoduodenectomy (LPD) is increasingly used, however vascular resection-reconstruction by the laparoscopic approach was rarely done. The parietal peritoneum (PP) was recently described for reconstruction of the mesenterico-portal vein with excellent results. We illustrate our experience in this video.

Methods
Compared to open approach, full mobilization of the mesentery and right liver is not systematic and theoretically with the laparoscopic approach, vascular graft may be necessary for vascular reconstruction and the PP is rapidly available. In this video we illustrate our experience in a men who underwent LPD for IPMN with vascular resection and reconstruction.

Results
The lateral right side of the superior mesenteric vein (> 25 mm) was resected under vascular occlusion. Reconstruction was achieved rapidly as a lateral patch with the falciform ligament. Surgery lasted 420 minutes with 50 minutes of portal vein occlusion and 300 ml of blood loss. The postoperative course was uneventful with 16 days in the hospital. Histology showed moderately severe dysplasia IPMN. Postoperative CT scan showed a patent portal vein without stenosis.

Conclusion
With the widespread use of LPD, venous resection will become routine and a lateral or tubular vascular graft may be more frequently required. We feel that with the laparoscopic approach, the parietal peritoneum has many advantages compared to an open approach including easy access, unlimited size and the rapid harvesting.
Laparoscopic pancreaticoduodenectomy: A promising new technique for pancreaticojejunostomy using V-Loc suture

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Background
Pancreatic fistula rate remains a matter of debate as the most important morbidity after pancreaticoduodenectomy. We have previously described a pancreaticojejunostomy technique using V-Loc suture with promising outcome considering fistula rate. The aim of the present study was to observe whether this new technique would be feasible and safe during laparoscopic pancreaticoduodenectomy.

Methods
Between January 2012-September 2016, 39 patients who underwent totally laparoscopic pancreaticoduodenectomy (TLPD) were prospectively included. In all patients, same surgical team performed lateral pancreaticojejunostomy (LPJ) anastomosis using V-Loc suture. Postoperative pancreas fistula (POPF), anastomosis duration, hospital stay, postoperative morbidity and mortality were recorded. POPF was classified up to the international study group definition.

Results
There were 22 male and 17 female patients with a mean age of 56 ± 6 (38-76) years. The mean time of surgical procedure and LPJ was 340±36 min (250-385 min) and 36±5 min (30-46 min), respectively. The number of patients with POPF (12%) were as follows; Grade A: 3, Grade B: 1, Grade C: 1. The rate of overall morbidity was 7.2% (postoperative hemorrhage (n=1) and hepaticojejunostomy stricture (n=1), surgical site infection (n=1), POPF (n=1). There was no 30-d postoperative mortality.

Conclusion
This new technique for dunking LPJ anastomosis using V-Loc appears to be remarkably safe and feasible approach to pancreaticojejunostomy without adversely affecting operating time or POPF rate.
Laparoscopic pancreateoduodenectomy in 50 consecutive patients with no mortality: How to beat the learning curve?

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Background
This study presents results regarding initial use of laparoscopic pancreateoduodenectomy (PD) in a single center.

Methods
From March 2012 to September 2015, 50 consecutive patients underwent laparoscopic PD. Reconstruction of the digestive tract was performed with double jejunal loop technique whenever feasible. Patients with portal vein invasion were operated by open approach.

Results
27 women and 23 men with a median age of 63 ys underwent laparoscopic PD. 5 underwent total pancreatectomy. All but one patient (previous bariatric operation) underwent pylorus-preserving resection. Reconstruction was performed with double jejunal loop in all cases except in 5 cases of total pancreatectomy. Conversion was required in 3 patients. Median operative time was 420 min and mortality was nil. Pancreatic fistula occurred in 13 patients(26%). There was one grade C (reoperated), one grade B (percutaneous drainage) and all remaining were grade A (conservative treatment). Other complications included port site bleeding (n=1), biliary fistula (n=2) and delayed gastric emptying (n=2). Mean hospital stay was 8.4 days.

Conclusion
Laparoscopic PD is feasible and safe but is technically demanding and may be reserved to highly skilled laparoscopic surgeons with proper training in high-volume centers. Isolated pancreatic anastomosis may be useful to decrease the severity of postoperative pancreatic fistulas.
Laparoscopic Resection of the Uncinate Process of the Pancreas

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Background
Resection of the uncinate process of the pancreas is a complex parenchymal-sparing and rare surgical procedure, even in open surgery. This video shows a laparoscopic resection of the uncinate process of the pancreas.

Methods
A 63-year-old man with a 3-cm neuroendocrine pancreatic tumor was referred. Clinical history shows a morbidly obese patient with coronary disease. Patient was considered a high-risk for pancreatectoduodenectomy. We decided to perform resection of the uncinated process by laparoscopy. Five trocars were used. A Kocher maneuver was performed with complete exposure of pancreatic head and uncinate process. The uncinate process was dissected from the superior mesenteric vein. Blood supply of the duodenum was preserved. Small pancreatic branches from inferior pancreateoduodenal artery were divided. Transection of pancreatic parenchyma was performed using coagulation shears. Surgical specimen was removed through umbilical port inside a retrieval bag. A hemostatic absorbable tissue was placed in the cutting pancreatic surface, and abdominal drain was left in place.

Results
Operative time was 100 minutes with minimum blood. Hospital stay was 3 days. Pathology confirmed neuroendocrine tumor with free margins. The patient is well and no evidence of the disease one year after the procedure.

Conclusion
Laparoscopic resection of uncinate process of the pancreas is safe and feasible. It is a good alternative to pancreatectoduodenectomy and should be considered for patients with low-grade malignancies.
Pancreas surgery: Clinical
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Laparoscopic resection of the uncinate process of the pancreas due to a branch-type IPMN

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Background
A 68-years-old man was diagnosed of a symptomatic 36 mm branch-type IPMN covering all the uncinate process of the pancreas. He previously presented two episodes of acute mild pancreatitis. On MRI was observed a small duct communicating the IPMN with the main pancreatic duct. Endoscopic ultrasound confirmed a mucinous cystic lesion in the uncinate process with an amylase level of 85.854 U/L and CEA 243 ng/ml.

Methods
A laparoscopic formal resection of the uncinate process of the pancreas was proposed. The patient was placed in supine with the legs spread open. The gastro-colic ligament was opened and the head of the pancreas exposed. The uncinate process of the pancreas was gently dissected from the right mesocolon, third portion of the duodenum and superior mesenteric vein. Pancreatic branches of the inferior anterior pancreatico-duodenal artery were divided. The communication duct of the IPMN with the main pancreatic duct was dissected and sutured after completing the uncinectomy. A drain was left in place.

Results
Total operative time was 430 min. Blood lost was uncountable. On postoperative course presented a grade B (antibiotic therapy) postoperative pancreatic fistula. Length of stay was 8 days. Definitive diagnosis confirmed a IPMN with low-grade dysplasia (no dysplasia in the communicating duct).

Conclusion
Laparoscopic uncinectomy is a challenging operation, but an excellent alternative to pancreatico-duodenectomy in selected cases of premalignant lesions.
Laparoscopic spleen preserving distal pancreatectomy with intra-operative assessment and frozen section may prevent unnecessary splenectomy

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Background
A 71 year old lady was referred to our centre with 25mm cyst at the tail of the pancreas. CT and EUS showed septation and soft tissue within the cyst, raising suspicion of malignancy and laparoscopic left radical pancreatectomy and splenectomy was recommended.

Methods
The intra-operative ultrasound showed a cystic lesion adherent to the vessels but the contour of the splenic vessels was intact with no invasion or deformity. Macroscopically the cyst appeared benign with a clear cystic formation. A spleen-preserving vessel sparing distal pancreatectomy (LSPDP) was performed with careful dissection of the splenic vessels. A frozen section confirmed the diagnosis of cystic adenoma and no further resection was needed.

Results
Operative time was 228 min with a total blood loss of 100mls. The patient was managed post operatively as per standard enhanced recovery and was discharged home on day 4 post surgery.

Conclusion
Preoperative assessment of pancreatic lesions can be difficult and may lead to unnecessary resections to ensure oncological efficiency. If there is doubt about the nature of the lesion, clinical experience and careful intra-operative assessment play a significant role in challenging the diagnosis. Spleen-preserving distal pancreatectomy with vessels preservation is a technically difficult procedure especially when there is a large lesion adherent to the vessels.
Laparoscopic spleen-preserving “tail-only” pancreatectomy for a left-sided neuroendocrine tumor

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Background
Pancreatic neuroendocrine tumors (pNET) have been increasingly diagnosed lately due to imaging refinements. Resection of pNET is often carried out in young patients, hence, a mini-invasive approach is desirable to limit perioperative morbidities, while spleen preservation avoids lifelong risk of severe infections and overwhelming post-splenectomy sepsis. This video describes our laparoscopic technique for limited pancreatic tail resection with preservation of splenic vessels (LTPSP).

Methods
A 55 year-old obese female (BMI 37.6) was referred to our clinic after discovering a mass in the pancreatic tail by a CT scan, performed for a suspicious hepatic focal nodular hyperplasia. Work-up was completed with an abdominal MRI and a 68Ga-labeled somatostatin analogue PET/CT, confirming the neuroendocrine nature of the lesion.

Results
The video exhibits patient position and trocars placement followed by a thorough description of the technical aspects of LTPSP. It focuses on the “tail to body” dissection which spares distal splenic vessels and ensures satisfactory free margins. Patient postoperative course was uneventful, length of stay was 5 days. Pathology was compatible with a G1 pNET with clean resection margins.

Conclusion
Mini-invasive parenchymal-sparing pancreatectomy appears a safe alternative to more extensive resections for benign and low-grade malignancies of the tail. Our “tail to body” approach allows a limited distal resection, ensuring oncological free margins while preserving splenic vessels.
Laparoscopic-adapted Blumgart anastomosis in laparoscopic pancreatico-duodenectomy

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Background
Laparoscopic pancreatico-duodenectomy (LPD) is a challenging and emergent operation with growing interest among surgeons worldwide. Pancreatic reconstruction is one of the main drawbacks of success. Blumgart anastomosis has been demonstrated as one of the safest pancreatic reconstructions, but difficult to perform by laparoscopy.

Methods
We present our technique for adapting the Blumgart anastomosis to the laparoscopic approach in LPD.

Results
From February 2013 to November 2016 we have operated 15 patients of LPD with laparoscopic-adapted Blumgart anastomosis (lap-BA). Two patients presented a clinically relevant postoperative pancreatic fistula (grade B), both needed antibiotic therapy. No severe Clavien-Dindo complications (III-V) were observed. Median length of stay was 14 days.

Conclusion
Our personal technique for performing a laparoscopic adapted Blumgart anastomosis in LPD is safe and can facilitate the pancreatic reconstruction in LPD.
Lumbo-Retroperitoneal and Subcostal Approach is Associated with Low Complication Rate and Mortality in Different Types of Necrotizing Pancreatitis

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Background
Minimally invasive necrosectomy is associated with better outcomes and certain technical limits. The study aimed to evaluate a 12-year-long experience with lumbo-retroperitoneal/subcostal necrosectomy.

Methods
Patients with different forms of necrotizing pancreatitis were prospectively included in the study from 2004 to 2016. Patients who underwent ultrasound-assisted limited lumbo-retroperitoneal and/or subcostal necrosectomy were allocated to focused open necrosectomy (FON) group; those who underwent conventional open necrosectomy (CON) served for control. Sepsis was defined according to Sepsis-3 guidelines.

Results
A total of 182 patients underwent necrosectomy; 84 according to the FON and 98 according to the CON approach. In 19% of patients the disease resulted in >30% pancreatic necrosis; in 34% it was graded at 30–50%, and 47% showed >50% necrosis. Sepsis developed in 77%–80% of patients. The median length of intervention was 58 minutes in FON vs. 116 minutes in CON group, p<0.001. Notably fewer repeated interventions in the walled-off necrosis phase were in FON group, 33% vs. 63%, p<0.003. The overall complication rate was similar, 18%–34%. The median ICU stay and hospital stay were significantly shorter in FON group, 12 days vs. 21 days, p<0.001, and 50 days vs. 69 days, p< 0.002. Mortality reached 6% in FON group and 9% in CON group.

Conclusion
Lumbo-retroperitoneal and subcostal necrosectomy are associated with low complication and mortality rates.
Major pancreatic resection in Jehovah's witness patients: a single institute experience

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**Background**
The patient’s refusal to accept blood transfusions during major abdominal surgery forces the surgeon to face an ethical challenge and raises doubts about the appropriate perioperative management of these patients. The aim of this study is to present our experience and assess the safety of bloodless major pancreatic surgery.

**Methods**
We retrospectively analysed perioperative outcomes of 25 unselected Jehovah’s witness who underwent surgery for pancreatic and periampullary tumors between 2010 and 2016. In collaboration of a multidisciplinary team, we treated perioperative anaemia with drugs stimulating erythropoiesis (erythropoietin, iron and folic acid).

**Results**
18 patients underwent pancreaticoduodenectomy, 3 spleen-preserving left pancreatectomy, 3 distal splenopancreatectomy, 1 total pancreatectomy. Median estimated intraoperative blood loss was 400mL (300 to 700mL). Median preoperative and postoperative day 1 values of Hb was 14g/dL (12 to 16) and 12g/dL (9 to 15), respectively. 10 (40%) patients had Clavien-Dindo < 3 complications: 6 pancreatic fistula (5 grade A and 1 grade B), 3 delayed gastric emptying, 1 abdominal collection, 1 biliary fistula, and 1 pulmonary thromboembolism. Only 1 patient had an abdominal fluid collection that required percutaneous drainage (Clavien-Dindo >3). In hospital mortality was 0%. Median length of stay was 16 days (8 to 30).

**Conclusion**
Multidisciplinary approach and specific perioperative management permit safe pancreatic resections in Jehovah's Witness patients.
Male gender and increased body mass index independently predicts clinically relevant morbidity after spleen-preserving distal pancreatectomy

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Background
Distal pancreatectomies are widely associated with high morbidity rates. Although several studies have identified risk factors for complications after distal pancreatectomy, however, none included only patients with spleen preservation. The study aims to explore predictors of clinically relevant complications after spleen-preserving distal pancreatectomy.

Methods
The data of 41 patients who underwent a spleen-preserving distal pancreatectomy at a single centre between 2000 and 2015 were reviewed. Uni- and multivariate analyses were performed to assess potential predictors of morbidity. A complication ≥ grade 2 Dindo was considered as clinically relevant.

Results
At least one clinically relevant complication occurred in 8 patients (19.5%). The univariate analysis identified male gender (p = 0.034), increased body mass index (p = 0.002) and neuroendocrine pathology (p = 0.013) as statistically significant risk factors. Furthermore, age, comorbidities (other than diabetes and obesity), operative time and tumor diameter were identified as marginally significant factors (p values < 0.1). The multivariate analysis identified male gender (HR = 1.29, 95% CI 1.07-1.55, p = 0.005) and increased body mass index (HR = 23.18, 95% CI 1.72-310.96, p = 0.018) as the only independent risk factors.

Conclusion
Male gender and increased body mass index are independently associated with an increased risk for a clinically relevant complication after spleen-preserving distal pancreatectomy.
Management of neuroendocrine tumors in the Netherlands

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Background
Efficacy of treatment of pancreatic neuroendocrine tumors (pNET) requires experience and knowledge. To develop optimal treatment strategies, more insight in the prognosis and treatment outcomes is needed.

Methods
Patients diagnosed with pNET in the Netherlands between 2008 – 2013 were retrospectively analyzed through a nationwide, population based registry. Survival analyses were performed based on tumor stage, tumor grade or first-line treatment.

Results
In total, 614 patients were included, 261 patients died. Median follow-up was 25.7 months. Grade was determined in 42%. Lymph node metastases (LNM) were seen in 29%, distant metastases (DM) in 47% patients. LNM affected median survival (84 vs 29 months, p<0.001). Five-year survival was 27% with vs 79% without DM (p<0.001). The effect of DM on survival was more significant in lower tumor stages (T1-3 p<0.05, T4 p=0.13). Resection in case of DM showed better 5 year survival compared to systemic treatment (87% vs 28%, p=0.004). Without surgery, patients with DM had better survival with systemic treatment than without treatment (28% vs 15%, p=0.015); independent of tumor stage (T1-2 vs T3-4, p<0.001). LNM, DM, surgery, targeted therapy and nuclear therapy were independently associated with better survival for patients with G1 and G2 tumors.

Conclusion
Pathological confirmation of tumor grade needs to be improved. Grade and stage affect survival the most. Indications for survival benefit after surgical resection of patients with DM is supported by this data.
Management of Pancreatic Trauma: Various manifestations - interdisciplinary therapy

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Background
Pancreatic trauma (PT) is rare. It varies enormously in its clinical presentation and need for treatment. It is classified according to the American Association for the Surgery of Trauma and often presents as concomitant injury in blunt abdominal trauma. Diagnosis may be difficult because of delayed clinical or radiological manifestation, as well as primarily unremarkable lab-results. Treatment options comprise conservative measures, endoscopic or interventional as well as highly complex surgical procedures. There are no uniform treatment recommendations.

Methods
We analyzed data from 23 patients who were treated in our hospital because of PT since 2005.

Results
The median age in our cohort was 36 years with a m:f ratio of 20:3. In 91,5% blunt abdominal trauma was the reason for PT, whereas penetrating trauma occurred in 8,5%. PT was traffic related in 65%. Surgery was performed in 20 patients. Only 4 surgeries were done for PT. Complex procedures as i.e. a combined fishmouth closure of the pancreatic head and pancreatogastrostomy for complete disrupture of the gland, were performed. Endoscopy was done in 47% and in some cases could splint pancreatic duct disruptions.

Conclusion
If therapy for PT is required, be it endoscopical, radiological or surgical, we talk about highly complex procedures to be performed in centers with all specialties at hand. It is important to be flexible and open to a multidisciplinary approach as the primary aim should always be the preservation of the organ and its function.
Management of portal annular pancreas during laparoscopic pancreaticoduodenectomy

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Background
Portal annular pancreas (PAP) is a rare congenital anomaly consequent of an aberrant fusion of the ventral and dorsal fetal pancreas. When surgery is planned, accurate identification of this anomaly could be crucial to avoid postoperative pancreatic fistula (POPF) related to the possibility of leaving undrained a portion of pancreatic parenchyma.

Methods
The present is a case report describing the operative management of PAP during laparoscopic pancreaticoduodenectomy (LPD).

Results
A 77 year-old male patient with a recent diagnosis of ampullary adenocarcinoma underwent LPD. Due to PAP presence, two pancreatic transections of the parenchyma respectively located anterior and posterior to portal vein (PV) and superior mesenteric vein (SMV), were required. We decided to perform a further parenchymal transection at the pancreatic body, removing about 2 cm of pancreatic parenchyma in order to obtain a single pancreatic stump. So pancreatic-intestinal continuity was restored performing a minilaparotomy assisted double purse-string pancreatico-gastrostomy at the end of the operation.

Conclusion
This report is the first case of LPD in a patient with PAP and the surgical technique we described herein proved to be feasible and safe.
Management of vascular complications after pancreaticoduodenectomy (PD): Reducing the numbers of failure to rescue.

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Background
No consensus on the treatment of PPH exists and failure to rescue rates still remain high, ranging from 14-47% after grade B or C PPH according to ISGPF classification.

The aim of this study is to analyze mortality and morbidity in surgical, endoscopic and endovascular treated patients for PPH.

Methods
A database of 974 PD patients from four medical centers in the Netherlands (January 2006-December 2015) was analyzed retrospectively.

Results
PPH occurred in 9.0% (88/974), of which 15.9% developed early PPH (14/88) and 84.1% delayed PPH (74/88). 16 patients died in the delayed PPH group (mortality rate of 21.6%). Hemodynamic stability and presence of risk factors as abdominal abscess, sepsis or pancreatic leak, significantly increased the failure to rescue rate of delayed PPH (resp. p=0.011, p=0.014). A failure to rescue rate of 22.5% for angiography (9/40), 42.9% for relaparotomy (3/7) and 33.3% for endoscopy (2/6) in the intention-to-treat analysis with delayed PPH was obtained. Primary endovascular treatment was successful in 57.9% (22/38), endoscopic treatment in 83.3% (5/6) and surgical treatment in 57.1% (4/7), no significant difference in success rates between the primary treatment modalities for delayed PPH was obtained (p=0.568).

Conclusion
No significant difference in success rates and morbidity between the three treatment modalities was observed in this large cohort. In order to develop an evidence based treatment protocol for PPH this cohort will be enlarged nationwide.
Mapping of the superior mesenteric vessels for artery first pancreateoduodenectomy in patients with high visceral fat

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Background
No studies have reported the impact of visceral fat on anatomy of the superior mesenteric vessels. We aim to clarify the anatomical relationships between the superior mesenteric artery, vein and their tributaries relative to levels of patient visceral fat to assess applicability of artery first pancreateoduodenectomy in obese patients.

Methods
176 triple-phase CT scans were retrospectively analysed to determine the positioning and distance of the superior mesenteric artery relative to the superior mesenteric vein at varying levels, and to jejunal veins. Patients were categorised into high and low visceral fat groups based on mean sagittal abdominal diameter. Hypothesis testing was performed to highlight anatomical differences.

Results
No statistical significance was found to suggest that either the distance between superior mesenteric artery and superior mesenteric vein (at gastrocolic trunk level), or the distance between superior mesenteric artery and ventral jejunal vein varied with level of visceral fat (p=0.26 and 0.08, respectively). Superior mesenteric artery originating caudal to the spleno-mesenteric confluence was significantly more prevalent in high visceral fat (n=80) patients compared to low visceral fat (n=96) patients (24% vs 6%, p<0.05).

Conclusion
Superior mesenteric artery access during artery first pancreateoduodenectomy appears to be as feasible and safe in obese patients as in non-obese individuals.
Meta-analysis on Recurrence After Curative Surgery of Pancreatic Neuroendocrine Tumors

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Background
Follow-up after curative surgery for pancreatic neuroendocrine tumors (pNET) is designed to detect recurrence, however reliable recurrence rates are difficult to deduct from literature. This meta-analysis provides insight into the prognosis of patients after curative resection of grade 1 or 2 pNET through investigation of recurrence rates, time to recurrence and predictors for recurrence.

Methods
Literature search was performed on studies reporting recurrence after complete resection of grade 1 or 2 pNET without distant metastases or hereditary syndromes. Excluded were studies with less than 20 patients, R2 resection or (neo)adjuvant therapy.

Results
Twelve studies were included. Between 1982-2013, curative resection was performed in 853 patients, 121 had a recurrence. Mean weighted follow-up was 44.1 months. Pooled recurrence rate was 14%. Sub-analyses showed a pooled recurrence rate of 5% for non-functional tumors, 17% for well-differentiated tumors and 7% for R0-resections. Weighted time to recurrence was 21.7 months. Locoregional recurrence was seen in 5%, distant metastases in 10%. Factors associated with worse disease free survival included: tumor size, tumor grade, lymph node metastases, perineural invasion and R1 resection.

Conclusion
With rates of 5-17%, recurrence of pNET is not rare. More research on predictors is needed to identify patients at risk. With this knowledge follow-up regimens can be customized and the role of adjuvant treatment for selected patients can be investigated.
Miniinvasive technologies in destructive pancreatitis surgery

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Background
An assessment of the effectiveness of diagnosis and treatment of destructive pancreatitis was hold in the issue of dealing miniinvasive percutaneous interventions under X-ray control in 326 patients.

Methods
All patients underwent multifocal fine needle diagnostic puncture under ultrasound control. Miniinvasive percutaneous therapeutic interventions under X-ray control were performed in patients with exudative complications.

Results
Sensitivity, specificity and diagnostic accuracy of ultrasound imaging were respectively 84.7%, 73.4% and 78.8%. Sensitivity, specificity and diagnostic efficiency of cytological and microbiological examination of our data were, respectively, 86.9%, 95.2% and 91.6%.

737 miniinvasive percutaneous interventions were held totally. The implementation of miniinvasive percutaneous interventions helped to stop the disease process and to avoid open surgical procedures in 91.7% of cases.

Conclusion
Fine-needle diagnostic puncture is a highly informative method for diagnosis of the nature and details of tissue damage and pathological process phase.

The timely refining ultrasound diagnosis of various clinical and morphological forms of acute pancreatitis combined with diagnostic fine-needle puncture conducting allows to approach differentiately to the implementation of miniinvasive percutaneous interventions and to justify a strategic position in the surgical treatment of destructive pancreatitis.
Minimally invasive versus open distal pancreatectomy for ductal adenocarcinoma (DIPLOMA): a pan-European propensity score matched study


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Background
A recent survey revealed that many European surgeons have concerns about the oncological safety of minimally invasive distal pancreatectomy (MIDP) for pancreatic ductal adenocarcinoma (PDAC).

Methods
A pan-European retrospective cohort study was performed on patients who underwent MIDP or open distal pancreatectomy (ODP) for PDAC (2007-2015). MIDP patients were matched to ODP patients (1:1) based on propensity scores obtained via multivariable logistic regression including only preoperatively variables: sex, age, BMI, ASA, prior abdominal surgery, surgery year, tumor location and size. Primary outcome was radical (R0) resection rate.

Results
In total, 1336 patients were included from 33 centers in 11 countries. Mortality was 2% and median survival 29 months. Of 369(28%) MIDP patients, 239 could be matched to an ODP patient. Conversion rate was 21%(n=44). After matching, R0 resection rate was 66%(n=149) for MIDP vs 52%(n=119) for ODP (p=0.002), lymph node retrieval was 13(IQR=7-23) vs 19(IQR=12-26)(p<0.001), the use of adjuvant chemotherapy was 72% vs 67%(p=0.28) and median overall survival (31 vs 26 months (p=0.51). Major complication rate (Clavien-Dindo 3-4) was 16%(n=36) vs 24%(n=53)(p=0.06), 90-day mortality 1%(n=2) vs 2%(n=4)(P=0.44) and hospital stay 7(IQR=5-10) vs 9(IQR=7-14) days (p<0.001).

Conclusion
This pan-European propensity score matched analysis suggests short term benefits for MIDP over ODP. A randomized controlled trial is, however, needed to confirm the oncologic safety of MIDP for PDAC.
Moderating postoperative pancreatic fistula achieved by selective use of pancreaticogastrostomy

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Background
Postoperative pancreatic fistula (POPF) continues to dominate the spectrum of complications of pancreaticoduodenectomy (PD). Selective use of pancreaticogastrostomy (PG) instead of pancreaticojejunostomy (PJ) may lead to reduction in rate and severity of POPF.

Methods
Retrospective chart review of all PD performed between 2009 and 2016 was conducted with respect to intraoperative gland assessment (soft vs. hard), duct size (<3mm was considered small) and postoperative outcomes. The pancreatic remnant was classified as “high-risk” if at least one risk factor (soft gland, small duct) was present.

Results
141 patients underwent PD at a single institution. PG was done in 49 (34.8%) and PJ in 71 (70.6%) patients. All PGs were done for high-risk remnant while PJ was performed in both groups. Clinically relevant POPF developed in 15 patients (10.8%); no significant difference between PG and PJ was observed (8.3% vs. 11.1%, respectively). The leaks after PJ occurred more often in patients with high risk remnants: 32% vs. 4.5%, p=0.005. In contrast, PG performed in a similar group of patients, was associated with significantly lower POPF rate: 8.3% vs. 32%, p=0.016). Gland texture, risk group affiliation, BMI, but not duct size or blood loss, were strong predictors of POPF on univariate analysis. Gland texture appeared to be the strongest predictor on multivariate analysis.

Conclusion
PG offers substantial reduction in the rate and severity of POPF in patients with "high-risk" gland compared to PJ.
Modified FOLFIRINOX in locally advanced and metastatic pancreatic cancer: the first prospective study in the Chinese population

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Background
FOLFIRINOX produces remarkable efficacy in locally advanced (LAPC) and metastatic pancreatic cancer (MPC) patients and significantly improves survival rates. However, FOLFIRINOX is currently not popular in China because of a high rate of adverse events and there is no current standard for Chinese patients. Therefore, modification of FOLFIRINOX is required for wider acceptance in China. The efficacy and safety of modified FOLFIRINOX chemotherapy for patients with advanced pancreatic cancer were evaluated.

Methods
28 LAPC and 40 MPC patients were treated using modified FOLFIRINOX (no Fluorouracil bolus, 85% Oxaliplatin and 75% Irinotecan) between April 2014 and December 2016. Response rate, safety, convention rate, surgical outcomes, overall survival (OS) and progression free survival (PFS) were evaluated.

Results
The response rate was 26.5% in a total of 68 patients with advanced pancreatic cancer. The most common grade 3/4 adverse events were neutropenia (26.5%) and anemia (14.75%). Surgical treatment was performed in 11 patients with LAPC and the convention rate was 39.3%. The median OS in the LAPC group was 13 months and 10 months for MPC. PFS was 13 and 9 months in the LAPC and MPC groups, respectively.

Conclusion
Modified FOLFIRINOX resulted in significantly improved tolerance in Chinese advanced pancreatic cancer patients with similar efficacy and an acceptable toxicity rate. These data might provide guidance for FOLFIRINOX use in Chinese patients with advanced pancreatic cancer.
Mortality in Severe Acute Pancreatitis: Are we getting better?

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Background
Severe acute pancreatitis (SAP) remains one of the more feared and respected acute surgical conditions, given that patients often have significant organ failure and require careful management. Published mortality rates of SAP hover about 20% but some of these studies are more than 10 years old. We seek to review our centre's mortality rate in SAP.

Methods
We retrospectively reviewed 411 cases of acute pancreatitis from 2008 to 2016 at a single centre, looking at pancreatitis severity and cause of mortality.

Results
Of 411 cases, 41 cases were severe. The series had 7 deaths, all of whom had SAP, making the overall mortality rate 1.7% for pancreatitis and 17% for SAP. Four of the 7 died from overwhelming systemic inflammatory response syndrome (SIRS) and multiorgan failure within the first 10 days and 1 from infected pancreatic necrosis on day 29. One passed away from aspiration as a result of intestinal obstruction from a concurrent sigmoid tumour; another was managed successfully and survived (SIRS) and intensive care, but passed away suddenly on day 24 of admission in the rehabilitation ward from cardiorespiratory cause. As such the actual mortality directly due to SAP is 12%.

Conclusion
Mortality rate for SAP in our centre is lower than published data and this likely reflects better clinical management with improved understanding of the pathophysiology of pancreatitis over the years. We believe many other centres will also show improved mortality rates compared to previously established data.
Multicenter experience of intraductal papillary mucinous neoplasms (IPMN).


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Background
Pancreatic cystic neoplasms include serous tumors, pseudopapillary neoplasms mucinous tumors, and IPMN. Sendai criteria, last update Fukuoka criteria, have increased attention on IPMN.

Methods
We retrospectively reviewed patients with IPMN at Getafe Hospital, Guadalajara Hospital and Miguel Servet Hospital, Spain, between 2009-2016.

Results
Data were collected from 26 patients: 61.54% males, 38.46% females. Median age: 66. 26.92% were asymptomatic. Most frequent symptoms: pancreatitis 19.23%, obstructive jaundice 15.38%.
Radiological findings: MD-IPMN 50%, BD-IPMN 34.62%, mixed-type 7.69%, and without characterization 7.69%. Mean size: 37.6±17.2mm. Most frequent localization: head in 15 patients.
Surgical indication: based on symptoms in 57.69%, suspected malignancy in 30.77%, MD-IPMN≥10mm in 1 patient and asymptomatic BD-IPMN≥30mm in 2
Surgical technique: Whipple procedure 38.46%; distal pancreatectomy 34.62%, total duodenopancreatectomy 23.08% and central pancreatectomy 3.85%.
Histological study: invasive IPMN 40.74%, high-grade displasia/carcinoma in situ in 5 cases, moderate dysplasia in 3, low-grade in 4 and no dysplasia in 3 patients.

Conclusion
IPMN preoperative diagnosis should determine their existence, anatomical type and risk of malignancy. Surgical indications, by Fukuoka criteria, include symptoms, MD-IPMN≥10mm and risk of malignancy (61.6% risk in MD-IPMN and 25.5% in BD-IPMN). This relative low frequency would justify conservative treatment in many of them.
Nationwide outcomes in patients undergoing surgical exploration without resection for pancreatic cancer

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Background
Despite improvements in diagnostic imaging and staging, unresectable pancreatic cancer is still encountered during surgical exploration with curative intent. This nationwide study investigates outcomes for unresectable pancreatic cancer found during surgical exploration.

Methods
All 10,595 patients diagnosed with pancreatic (adenocarcinoma (2009-2014) in the Netherlands Cancer Registry were included. Predictors for unresectability, 30-day mortality, and poor survival were evaluated using logistic and Cox regression.

Results
An increase was found in the proportion of patients undergoing surgical exploration (20 to 27%, p<0.001) and in the resection rate (62 to 71% of explored patients, p<0.001). Compared with resected patients, patients not undergoing resection had an increased 30-day mortality (7.8 vs 3.8%, p<0.001). In non-resected patients with M0 and M1 disease at surgical exploration, 30-day mortality was 4.7 vs 10.6% (p=0.002), median survival 7.2 and 4.3 months (p<0.001), and 1-year survival 28 and 13%, respectively. Among other factors, low hospital volume (0-20 resections/year) was an independent predictor for not undergoing a resection, but also for 30-day mortality and poor survival after not undergoing resection.

Conclusion
Despite nationwide increasing exploration and resection rates, one-third of patients undergoing surgical exploration for pancreatic cancer did not undergo resection, with doubled 30-day mortality compared with patients undergoing resection.
Nationwide prospective audit of pancreatic surgery: design, accuracy, and outcomes of the Dutch Pancreatic Cancer Audit

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Background
Auditing is an important tool to identify practice variation and ‘best practices’. The Dutch Pancreatic Cancer Audit (DPCA) is mandatory in all 18 Dutch centers for pancreatic surgery. We present the design, outcomes, and accuracy of this prospective nationwide audit.

Methods
Performance indicators and casemix factors were identified by a PubMed search for RCTs and large series in pancreatic surgery. Data dictionaries of two national audits, three major pancreatic centers, and the national cancer registry were evaluated. Morbidity, mortality, and length of stay were analyzed in all pancreatic resections registered during two audit years. Case ascertainment was cross-checked with the Dutch healthcare inspectorate and key variables validated in all centers.

Results
Sixteen RCTs and three large series were found. Sixteen indicators and 20 casemix factors were included in the audit. During 2014-2015, 1,785 pancreatic resections were registered including 1,345 pancreatoduodenectomies (PD). Diagnosis was pancreatic adenocarcinoma in 39% of cases. In-hospital mortality was 3.6%. Following PD, mortality was 4.1%, Clavien-Dindo grade ≥3 morbidity was 29.9% and median (IQR) length of stay 12 (9-18) days. In total 97.2% of >40,000 variables validated were consistent with the medical charts.

Conclusion
The DPCA, with high quality data, reports good outcomes of pancreatic surgery on a national level. The audit facilitates nationwide and international comparison of outcomes and identification of best practices.
Neoadjuvant therapy decreases rates of local recurrence but not of distant metastasis in pancreatic cancer – a systematic review and meta-analysis

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Background
Neoadjuvant therapy/NTx is currently solely indicated for downstaging borderline or unresectable pancreatic cancer/PCa. In this context, several studies reported that NTx is able to increase resectability rates exceeding 60%. Nevertheless, the true impact of NTx on patterns of recurrence in PCa has not been sufficiently investigated, yet. Therefore, a systematic review with meta-analysis was conducted.

Methods
For this purpose, systematic review with meta-analysis were performed according the PRISMA-guidelines. After screening databases of Pubmed, Embase, Ovid, Scopus and Google Scholar for predefined terms, comparative data between NTx and upfront surgery were pooled in meta-analyses.

Results
A total of 4,257 studies could be identified. After exclusion, 11 studies could be included in our meta-analysis. Importantly, NTx reduced the risk for overall recurrence (RR 0.82; 95%-CI:0.74-0.90,p<0.0001) and for local recurrence (RR 0.42; 95%-CI:0.32-0.55,p<0.00001). In contrast, no effect of NTx could be observed on the risk for developing distant metastasis (RR 1.02 ;95%-CI:0.91-1.43,p=0.78), hepatic metastasis (RR 0.86; 95%-CI:0.68-1.10,p=0.23), pulmonary metastasis (RR 0.99; 95%-CI:0.37-2.66,p=0.98) and peritoneal metastasis (RR 0.88; 95%-CI:0.57-1.38,p=0.58).

Conclusion
This is the first systematic review with meta-analysis showing the favourable effect of NTx on local recurrence in PCa. To underline these findings, prospective, randomised controlled trials are urgently needed.
Neoadjuvant Therapy for Borderline Resectable Pancreatic Ductal Adenocarcinoma (PDA) Involving a High Volume Pancreatic Centre in Ireland


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Background
Neoadjuvant (NA) therapy for borderline resectable PDA patients (pts) appear to improve outcome [1] [2]. There is limited data with the use of FOLFIRINOX (FX) and Gemcitabine/nab-paclitaxel (GP).

Methods
St. Vincent’s University Hospital (SVUH) is a national referral centre for PDA in Ireland. Pts were identified from the pancreatic MDT discussions. Borderline resectability as defined by the NCCN criteria. Primary endpoints were resection rate and median survival (mOS).

Results
93 pts were identified between 1 Jan 2012 and 31 Dec 2015 with median follow-up of 11.40 mos (95% CI 11.51 – 15.10). 50 (53%) were female with a median age of 67 years (range: 43 -78). NA chemotherapy was administered in 76 pts. Majority were treated with FX (24, 32%) and GP (20, 26%). 53/76, 82% pts had sequential radiation; 58% were treated with long course- and 42% with short course-radiation. 34/53, 64% were planned for surgery. Resection rate was 40% (21/53); 53% (16/30) with FX/GP v 22% (5/23) with other regimens, p=0.02. R0 resection rate was 76% (16/21); 88% with FX/GP v 40% other reg, p=0.03. mOS improved with FX/GP 19.87 mos v other reg 13.36 mos, p<0.005; including in those who were resected, 40.86 mos with FX/GP v 22.31 mos with other reg, p=0.02. There is a trend in improved resection rate between those treated with NA FX/GP in SVUH v other centres; 50% v 23% respectively, p=0.06.

Conclusion
NA FFX/GNP improve resection, R0 resection and mOS. Treatment in high-volume specialist centre may improve resection outcome.

References:
New-onset Pancreatogenic Diabetes Mellitus after Pancreatoduodenectomy:

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Background
Pancreatoduodenectomy (PD) is the recommended procedure for malignant and high-risk premalignant lesions in the pancreatic head and the periampullary region. Although it is associated with low mortality rates, the risk of new-onset pancreatogenic diabetes mellitus (NOPDM) is a chronic complication with substantial and long-lasting effects on quality of life. We aimed to assess the risk of NOPDM after PD.

Methods
PubMed, Cochrane, and Embase databases were searched for cohort studies and randomized controlled trials published before May 2016, including patients after PD. Primary endpoint was the risk of NOPDM in (pre)malignant disease and a subgroup analysis of the risk for insulin dependent NOPDM and separately the risk in malignant and premalignant disease was performed. Mean weighted overall proportions of NOPDM after PD were calculated with 95% confidence intervals (CI).

Results
After screening 1,381 studies, 25 studies, representing 1,252 patients, were included. Mean follow-up of patients was 3.7 years (±1.7). The mean weighted overall proportion of NOPDM after PD was 19%, (95% CI = 16-22). Of all patients, 13%, (95% CI = 10-16), developed insulin dependent NOPDM after PD. The incidence of NOPDM after PD for malignant disease was 21%, (95% CI = 16-27), was similar to 32% (95% CI = 23-41) for premalignant disease (P = 0.12).

Conclusion
About 20% of patients develop diabetes after PD for malignant and premalignant disease. Preoperative counseling should include NOPDM risk and the related symptoms.
Pancreas surgery: Clinical
FP18.06

Ninety day mortality following pancreatoduodenectomy in England

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Background
Mortality following pancreatoduodenectomy (PD) is related to centre volume though the optimal volume of PD has yet to be defined. Most studies report 30 day or in hospital mortality due to inadequacies of data collection. This study reports 90 day mortality following PD in England.

Methods
The effects of patient variables, centre volume and time period upon 90 day mortality were studied among patients undergoing PD between April 2001 and March 2016.

Results
90 day mortality (970/14935, 6.5%) was related to advanced age, comorbidity, diagnosis, ethnicity, deprivation, centre volume and time period. The lowest mortality (3.6%) was observed in very high volume centres (>60 PD per year) in the most recent time period (2013-16) whilst the highest mortality (18.4%) was in very low volume centres (≤3 PD per year) in the earliest time period (2001-4). There was no difference in 90 day mortality between high (36-60 PD per year) and very high volume centres. However when patients treated at these centres were compared those operated upon at very high volume centers were significantly more elderly, deprived and comorbid.

Conclusion
90 day mortality following PD in England has fallen rapidly with time and centralisation of services. A plateau in centre volume-mortality relationship is demonstrated though very high volume centres achieve this whilst operating on more elderly and comorbid patients. There is thus indirect evidence of conservative patient selection among lower volume centres.
No Need for Routine Drainage After Pancreatic Head Resection: the Dual Center Randomized Controlled PANDRA-Trial (ISRCTN04937707)

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Background
There is uncertainty regarding intraabdominal drainage after pancreatoduodenectomy. This randomized controlled, dual center, non-inferiority trial aimed to proof that omission of drains does not increase reintervention rate after pancreatic head resection.

Methods
Patients with pancreatic head tumors were randomized to intraabdominal drainage versus no-drain. Primary endpoint was overall reintervention rate. Secondary endpoints were clinically relevant pancreatic fistulas (grade B/C), mortality, morbidity (bile leaks, delayed gastric emptying, wound infection, etc.) and hospital stay. Sample size was 188 patients/Group. Analyses by ITT.

Results
438 patients were randomized, 396 patients (205 drain, 191 no-drain) were analyzed. Overall in-hospital mortality (2.8%) was equal in both groups (drain 2.4 %, no drain 3.1%; p=0.67). Re-intervention rates were significantly higher in the drain group (drain 21.6%, no-drain 16.2%; p<0.01). Surgical morbidity (41.7%) was comparable (p=0.75). Fistula rate (grade B/C only) was significantly reduced in the no-drain group (drain 11.9%, no-drain 5.8%; p=0.03). Operation time (p=0.09), postoperative bleeding (p=0.18), abscess formation (p=0.22), burst abdomen (p=0.47), wound infection (p=0.71) and hospital stay (p=0.54) did not show differences.

Conclusion
Omission of drains was superior in terms of postoperative reintervention and clinically relevant pancreatic fistula rates. Prophylactic drains cannot be recommended during routine pancreatic head resections.
Non functioning neuroendocrine pancreatic tumors (PNET) in multiple endocrine neoplasia type 1 (MEN1) patients

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Background

Most PNET are sporadic, but they can be associated with endocrinopathies, including multiple MEN 1

Methods

We present four cases of non functioning PNET-MEN1

Results

MEN1 diagnosed by clinical manifestations (lactotroph pituitary adenoma, primary hyperparathyroidism):

• 55-year-old female. MRI follow-up: a 16cm retroperitoneal mass in contact with pancreatic body-tail. We performed en block-resection including tumor and pancreatic tail. Histology: PNET (pT3N0, Ki67 <5%)

• 41-year-old female. MRI: 6mm pancreatic body lesion. EUS: 3 PNET (head, body, tail). Total splenopancreatectomy was performed. Histology: multiple PNETs in head, body and tail (pT1N1, Ki67 2%)

MEN1 diagnosed by genetic screening (mother suffered MEN1):

• 34-year-old female. Follow-up no findings. EUS: 7 PNETs. We performed corporocaudal splenopancreatectomy. Histology: 8 foci of PNET, one of them (pT1N0, Ki67: 4%)

• 25-year-old female. Follow-up EUS: 8mm pancreatic head cyst. Enucleation was performed. Histology: PNET (pT1N0, Ki67 <2%)

Conclusion

80-100% MEN1 patients will develop PNET, usually multiple and malignant. Non-functioning PNET are the most common tumor of pancreaticoduodenal region in MEN1. The best way to diagnose them remains unclear. Size and location are determinant for surgery. Current evidence suggests annual biochemical evaluation and abdominal MRI and MRI of head every 3-5 years. Although reasonable, the strength and quality of the evidence supporting is suboptimal.
Nontrauma emergency pancreatoduodenectomies – a single-center retrospective analysis

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Background
To retrospectively assess the frequency and indications for emergency pancreatoduodenectomies in a tertiary referral center.

Methods
Pancreatoduodenectomies between January 2005 and January 2014 were retrospectively assessed for emergency indications defined as surgery following unplanned hospital admission in less than 24h. Data on indications and on the intraoperative as well as the postoperative course was collected.

Results
Out of 583 pancreatoduodenectomies during the interval, a total of 10 (1.7%) were performed as an emergency surgery. Indications included uncontrollable bleeding, duodenal and proximal jejunal perforations and endoscopic retrograde cholangiopancreaticography (ERCP) related complications. Three of the 10 (30.0%) patients died during the hospital course. In one patient, an intraoperative mass transfusion was necessary. No intraoperative death occurred. All but one patient were American Society of Anesthesiologists (ASA) class 3 or higher. In 2 cases, the pancreatic remnant was left without anastomosis for second-stage pancreatojejunostomy. Median operation time was 326.5 minutes (SD 100.3 minutes). Hospital stay of the surviving patients was prolonged (median 43.0 days; SD 24.0 days).

Conclusion
Emergency pancreatoduodenectomies are non-frequent, have a diverse range of indications and serve as an ultima ratio to cope with severe injuries and complications around the pancreatic head area.
Pancreas surgery: Clinical
V8.06

Novel CLASP technique for stump closure following distal pancreatectomy

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Background
Pancreatic fistula remains the primary source of morbidity following distal pancreatectomy. There is currently no optimal stump closure technique to reduce pancreatic fistula rates.

Methods
Video presentation of a novel technique for pancreatic stump closure using Clip Ligation of the duct and Associated Suturing of Pancreas (CLASP). Retrospective study of the clinicopathological data and outcome of five patients that underwent distal pancreatectomy and splenectomy using the CLASP technique.

Results
Five patients (3 females) with a median age of 65 underwent distal pancreatectomy and splenectomy for pancreatic body or tail tumour. Four of those operations were done laparoscopically. Only one patient developed a grade A pancreatic fistula. No other postoperative complications were noticed. The median length of stay was 6 days. Clear resection margins achieved in all patients (R0 resection). CLASP technique was applicable in both laparoscopic and open distal pancreatectomy. The key points are the mobilisation of the pancreatic body from the retroperitoneum, the isolation of the pancreatic duct with application of a double ligaclip on the proximal duct and the suturing of the pancreatic stump.

Conclusion
CLASP technique is an effective, reproducible, cheap and safe alternative technique, particularly for fat bulky pancreas, that could be compared to the traditional methods of pancreatic stump closure.
One Hundred and Seventy Pancreaticoduodenectomy: No Intensive Care Unit Admission

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Background
350 pancreaticoduodenectomies were performed over the past 20 years. Before 1998, general surgeons were performing it with a mediocre outcome. In 1998, it was performed by a single specialized hepatobiliary surgeon, which led to significant improvements in outcomes. In 2009, another specialized surgeon joined, and results were even better causing significant decreases in operative times, length of hospital stay, and over-all complications. We are reviewing the last 170 pancreaticoduodenectomies performed at our institution with no intensive care unit (ICU) admission.

Methods
A retrospective data analysis review was performed for all pancreaticoduodenectomies performed from 1994 to 2015 to evaluate surgical complications and morbidity rates, comparing the outcomes between past and present.

Results
Before 1998, the median operative time was 370 mins. After 1998, it became 355 mins. After 2009, it became 290 mins (p-value 0.0039). With this, there was decrease in post-operative complications with a lesser need for blood transfusions and better recovery of patients without the need for ICU. Before 1998, the median length of hospital stay was 25 days. After 1998, it improved to 18 days and in 2009 it became 7 days reflecting the great improvement in the surgical outcome.

Conclusion
Comparative analysis to the different parameters between different periods has showed significant improvements for the performance of the procedure by a specialized surgeon, and even more when 2 specialists worked together.
One visceral artery is enough. Pancreatectomy in a patient with total occlusion of the celiac and superior mesenteric arteries

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Background
The blood supply of the liver is very variable and only 50% of humans present with a standard vascular anatomy of one hepatic artery arising from the celiac trunk and a pancreatico-duodenal arcade between the hepatic and the superior mesenteric arteries (SMA). Chronic obstruction of one artery exists in approximately 10-20% of patients, but can often be compensated and therefore usually remains asymptomatic due to this double blood supply.

Methods
We report the case of a patient with complete atherosclerotic obstruction of the celiac and superior mesenteric arteries (SMA) who required a resection of the pancreatic head due to cancer. This vascular anomaly was missed on the preoperative imaging and became known postoperatively. A collateral circulation from a hypertrophic inferior mesenteric artery (IMA) to the celiac trunk and SMA compensated the blood supply to the visceral organs.

Results
The postoperative course was complicated by an elevation of the liver function tests, which normalized under conservative treatment with alprostadil (prostavasin™) and anticoagulation, since angiographic recanalization failed. The patient recovered fully and was discharged at the 14th postoperative day. Two years later, she required endovascular repair of an aortic rupture during which the IMA was preserved.

Conclusion
CT scanning should always include a proper arterial phase in order to evaluate the arterial blood supply to the liver and bowel preoperatively in patients with atherosclerosis.
Open necrosectomy or a step-up approach for infected necrotizing pancreatitis

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Background
Infected necrotizing pancreatitis is associated with a high mortality rate due to the development of multiple organ failure and other complications.

Methods
Analyzed the results of surgical treatment of 514 patients with acute necrotizing pancreatitis. Mean age was 45.2 years, the men were 65%. Used the classification of acute pancreatitis in Atlanta (1992) and its revision of the working group in 2012.

Results
Acute pancreatitis of moderate severity diagnosed in 12.1%, severe was in 87.9% of patients. The open necrosectomy performed in 372 patients, died 27.4%. Percutaneous drainage under the ultrasound performed in 58 patients, died 0%. External drainage in complicated pseudocysts performed in 35 (6.8%), died 16.7%. Endoscopic transgastric drainage was performed in 2 patients. There was no mortality. Laparoscopic operations were performed in 49 patients: drainage in 32, died 13.6%; retroperitoneal necrosectomy in 17%, died 11.8%. In 8 (1.6%) patients were subjected to selective or superselective vascular occlusion. Open interventions were performed in 75% of them, dead 50%. The total mortality was 21.6%.

Conclusion
Our results indicate that the preferred treatment strategy for patients with necrotizing pancreatitis and secondary infection, from both a clinical point of view, is a minimally invasive Step-up approach, if necessary, by minimally invasive retroperitoneal necrosectomy. Delaying execution of open operations within the period of 15 days or more after onset of the disease leads to less mortality.
Operations on the pancreas using robotic complex

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Background
Aim: to create a conception of adequate usage of robotic complex in pancreatic surgery.

Methods
A retrospective study of robotic-assisted (RA) operations in 84 patients was held. Ductal adenocarcinomas were in 20 cases (23.8%), NETs in 33 (39.3%), cystic tumors in 15 (17.9%), SPPNs in 9 (10.7%), nesidioblastosis in 2 (2.4%), metastasis of neuphrocellar carcinoma in pancreas in 1 (1.2%), benign tumors in 5 (5.9%) patients. Distal pancreatectomy was carried in 44 participants, tumor enucleation in 15, pancreaticoduodenectomy (PD) in 17, central resection in 6. Total duodenumpancreatectomy was made in 2 cases.

Results
Duration of RA PD varied within 305 to 670 minutes and took 407 min. median time. Conversion was in 2 cases. Blood loss volume (blw) was 225 ml. Median length of stay (Los) was 15.5. Lymph nodes harvest was 18.5 correlate with the quantity of removed along the traditional PD. Duration of the distal pancreatectomy was 210 min, blw was 100 ml. Postoperative period in 18 patients was accompanied by pancreatic fistulas. Median enucleation and central resection time was 140 and 238 min.

Conclusion
indications to the RA surgery are: malignant pancreatic tumors T1-T2, benign and low malignant tumors 4-5 cm without invasion into vessels. RA operations provide precise remove of the lymphatic nodes and anastomosis formation. Postoperative period passes more comfortable for the patients due to the minimal tissue trauma. It doesn’t prevent specific postoperative complications.
Pancreas exocrine replacement therapy is associated with increased survival following pancreateoduodenectomy for periampullary malignancy

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Background
Many patients undergoing pancreatoduodenectomy (PD) for cancer have pancreatic exocrine insufficiency though pancreas exocrine replacement therapy (PERT) is not routine and effects upon post-operative survival are unclear.

Methods
This review of patients undergoing PD for periampullary malignancy sought an association between PERT and overall survival, with post-hoc subgroup analysis performed after stratifying patients by dose, pancreatic duct width and tumour type.

Results
Some 151/409 (36.9%) patients received PERT. After accounting for pathological variables and chemotherapy PERT use was independently associated with improved survival on multivariable analysis [HR 0.72 (95% CI: 0.52 – 0.99, p=0.044]. Furthermore, a significant dose effect response was observed with patients on the greatest dose having the greatest survival (p=0.010). The effect of PERT upon improved survival was predominantly observed amongst patients with a dilated pancreatic duct (≥3mm).

Conclusion
PERT use was independently associated with improved survival following PD for cancer. The validity of this observation is supported by an effect largely confined to those patients with a dilated pancreatic duct and furthermore a dose effect response. The nutritional status of patients undergoing PD for cancer needs further investigation and the effects of PERT verified in further clinical studies.
Pancreatic Hydatid Cyst Due to Sinistral Hypertension: Case Report

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Background
Hydatid cysts are caused by Echinococcus granulosus and commonly located in lungs and liver. Pancreatic location is seen less than 0.1-2% even in endemic areas. Due to its rareness, preoperative diagnosis is hard. Differential diagnosis is also hard with pseudocysts, cystadenomas and cystadenocarcinomas in the foreground. In this case report, we aim to present a rare pancreatic hydatid cyst causing sinistral hypertension.

Methods
Case report

Results
Twenty-six-year old male patient presented with abdominal pain. He had a history of hydatid cyst operation of lung fifteen years ago. Left thoracotomy incision scar was observed in physical examination. Laboratory findings revealed no abnormalities. Abdominal ultrasonography showed 96x69 mm lobular contoured, well-circumscribed cystic lesion containing thick septation. Abdominal magnetic resonance imaging (MRI) showed 100x76 mm smooth bordered cystic lesion containing septations in the body and tail of the pancreas compressing the splenic artery and vein causing sinistral portal hypertension. Dilatation is noted in the left gastroepiploic vein. He underwent cystotomy. Pancreatic fistula was developed in the postoperative follow-up. The patient was discharged in 20 days without postoperative complications. No complications were observed in the follow-up period of 7 months.

Conclusion
Pancreatic hydatid cysts may be confused with other pancreatic cysts. Endemic locations should be kept in mind during diagnosis.
Pancreatic Neuroendocrine Tumors: Selection an Approach in Surgical Treatment. Single center experience

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Background
Pancreatic neuroendocrine tumors (pNETs) are found in 2-3 cases per 100 000. Surgical resection is the main method in treating of pNETs. Contemporary preoperative and intraoperative diagnostic can help using selective approaches, to perform organ-preserving (OP) procedures including operations with miniminvasive techniques (MI) such as robot – assisted (RA) or laparoscopic (La).

Methods
We made a retrospective analysis of treating of 92 patients with pNETs. Most of them were female 67 (73%), average age 51.2±12.9. There were 52 (56.5%) patients with functional pNETs.

Results
52 procedures with conventional laparotomy and 36 (33 RA, 3 - La) were performed in our department. MI procedures were performed in cases when tumor was less than 30 mm. OP procedures were made in cases with G1 pNETs. Distal pancreatectomies were performed in 36 cases (21 – conventional, 13 – RA, 2 La). Pancreatectoduodenectomies were made in 23 cases (20 conventional, 3 – RA); there were 21 tumor enucleations (8 – traditional, 12 RA, 1 - La), 9 central resections (4 traditional, 5- RA) and 3 total pancreatectomies (all of them were performed by conventional laparotomy).

Conclusion
Surgical treatment of pNETs requires selective approach in choosing of volume technique of resection. It depends of localization, size and aggressiveness of tumor. Use of MI technique is available in cases with tumor size less 5 – 6 sm. Contemporary perioperative diagnostic can reduce volume of removing pancreatic tissue allows to perform OP operations.
Pancreatic neuroendocrine tumours (PNETs): Surgical management & factors influencing survival in a multicentre, national study (ACO-ASSO PNET STUDY)

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Background
PNETs are rare but incidence is increasing. Previous studies suggested a watch-and-wait-strategy for tumours <2cm. Also, there is debate about the indication and perioperative/oncological safety for limited resections.

Methods
Austrian, retrospective, multicentre study. Demographics, perioperative-, pathology- and followup data were centrally analysed.

Results
170 patients underwent PNET surgery, 18.7% of patients had metastasis. Median TU-size was 2.8 cm, Grading: G1/2/3: 44.7%/44.7%/10.7%. Limited resection was applied in 17.9%. 42.6% of patients underwent simultaneous resection of other organs. Mortality was 2.4%, morbidity 42.4%, severe morbidity 11%. Grade B/C pancreatic fistula occurred in 17.2%. 15.5% of patients had pre-op diabetes, 14.2% developed new-onset diabetes. 5y/10y overall-survival (OS) was 79.4%/62.6%, 5y/10y-disease-free-survival 69.9%/38.6%. Factors of worse survival were grading, metastasis, preop.CRP>0.5mg/dl, TU-size>2cm. Limited resections had 0% mortality and 91.7% 5y-OS, because of favourable tumour parameters, however accompanied by 24.2% B/C-fistulas & 10.3% severe complications. TU < 2cm were N+ in >10% & G2/3 in >30%, showing significant worse survival with these factors present.

Conclusion
Our cohort accounts for 2/3 of PNET-resections in Austria in the last 5 years. Morbidity/mortality is comparable to international standards. Limited resections show excellent survival, but high morbidity. A watch-and-wait-strategy solely based on TU-size <2cm is clearly not indicated.
Pancreatic Non-Functioning Neuroendocrine Tumor and Lynch Syndrome: A new tumor association.

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Background
Lynch Syndrome (LS) is a autosomal dominant inheritance caused by a mutation in one of the deoxyribonucleic acid mismatch repair genes. Mutations occur most frequently in the MLH1 and MSH2 genes, followed by MSH6 and then finally PMS2.
Colorectal carcinoma (CRC) is the most commonly associated neoplasm. But other neoplasm had been associated: endometrium, gastric, ovarian, breast, small intestine, renal, skin, brain and pancreatic adenocarcinoma. However pancreatic neuroendocrine tumor (PNET), were suggested to be associated but with no confirmation to date.

Methods
We present a 65 years old woman affected by LS. She had a CRC 20 year ago. Twelve years later had another one in the right colon. At age of 58 an endometrial cancer was resected. A genetic study was performed and discover a MLH1 MMR gene mutation. She had also a low grade ductal carcinoma of breast at the age of 63 with the same gene mutation.
A gastroscopy found a duodenal adenocarcinoma.

Results
A pancreaticoduodenectomy was performed. Histology reported a duodenal adenocarcinoma T1N0, two PNET, one G1 and another G2. IHC confirmed the lack of expression of MLH1 and PMS2 in all tumor except in the small PNET. Polymerase chain reaction showed instability only in CRC, duodenal and skin tumors

Conclusion
The association of pancreatic NE tumors and LS is now confirmed and its due to the mutation of the MLH1 and PMS2 nuclear proteins. A gastroscopy with duodenal study should be added in the follow-up of theses patients.
Pancreatic resections for advanced M1-pancreatic carcinoma

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Background
However, in highly selected patients with neoadjuvant settings, metastasectomy with primary tumor operation may be appropriate together with pancreatic resection when operative morbidity is low.

Methods
From January 1, 2014 to December, 2016 a total of 14 patients with pancreatic malignancies were retrospectively evaluated who underwent pancreatic surgery with resection of hepatic or peritoneal metastases for proven TNM stage IV cancer of the pancreas. Perioperative as well as clinicopathological parameters were evaluated.

Results
There were 14 patients (9 men, 5 women; mean age 59.07 years) identified. The primary tumor was located in the pancreatic head (n = 4, 28%) and pancreatic body & tail (n = 10, 72%). Metastases were located in the liver (n = 14, 100%), peritoneum (n = 3, 21%), and lung (n = 1, 7%). Lymphnode metastases were present in all patients. All patients received resection of their tumors together with metastasectomy. While Pylorus preserving duodenopancreatectomy was performed in 4 patients, distal pancreatectomy performed in 10 patients. Morbidity was 35% and there was no perioperative mortality. The median overall survival time was 11.8 months (95% confidence interval [CI]), and the estimated 1-year overall survival rate was 43.7% (95% CI) for patients with M1 disease.

Conclusion
Pancreatic resection for M1 periampullary cancer of the pancreas can be performed safely in well-selected patients. However, indication for surgery has to be made on an individual basis.
Pancreaticoduodenectomy for ductal adenocarcinoma. Which patients may have a 5 year survival?

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Background
Long survival after pancreaticoduodenectomy (PD) for ductal adenocarcinoma ranges between 15 and 25%. Positive prognostic factors are still to be defined. The aim of the study was to identify factors affecting positively 5-year survival of patients who underwent PD for pancreatic adenocarcinoma.

Methods
All patients who underwent PD for ductal adenocarcinoma in a single referral unit in the UK between January 2007 and February 2011 were included. Patients were divided into two groups: Group A, patients survived more than 5 years and Group B who died within 5 years. Clinical and pathological data were analysed and the two groups were compared.

Results
109 patients were included (Group A, n=23 and Group B, n=86). Univariate analysis identified absence of venous resection (p=0.007), R0 resection (p=0.002), operative time (p=0.016), blood loss (p = 0.008) and no perioperative transfusion (p=0.049), low lymph node ratio (LNR) (p=0.025), stage I-II (p=0.032 and 0.048 respectively), absence of perineural (p=0.001) and lymphovascular invasion (p=0.023) were associated with better 5 years’ survival. However, on multivariate analysis, R0 resection, (OR 1.972, 95% CI 1.201-2.456, p=0.015), LNR<0.2 (OR 2.245, 95% CI 2.025-2.984, p=0.034) and absence of venous resection (OR 2.352, 95% CI 1.214-4.925, p=0.042) were found to be independent prognostic factors for five years’ survival.

Conclusion
In our study R0, low lymph node ratio and absence of venous involvement appears to be positive prognostic factors for long term survival.
Pancreaticoduodenectomy for Pancreatic Neuroendocrine Neoplasms: Incidence, Risk and Predictors of Postoperative Morbidity and Mortality

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Background
Pancreatectoduodenectomy (PD) is associated with a high risk of post-operative complications and mortality. Aim of this study was to compare morbidity after PD in patients undergoing resections for pancreatic neuroendocrine neoplasms (PanNENs) with patients with pancreatic ductal adenocarcinoma (PDAC).

Methods
Data collected of 566 patients from three European tertiary referral centres between January 1998 and December 2014 were considered for analysis. Clinical and operative details were recorded. Univariate and multivariate analyses were performed

Results
Overall, 566 patients (179 with PanNENs and 387 with PDAC) who underwent PD were analysed. The consistence of the pancreas was soft in 147 (82%) patients with PanNENs and in 162 (42%) patients with PDAC (P<0.0001). Patients in the PanNENs groups had a significantly higher rate of pancreatic fistula (PF)(33.5% versus 19%, P<0.0001), bile leak (9.5% versus 4%, P=0.004), abdominal collection (21% versus 13%, P=0.017), and development of sepsis (15% versus 9%, P=0.042). No differences in terms of in-hospital mortality (2%). On multivariate analysis gender (male), PanNENs indication, blood transfusion and “soft” pancreas were independent predictors of PF after PD

Conclusion
In this large series, the presence of a “soft” pancreas is the major determinant of the risk of postoperative morbidity among these patients. The association between PanNEN diagnosis and a “soft” pancreatic texture justifies the high risk of clinically relevant PF among these patients.
Pancreaticoduodenectomy in septuagenarian and octuagenarian: single Center experience with 78 Patients.

Universitätsklinikum Tübingen, General Surgery, Tuebingen, Germany

Background
Pancreaticoduodenectomy (PD) for pancreatic cancer in patients >70 and >80 years, still matter of debate in terms of clinical, oncological and economical perspectives
Aim to evaluate the impact of age (>70/ >80 years) in mortality and morbidity after PD

Methods
Retrospective analysis of single centre experience. 78 patient aged ≥70 years underwent PD from 2010 to 2016. The patients divided in 3 subgroups: G1 (70-74 years; n=37), G2 (75-79 years; n=30), G3 (≥80 years; n=11). Operative morbidity and mortality graded according Dindo-Clavien were analyzed (i.e. POPF, PPH, DGE, BL, LOS)

Results
Mean age was 75.2 yrs (range 70-86). Malignancy was the main indication to surgery (G1: 82% G2: 97% G3: 91%). The groups were comparable for gender, symptoms and procedure. ASA score of 3 was higher in G3 patients (G1: 45.9%, G2: 50%, G3: 63.9%). Overall postop morbidity and mortality rate was 67.7% and 1.2% respectively. G3 patients higher incidence of minor complications (i.e. DC grade II and IIIa, such as POPF grade A and B, DGE, BL grade A and minor PPH), (G1: 21.1%; G2: 16.6%; G3: 63.6%). No significant differences among the three groups regarding major complications (i.e. DC grade IIIb and IV POPF grade C, major PPH and severe pancreatitis) was observed (29% globally). Median LOS was 24.2 days in G1, 22.8 in G2 and 27.3 in G3.

Conclusion
PD can be performed safely in selected elderly patients older than 80 in specialized centers. A higher risk for minor complications and longer LOS should be considered.
Pancreaticoduodenectomy in the Middle East: A Single Center Experience

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Background
Pancreatic cancer is the fourth cause of death from cancer; radical surgical approach is still the only hope for cure. Since most patients present with advanced stage, only 10% to 20% of them are resectable. We are presenting our experience of 300 pancreaticoduodenectomy form 1994-2015

Methods
From 1994 to 2015,370 patients underwent pancreaticoduodenectomy. Of these,we were able to retrieve the medical records of 300 only. The median age was 61 years (range 13-84), 193(64.3%) males and 107 (35.7%) females. The most common presenting symptom was jaundice in 76%, abdominal pain in 59%. 10 patients received neoadjuvant chemotherapy for size reduction prior to operation (3%). 92 patients required preoperative biliary stenting. 30% had preoperative ERCP and 4 PTC. The median Ca19.9 was 86.6 (range 0.6-45707). 252 underwent standard Whipple procedure and 48 PPD with a mean operative time of 300 minutes (75-755 min).

Results
The 1,3, 5 and 10 year survivals were: 85%, 35%, 18%, and 10% respectively. 44% had postoperative complications which included; pancreatic fistulas, biliary leak and delayed gastric emptying in 22, 5, 12% respectively. 47% were diagnosed with pancreatic adenocarcinoma.
Alkaline Phosphatase (ALP) median level was 251 (22-2337), albumin 37 (15-53), INR was 1 (0.75-2.2)

Conclusion
With the improvement of surgical techniques and expertise, pancreaticoduodenectomy is becoming a standard procedure for pancreatic cancer with good surgical outcome compared to historical data.
Pancreaticoduodenectomy in young patients. A single center experience of 58 cases.

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Background
As pancreatic and periampullary pathologies are uncommon in young populations, PD is not a frequently performed procedure in pediatric and young adult population. In fact the literature is relatively deficient in this area with the largest published series to our knowledge only including 22 patients.

Methods
This is a retrospective analysis of the data of all patients who underwent PD at Gastro-intestinal Surgical Center, Mansoura University in the period between 1995 and 2016. Patients under 35 years were defined as young adults. An adult cohort representing adult patients who underwent PD in the same study period at our institute were also analyzed for comparison.

Results
Fifty eight patients with a median age of 31 years (range, 12-35) underwent PD. The most common pathological diagnosis were adenocarcinoma (41.4 %) and solid pseudopapillary neoplasm (29.3%). The overall complication rate were 36.3 % for the young adult group and 32.5 % for the adult group. The most common complication in the young adults was pancreatic fistula (19 %). Hospital mortality rates were 1.7 % for the young adult group and 4.7 % for the adult group. In the young adult group the 5 years survival for adenocarcinoma was 35 % and for solid pseudopapillary tumor 94 %.

Conclusion
To our knowledge this appears to be the largest series for PD in young adults where it appears to be safe with comparable short term and long term surgical outcomes.
Pancreaticojejunostomy with seromuscular jejunal flap formation to prevent pancreatic fistula

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Background
Pancreatic fistula following pancreaticoduodenectomy is a serious complication associated with high morbidity rates. We present a modification for duct-to-mucosa, end-to-side pancreaticojejunostomy with a seromuscular jejunal flap, in order to increase the safety of the anastomosis.

Methods
The technique we describe is an end-to-side, duct-to-mucosa, two layer pancreaticojejunostomy with a seromuscular jejunal flap and insertion of a silicon stent. We performed this modified anastomosis in sixty-three patients who underwent a pancreaticoduodenectomy procedure from July 2009 to November 2016. The procedure was classic pancreaticoduodenectomy except six cases with pyloric preservation.

Results
There were 63 patients with periampullary tumor that underwent pancreaticoduodenectomy with the modified pancreaticojejunostomy technique. Thirty-six (57%) of them were males and 27 (43%) females, with a mean age of 67.4 years (range 32-82). The mean operative time was 308.2+37 min and the mean time needed to perform the anastomosis was 24.6 min (range 21-26 min). Five patients (8%) developed pancreatic fistula; four grade A and one grade C who needed reoperation due to bleeding. The overall morbidity was 22%. There was no anastomosis-related mortality.

Conclusion
This modified pancreaticojejunostomy appears to be a safe and reliable technique without adversely affecting operative time. The seromuscular jejunal flap intends to promote healing process especially in cases of soft pancreas and narrow pancreatic duct.
Pancreatoduodenectomy for pancreatic head and periampullary adenocarcinomas: outcomes and predictive factors for long term survival

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Background
Pancreatoduodenectomy (PD) is the only curative treatment for resectable tumors of the head of the pancreas and periampullary regions. The aim of this study was to evaluate the outcomes and identify the predictive factors influencing long term survival of these patients at our center.

Methods
Retrospective analysis of prospectively maintained database of PD patients between 2010-15, at our institute was performed.

Results
Out of 102 patients, 81 patients with mean age of 52 years were analysed (8 expired and 13 lost to follow up). The incidence of postoperative complications was 36%. The overall survival was 66.5% at 1 year and 17.5% at 5 years, with a median survival of 33 months. On histopathology, 40% of patients had T3/T4 disease, 37% had lymph node involvement, 20% had poorly differentiated histology, and 9% had positive resection margins. Predictive factors for long-term survival in both univariate analysis and multivariate analysis included absence of preoperative biliary drainage, low baseline CA 19-9 level, R0 resection, tumor diameter (size <3 cm) and grade, absence of lymph node involvement or distant metastasis, lymphovascular and perineural infiltration and adjuvant chemotherapy.

Conclusion
Thus completeness of resection, tumor characteristics including tumor diameter and degree of differentiation, and adjuvant chemotherapy are important independent prognostic factors for survival. Preoperative biliary drainage and high baseline CA 19-9 levels had negative impact on long term survival.
Pancreas surgery: Clinical
EP1.05

Pancreatogastrostomy as reconstructive technique after pancreatoduodenectomy

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Background
Recent series and metanalisis showed pancreatogastrostomy after pancreatoduodenectomy as an alternative to reconstruction with pancreatojejunostomy in order to reduce the rate of postoperative fistula after head pancreatic resection. Nevertheless a higher incidence of postoperative hemorrhage has been described.

Methods
We present the video corresponding to the operative procedure in a male patient, 69 years old, who presented icteric at our institutions in relation with the existence of a neoplasm in the distal biliary tree.

Results
The main purpose is to expose technical aspects of pancreatogastrostomy who is performed through transgastric approach in a double row of suture. Piloric preservation is standard in our team in these tumours. Two of our patients with this reconstruction need for surgical reintervention due to intragastric hemorrhage, in one case due to pancreatitis of the pancreatic stump and in the other secondary to active bleeding in the pancreas.

Conclusion
Pancreatogastrostomy is an attractive technique of reconstruction after pancreatoduodenectomy specially, in our opinion, in cases of soft pancreas and/or small diameter of the Wirsung duct in order a reduce the incidence of postoperative fistula. But we must keep in mind a higher risk of postoperative hemorrhaghe related to the ubicacion of the pancreatic stump in the gastric lumen.
Patch reconstruction of the superior mesenteric-portal vein using gonadal vein with three-dimensional planning in pancreatic head cancer

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Background
Pancreatectoduodenectomy (PD) with combined partial resection of the superior mesenteric-portal vein (SMPV) often is necessary for curative resection in adenocarcinoma of the pancreatic head. However, it was difficult to select the graft to reconstruct. The aim was to evaluate the availability of patch reconstruction of the venous defect using gonadal vein graft with three-dimensional (3D) planning.

Methods
Between 2007 and 2016, 85 patients with adenocarcinoma of pancreatic head underwent curative resection in our hospital. Preoperatively, we evaluated the length of SMPV stenosis using 3D planning. Thirteen patients underwent PD with combined resection of SMPV. We reconstructed the venous defect using gonadal vein graft.

Results
Thirteen patients (15.3%) were underwent PD with patch reconstruction of SMPV by gonadal vein graft. The mean age was 68.8 years (47-83 years), the mean operating time was 827 min (723-962 ml) and the mean blood loss was 1360 ml (660-2920 ml). Mean postoperative hospital stay was 39 days (19-53 days). In hospitalization, patency of the reconstruction vein was 100% and there were no morbidity of SMPV thrombosis and bleeding.

Conclusion
Venous patch reconstruction using gonadal vein graft is feasible in the PD with combined resection of SMPV.
Perioperative and long-term oncological results of minimal-invasive pancreaticoduodenectomy - A matched pair analysis of over 100 cases

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Background
Laparoscopic pancreaticoduodenectomy (LPD) is a feasible but technically extremely demanding surgical procedure. Data on outcome of LPD is limited and the oncological equivalence of LPD to open pancreaticoduodenectomy (OPD) is still unclear. The aim of this study was to compare perioperative outcome and long-term survival after LPD and OPD for periampullary carcinoma and adenocarcinoma of the pancreatic head.

Methods
Overall 549 patients, operated in from 2000 to 2015 in the Department of Surgery, UKSH Lübeck were identified, with 489 in the OPD group and 60 patients in the LPD group. N=120 patients were matched 1:1 for age, sex, BMI, ASA, histologic diagnosis, pancreatic texture and portal venous resection (PVR). Perioperative outcome and long-term survival were compared between the two groups.

Results
ICU-stay (p=0.008) and overall hospital stay (p=0.012) were significantly shorter and transfusion rate (p=0.032) was significantly lower in the LPD group. Regarding the procedure related complications, LPD was associated with lower rates of severe postoperative pancreatic fistula (POPF B/C, LPD 15% vs. OPD 36%; p=0.036) and delayed gastric emptying (DGE B/C, LPD 8% vs. OPD 20%; p=0.049). Survival was significantly longer in the LPD group for periampullary carcinoma but not for adenocarcinoma of the pancreatic head.

Conclusion
Long-term survival after LPD is better than that after OPD for periampullary cancer but not for pancreatic adenocarcinoma.
Perioperative antiplatelet therapy and pancreatic surgery: friend or foe?

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Background
With increasing age, the number of patients with cardiac co-morbidities do increase and with this also the individual antiplatelet therapy. This regime seems to increase the perioperative (po) bleeding risk. International guidelines recommend to shift the operation up to one year, which is not possible in pancreatic cancer.

Methods
838 patients with a pancreatic resection between 2007 and 2015 were analyzed retrospectively. 467 without anticoagulation were the control group. Pat with anticoagulative therapy were divided into: group (I) 62 with po ASS, (II) 8 with po ASS + Plavix, (III) 32 with oral anticoagulation (OAC) converted to therapeutic low-molecular-weight heparin (= tLMWH), (IV) 44 patients with paused medication and (V) 136 with new postoperative onset of therapy. Lastly was divided into three groups: (Va) only ASS, (Vb) tLMWH, (Vc) tLMH + ASS. Bleeding was classified according to recommendation of ISGPS and the complications according to Clavien-Dindo.

Results
125 (14.9%) pat received pre-operative anticoagulation (group I - IV). In these pat, there was no difference in the incidence and severity of bleeding. The cardiac and overall complication rate did not differ in these groups. However, 136 patients (16.2%) who received postoperatively a novel anticoagulatory therapy regime (group V) demonstrated significantly more and severe bleeding (group Va: p = 0.009; Vb: p = 0.027; Vc: p <0.0001). Also the rate of overall complications was higher.

Conclusion
Patients with novel postoperative anticoagulatory therapy seem to be more at risk.
Perioperative blood transfusion is associated with poor long-term survival among patients with pancreatic adenocarcinoma

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Background
Perioperative red blood cell transfusion (RBCT) can negatively affect the host’s immune system. This study investigated the effects of perioperative RBCT on long-term survival among patients with pancreatic ductal adenocarcinoma (PDAC).

Methods
We retrospectively evaluated 148 patients with PDAC who underwent surgery with curative intent (33 patients received RBCTs and 115 patients did not receive RBCTs). Significant prognostic variables in the univariate analyses were subjected to multivariate analyses using a Cox proportional hazard regression model. We also adjusted for different covariate distributions in each group using inverse probability of treatment weighting, and the prognostic variables were re-analyzed.

Results
Patients received and did not receive RBCT exhibited significant differences in age, preoperative hemoglobin levels, CA19-9 levels, maximum tumor size, tumor staging, operative time, intraoperative blood loss, major vascular resection, and the proportion of pancreaticoduodenectomy. In the unweighted analyses, patients with RBCT exhibited significantly poorer overall survival (P < 0.001) and recurrence-free survival (P < 0.001), compared to patients without RBCT. After adjusting for the different covariates, perioperative RBCT remained an independent risk factor for poorer long-term overall and recurrence-free survivals.

Conclusion
Perioperative RBCT was associated with poorer long-term survival rates among patients with PDAC who underwent surgery with curative intent.
Platelet to lymphocyte ratio is a predictive marker for invasive carcinoma in patients with pancreatic intra epithelial neoplasia

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Background
Platelet to lymphocyte ratio is an inflammatory marker that has been associated with overall survival in patients with invasive malignancies including pancreatic cancer. Its potential to identify precancerous lesions of the pancreas that progress to malignancy has not been investigated so far.

Methods
We reviewed 102 patients (46 female, 56 male) who underwent surgical resection for histologically confirmed pancreatic intraepithelial neoplasia (PANin). PLR was calculated and coevaluated with additional demographic, clinical, and imaging data for possible correlation with PANin-associated carcinoma.

Results
Overall survival was 27.1% and 33% (n=34) of the patients showed invasive pancreatic cancer. PLR was significantly elevated in patients with PANin-associated invasive carcinoma (P 0.006). In the multivariate analysis, invasive carcinomas were significantly more prevalent in patients with PLR above 110 (OR: 4.06, CI 95%: 3.91-4.12, p=0.04). Patients with elevated PLR had a two times higher risk to die in the postoperative period (HR: 2.26, CI 95%: 1.04-2.21, p=0.001).

Conclusion
PLR is an independent predictive marker for the presence of PANin-associated invasive carcinoma.

References:
Polyester sutures for pancreaticojejunostomy protect against postoperative pancreatic fistula: a case-control risk adjusted analysis

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Background
There is a wide variability in the use of suture material for pancreatic anastomosis after pancreaticoduodenectomy (PD). A recent retrospective analysis showed that the use of polyester (PE) sutures might decrease the incidence of clinically relevant postoperative pancreatic fistula (CR-POPF). This study evaluates the role of suture material on CR-POPF after pancreaticojejunostomy (PJ) in a risk-adjusted setting.

Methods
A retrospective study comparing PE with polydioxanone (PDO) was performed in 520 PDs. Using propensity score matching, patients were matched for risk for CR-POPF as assessed using the fistula risk score (FRS).

Results
Both the matched PE and PDO groups consisted of 232 patients. The incidence of CR-POPF was lower in the PE group (11.6 vs. 22%, p < 0.01), with a lower rate of grade B (10.3 vs. 15.5%, p < 0.01) and C (1.3 vs. 6.5%, p < 0.01) POPF. After stratifying by fistula risk zone, PE suture remained associated with a reduced incidence of CR-POPF (9.4 vs. 15.6% in the low-, p=0.04; 15.6 vs. 28.1% in the intermediate-, p = 0.02; and 16.7 vs. 83.3% in the high-risk zone, p<0.01, respectively). Multivariate analysis demonstrated that pancreatic texture, preoperative diagnosis, FRS and the use of PE sutures were independent predictors of CR-POPF.

Conclusion
In the setting of a case-control matched for risk analysis, the use of PE suture for PJ is associated with a significant reduction of CR-POPF.
Portal and Mesenteric Vein Resection during Pancreaticoduodenectomy and Total Pancreatectomy:

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Background
The aim of this study was to identify the perioperative morbidity and long-term outcomes of venous resection (VR) during pancreaticoduodenectomy (PD) and total pancreatectomy (TP) operations.

Methods
We conducted a retrospective study of patients undergoing PD or TP between March 1995 and December 2014 at Mayo Clinic in Jacksonville, Florida. Preoperative, operative, and postoperative clinicopathological data were collected and analyzed.

Results
Out of 601 patients who underwent PD and TP in this study, 104 (17.3%) underwent VR. The types of VR and reconstruction were: type I (lateral venorraphy) in 49 patients (47.1%), type II (patch graft) in 10 patients (9.6%), type III (primary anastomosis) in 27 patients (26%), and type IV (interposition venous graft) in 16 patients (15.4%). Two patients (1.9%) had no portomesenteric reconstruction. The 90-day major postoperative complications and mortality in patients with VR were 44.2% and 7.7%, respectively, versus 29.2% and 4.4%, respectively, in patients with standard resection. The 1-, 3-, 5-, and 7-year survival rates in VR with periampullary adenocarcinoma were 55.1%, 27%, 21.9%, and 15.4%, respectively, while in patients with periampullary adenocarcinoma without VR the survival rates were 78.4%, 45.6%, 34.6%, and 30.9%, respectively (P< 0.01).

Conclusion
VR and reconstruction with PD can be performed safely with acceptable perioperative morbidity and long-term survival rates to achieve complete removal of the tumor.
Portal vein resection during pancreatic resection for inflammation instead of true tumor infiltration – a false positive benefit for overall survival?

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Background
Extended pancreatic resections including resections of the portal (PV) may nowadays be performed safely. Limitations in distinguishing true tumor involvement from inflammatory adhesions however result in PV resections being performed without histological evidence of tumor infiltration. The aim of this study was to analyze the impact of these false positive resections on operative outcome and long-term survival.

Methods
40 patients who underwent pancreatic resection with PV resection for pancreatic adenocarcinoma (PA) without tumor infiltration of the PV (PVR-group) were identified. In a 1:3 match these patients were compared to 120 patients who underwent standard pancreatic resection without PV resection (PD-group) with regard to operative outcome and overall survival.

Results
A pancreatic head resection was performed in 63% of the patients whereas 37% underwent a total pancreaticoduodenectomy. Overall postoperative complications > Clavien II were observed in 14 patients (35%) of the PVR group and 19 patients (16%) of the PD group (p = 0.01). Postoperative mortality occurred in 2 patients (5%) of the PVR group vs. 1 patient (1%) of the PD group (p = 0.10). Overall survival was significantly decreased in the PVR group (p = 0.00).

Conclusion
Radical resection affords the best chance for long-term survival in patients with PA. Based on the results of this study a routine resection of the PV as recently proposed may however not be recommended.
Post pancreatectomy haemorrhage (PPH): Risk assessment and management

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Background
PPH is a life-threatening complication in pancreatic surgery. All the more important are a sensible risk assessment, an early diagnostic evaluation and management.

Methods
In our hospital 161 patients underwent pancreatic resection from January 2013 until December 2016. Relevant data from all resections were collected in a prospective data base and reviewed retrospectively.

Results
Among 161 pancreatic resections were 100 head resections, 45 distal resections and 21 total pancreatic resections. 6 of the 161 patients (3.7%) showed a type B or C PPH. These involved 2 cases of early bleedings which were stopped by relaparotomy on operation day. 4 PPH were delayed bleedings as a result of a septic intraabdominal focus. One of these patients died during an acute arresion bleeding. In 2 patients CT angiography showed a pseudoaneurysm of the hepatic artery which was occluded by selective mesentericography. Simultaneously the septic focus was treated by interventional radiology. One patient had a cardiovascular relevant arresion bleeding of the mesenteric artery. Primary relaparotomy following interventional embolization was performed successfully.

Conclusion
A septic intraabdominal focus after pancreatic resection seems to be predisposal for PPH type B/C. Early CT angiography is relevant for following interventional treatment options of septic pseudoaneurysm. Therefore relaparotomy can often be avoided. At the same time trigger factors like pancreatic fistula or intraabdominal abscess should be treated.
Postoperative complications and outcomes after pancreatic surgery in the pediatric, adolescent and young adult population

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Background
Pancreatic surgery in the pediatric, adolescent and young adult (PAYA) population is rare. Consequently, data on well-defined post-operative outcomes is scarce. The study aim was to determine the outcomes after pancreatic surgery in the PAYA population, compared to an adult population.

Methods
A single center retrospective cohort study was performed including all patients who underwent pancreatic surgery between 2000 and 2016. PAYA was defined as age <35 years. All pancreatic surgery specific complications were assessed according the ISGPS guidelines and graded according to Clavien-Dindo. Outcomes in the PAYA population were compared to the adult (≥35 years) population.

Results
Out of 713 patients, 35 (4.9%) were PAYA with a median (range) age of 22 (5-34) years. The 90-day mortality was 0% for PAYA group. Postoperative pancreatic fistula occurred in 22.9% of PAYA vs. 8.9% of the adult population (p=0.019). Delayed gastric emptying occurred in 22.9% of PAYA vs. 35.0% of the adult population (p=0.102). Post pancreatic hemorrhage and bile leakage did not occur in the PAYA population. Complications requiring reintervention (Clavien-Dindo grade≥3) occurred in 17.1% of the PAYA group vs. 28.0% in the adult group (p=0.227). The median time until discharge was 12.5 (9-15) in the PAYA group vs. 13 (9-20) days in the adult population (p=0.191).

Conclusion
While pancreatic surgery in patients <35 years is a rarity, similar outcomes as in adults can be achieved.
Postoperative inflammatory scores associated to major morbidity and mortality after pancreatic resections

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Background
To our knowledge, there are no articles evaluating correlation between postoperative values of inflammatory scores (neutrophil-lymphocyte ratio NLR, platelet-lymphocyte ratio PLR) and severe complications after pancreatic surgery.

Methods
Prospective case-control study of major pancreatic resections (n=33) from Jan. 2015 to Dec. 2016. Postoperative complications (Clavien’s classification) registered up to discharge. Severe morbidity was defined as cases. NLR and PLR were systematically calculated based on 8 a.m. blood analysis on postoperative day (POD) 1st, 2nd and 5th and compared between cases and controls. Subgroup analysis performed for pancreatoduodenectomy (PD), n=24. Statistics: SPSS 18.

Results
Sex: 60.6% males. Age: 62±11.1 years old. Preoperative NLR and PLR did not differ among cases and controls.

Global series:
- Reoperation (Clavien IIIb): NLR-POD1 lower among cases (5.9±3.0 vs 11.7±5.8, p=0.04). No other significant differences.
- Clavien ≥III morbidity: NLR-POD1 lower among cases (6.8±3.2 vs 12.5±5.9, p=0.007). No other significant differences.
- Mortality: no significant results.

PD subgroup: statistical results remain similar as for global series.

Conclusion
Despite a short number of patients, our findings suggest that NLR on POD1 is associated with severe complications in pancreatic surgery, especially PD. It seems that patients with a lower inflammatory/neutrophilic reaction during early postoperative period might be at risk for Clavien III-IV morbidity but not for mortality.
Predictors of hospital readmission after pancreaticoduodenectomy: development of a risk score

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Background
Hospital readmission after pancreaticoduodenectomy (PD) may increase morbidity and resource utilization, and may be a particular concern in an era of enhanced recovery pathways and rapid discharge after major surgery. The aim of this study was to identify predictors of 30-day readmission after PD and develop a risk score.

Methods
Consecutive patients undergoing PD between 2009 and 2016 at a single centre were identified from a prospective database. Predictors of 30-day readmission were identified using logistic regression, and a risk score was developed.

Results
Of 518 patients, 81 (16%) were readmitted within 30 days after discharge. Reasons for readmission included delayed gastric emptying (24), intra-abdominal collection (22) and delayed haemorrhage (10). On multivariable analysis, history of cardiac disease (OR=2.0), CRP>130mg/L on postoperative day 3 (OR=3.0), and postoperative complication (OR=1.6) were identified as predictors for 30-day readmission. The model showed good discrimination (c-statistic=0.68, p<0.001) and calibration (Hosmer-Lemeshow p=0.73). The 30-day readmission rates of patients with a score of 0, 1, 2, 3 or 4 points were 4%, 11%, 14%, 25% and 39%, respectively.

Conclusion
The present risk score may be useful to identify patients at high risk for 30-day readmission after PD. High risk patients may benefit from routine CT scans prior to discharge and/or earlier clinical follow-up to reduce morbidity and readmission.
Predictors of persistent common bile duct stones in mild acute biliary pancreatitis; the role of liver enzyme and dilated CBD on ultrasound

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Background
Abnormal liver enzyme tests (LET) are frequent in acute biliary pancreatitis (ABP), and not always related to persistent common bile duct stones (CBDS). The aim of our study was to determine whether LET on admission, value variations at 24 h and dilated common bile duct (CBD) on ultrasound (US) are appropriate predictors of CBDS in mild ABP.

Methods
Data were analysed from our prospective database of 56 consecutive patients diagnosed of mild ABP; of whom 14(25%) had persistent CBDS confirmed by endoscopic retrograde cholangio-pancreatography. LET; alanin aminotransferase (ALT), aspartate aminotransferase (AST) and total bilirubin (TB) on admission and at 24 h were evaluated. Higher LET values were considered: TB>1.2mg/dl, AST>75U/l, ALT>75U/l. Abdominal US was performed. Predictive accuracy of the variables was measured using area-under-the-receiver-operating characteristic curve (AUC) analysis.

Results
Neither abnormal LET on admission or its raised values at 24h showed accuracy in predicting CBDS (AUC values under 0.5), nor did the association of the 3 abnormal LET (AUC=0.66; 0.51-0.82). However, dilated CBD on US showed good accuracy for predicting CBDS (AUC=0.75; 0.58-0.91).

Conclusion
A dilated CBD on US seems to be superior than abnormal LET in predicting CBDS in mild ABP, it could help to guide decisions making in the emergency setting of mild ABP, on selection of patients who will benefit from other specific imaging techniques.
Preliminary results in Laparoscopic Pancreaticoduodenectomy

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Background
Laparoscopic pancreaticoduodenectomy (LPD) has been gaining a favorable position in the field of pancreatic surgery in recent years. The aim of this study was to share the results of LPD that we performed on patients.

Methods
63 cases of LPD carried out between from 2012 to 2016 in Pancreatic Surgery Centers at Gazi University (Ankara), GMMA (Gülhane Military Medical Academy) (ANKARA) and Memorial Şişli were included in the study. The group of patients consisted of 37 male and 35 female. Postoperative pancreatic fistula (POPF), the length of stay in hospital, morbidity, and mortality were evaluated. International Study Group on Pancreatic Fistula classification was used as POPF evaluation.

Results
56 of the patients were applied pylor preserving LPD and 7 of them were implemented conventional technique LPD. When total LPD technique was applied in 46 patients, anastomoses were performed with open technique after the specimen was removed with a small midline incision after LPD in 17 patients. The second method was performed during the initial periods of the LPD program. The mean operative time was (342±41) minutes. The mean blood loss was (214±96) ml. The rate of overall postoperative complications was 31.4% (20/63), with %7.9 (5/63) of grade A, 6.3 % (4/63) of B or 3% (2/63) C pancreatic fistula and 3% (2/63) with bleeding. The mean postoperative hospital stay was (9.2±4) days. Postoperative mortality was not seen.

Conclusion
Our early experience in LPG reveals that this method is feasible and reliable.
Preoperative predictive risk scores of pancreatic fistula following pancreatoduodenectomy

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Background
Preoperative prediction of Postoperative Pancreatic Fistula (POPF) may provide opportunities for individualization in the selection of patients for pancreatoduodenectomy (PD) and their postoperative management. The aim of this study was to evaluate the clinical value of four predictive scores to estimate the risk of POPF in patients undergoing PD.

Methods
Four different risk scores were calculated from a retrospective review of 64 patients with pancreatic and periampullary tumors undergoing PD from January 2007 to December 2013. POPF was graded using International Study Group of Pancreatic Fistula criteria (ISGPF). Grade B and C leaks were defined as clinically significant. Patients were stratified into risk categories based on the point totals as per the risk score.

Results
Grade A fistula occurred in 8 (12.5%) patients, grade B in 12 (18.8%), and grade C in 7 (10.9%). The risk of POPF increased as the risk score increased. The four scores predicted POPF with a higher predictive score associated with increasing risk of POPF: Score 1 (Roberts): P=0.035; Score 2 (Callery): P<0.001; Score 3 (Yamamoto): P=0.033 y Score 4 (Wellner): P=0.029.

Conclusion
The use of four specific risk scores predicted POPF in our study. An ideal predictive risk score should be easy, accurate and objective and might enable the clinician to adjust surgical management according to POPF risk. Further studies are needed to confirm the findings of this study.
Primary hydatid cyst of the pancreas: difficulties and therapeutic management

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Background
Hydatid disease is a parasitic infection caused by larval stage of Echinococcus granulosus in human. The most frequently involved organ is the liver. The pancreas is an uncommon site of a hydatid cyst, even in countries where echinococcal disease is endemic. Pancreatic localization accounts for less than 1% of cases.

Methods
It is a retrospective study that reported the hydatid cysts of the pancreas over a period of 20 years (1995 to 2015). By means of our study we try to clarify clinical manifestation, radiological features and therapeutic modalities.

Results
We report seven cases of primary hydatid cysts of the pancreas. Abdominal pain was the most frequent clinical signs. The diagnosis of hydatid disease has been based on a history and clinical findings and mainly on imaging (ultrasound and CT-scan). Mean size was 100 mm. The echinococcal serology (Elisa) was positive in all cases. All patients were operated by laparotomy. Surgical treatment included resection of the prominent lump in three patients, a radical surgery in 4 cases. The postoperative periods were uneventful and no recurrence was seen.

Conclusion
Primary hydatid cyst of the pancreas should be suspected in cystic lesions affecting any organ in the body, especially in endemic areas of the world. Preoperative diagnosis may be difficult regarding the absence of clinical or radiological signs. Surgery, conservative or radical, is still the treatment of choice for all locations of the disease.
Primary malignant melanoma of the duodenum with pancreatic involvement treated with pancreaticoduodenectomy

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Background
Despite the fact that the small intestine is the most common site of gastrointestinal metastases from cutaneous malignant melanoma, primary malignant melanomas originating in the duodenum are extremely rare [1]. The most common clinical findings are anorexia, weight loss, diffuse abdominal pain and digestive bleeding. Aggressive surgery remains the treatment of choice in order to offer both symptom palliation and long-term survival [2].

Methods
A 40-year-old female presented with abdominal pain, anorexia, palpable upper abdominal mass and anemia. She was submitted to Ct-scan that disclosed a 10 cm mass in the horizontal part of the duodenum. A endoscopy was performed and tissue samples obtained. Pathology disclosed a malignant melanoma. Surgical resection was proposed. Intraoperative findings were a large mass occupying the duodenum, extending to the mesocolon and mesentery and to the uncinate process of the pancreas. The lesion was dissected from the mesocolon and mesentery and a pancreaticoduodenectomy with lymphadenectomy performed.

Results
Operative time was 360 minutes. Estimated bleeding was 250 mililiters. Postoperative period was uneventfull. Pathology confirmed a malignant melanoma of the duodenum. Postoperative investigation did not reveal any primary melanotic lesions. The diagnosis of primary duodenal melanoma is suggested.

Conclusion
Primary malignant melanoma of the duodenum is extremely rare and must be differentiated from other intestinal tumors. Aggressive surgery is the treatment of choice.

References:
Primary malignant melanoma of the duodenum. A case report of surgical management and long-term survival of the rare disease

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Background
Primary malignant melanoma originating in the duodenum is extremely rare. We report the case of a 57-year-old man who presented with a preoperative duodenal tumor with a subcompensated stenosis.

Methods
The patient previously had a diffuse large B-cell lymphoma, and he had complete remission to time of surgery. A pancreaticoduodenectomy with paraaortic lymphadenectomy was performed on 14th March, 2008).

Results
Histopathological examination ascertained the diagnosis of a duodenal malignant melanoma with muscular layer invasion without locoregional lymphatic spread. Immunohistochemistry has proved primary malignant melanoma of duodenum. A thorough pre- and postoperative investigation did not reveal any other melanotic lesions. There is no evidence of recurrence 7 years after surgery.

Conclusion
Primary malignant melanoma of the duodenum is a very rare, though existing type of tumor. Surgery could be treatment of choice that can provide a long-term survival.
Prognosis of invasive intraductal papillary mucinous neoplasms of the pancreas after surgical resection: a matched control study


Background
The prognosis of Invasive intraductal papillary mucinous neoplasms (IPMNinv) was often considered more favorable compared to pancreatic adenocarcinoma (PDAC). However, recent reports suggest a comparable long term outcome between PDAC and advanced stages of IPMNinv.

Methods
One thousand, eight hundred eighty-four patients underwent surgery for IPMNinv (n=198) or PDAC (n=1686) were included. Clinical, biochemical, and pathological features and follow up after resection were recorded. Patients with IPMNinv (n=169) were matched with patients with PDAC (n=169), according to age, TNM stages, perineural invasion, margin and surgical procedure.

Results
Overall median survival of IPMNinv was 70 months compared with 28 months of PDAC (p<0.001). early stages were significantly increased in patients with IPMNinv (78% vs 98%, p<0.001). On multivariate analysis, IPMNinv demonstrated a 39% lower hazard than PDAC. For patients with IPMNinv, positive lymph nodes (HR, 2.51; 95% CI, 1.17-5.41, p=0.018) was the only predictor of survival. When patients were matched by age, TNM stages, perineural invasion, margin and surgical procedure, overall (70 vs 34 months, p=0.09) and free disease survivals (21 vs 17 months, p=0.9) were similar.

Conclusion
The more favorable pathological factors of IPMNinv and early diagnosis suggested the less aggressive behavior of this tumor. However, the prognosis of IPMNinv is as poor as PDAC.
Prognosis of sporadic resected small (≤ 2 cm) nonfunctional pancreatic neuroendocrine tumors - a multi-institutional study


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Background
Non-functional pancreatic neuroendocrine tumors (NF-PNET) are rare tumors increasingly being diagnosed incidentally. Choice of treatment for small (2cm or less) NF-PNETs is difficult as their malignant potential is difficult to predict. This is reflected in the current recommendations - some favor surgery, while others suggest wait-and-see policy [1] [2] [3] [4] [5] [6]. As these tumors are rare, previous clinical series are small. The aim of this study was to identify factors affecting prognosis after surgery for small NF-PNETs in a multicenter study.

Methods
Patients were identified from the databases of 16 European centers and data was extracted retrospectively. Uni- and multivariate (Cox) analyses were used to identify risk factors for recurrence.

Results
210 patients (median age 60y) were included. Median tumor size was 15mm, 65% were asymptomatic, and 42% underwent parenchyma-sparing surgery. Severe morbidity was noted in 14% and 1 patient died postoperatively. 10% had metastatic lymph nodes. 5-year disease-free survival was excellent, 93.5%. Tumor size, presence of bile or pancreatic duct dilation, and WHO grade 2 -3 were identified as independent risk factors for recurrence. Tumors <11mm in size did not recur during follow-up. Parenchyma-sparing pancreatectomy carried highest risk for pancreatic fistula, but was also associated with favorable disease-free survival.

Conclusion
Presence of bile or pancreatic duct dilation or WHO grade 2-3 advocate for surgical treatment of small (2cm or less) NF-PNETs.

References:
[1] Lee, (2012), Small, nonfunctioning, asymptomatic pancreatic neuroendocrine tumors (PNETs): Role for nonoperative management,.
Prognostic Ability Of Inflammation Based Scores In Acute Pancreatitis.

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Background
It is currently seeking a prognostic marker in question. Therefore, we evaluated the prognostic ability of inflammation based scores for patients with acute pancreatitis.

Methods
We retrospectively reviewed the medical records of 299 cases with acute pancreatitis from 2010 and 2014.

Results
241 of the patients were classified as mild, 58 of them were classified as moderate-severe pancreatitis according to Atlanta 2010 classification. There were no significant relationships between mGPS 0 and etiology, severity, ICU requirement, surgery requirement, local or systemic complications and mortality. Score of “2” according to the mGPS 48 were significantly related with severity according to Atlanta classification (p<0.001, %43.2-%74.5), need for antibiotics (p<0.001, %38.5-%69.3), requirement of ICU (p=0.005, %46.9-%81), systemic complications (p<0.001, %38.7-%73.8) and mortality (p=0.364, %48.3-%100). It was found that PNI 0, PNI 48, NLR 0, NLR 48, PLR 0, PLR 48 and CRP/albumin 48 (but not CRP/albumin 0) were significantly correlated with Atlanta classification, need for antibiotics and presence of systemic complications (p<0.001, p<0.05 and p <0.05). NLR 48, PLR 48 and CRP/albumin 48 were significantly related with surgery requirement and presence of local complications (p<0.05).

Conclusion
Nutritional or Inflammation-based prognostic scores are not reliable in the first 24 hours for prediction the severity of acute pancreatitis.
Prognostic factors in non-functional neuroendocrine tumors of the pancreas in a 70 patients series.

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Background
The aim of this study was to analyze prognostic factors for survival and recurrence in patients with resected pancreatic non-functional neuroendocrine tumors (NF-pNETs).

Methods
Medical records of 70 patients with resected NF-pNETs were retrospectively reviewed. The variables studied were: age, sex, form of presentation, (sporadic /familial tumors), type of tumor, localization, diagnostic tests (analytical/image tests), type of surgery, tumor size, multifocal tumors and recurrent rates. The new WHO classification (2010) was used.

Results
There were 41 men and 29 women. Mean age was 42.7 years. Regarding the mode of presentation, it was sporadic in 51 patients (72.8%) and 19 cases were familial neuroendocrine tumors (27.2%) in association with MEN 1 syndrome. Distal pancreatectomy was the most common surgical procedure. There was synchronous liver metastasis in 28 patients, all of them from the sporadic group. According to the WHO classification, 19 patients had a NF-pNETs G1, 34 NF-pNETs G2 and 17 with a poorly-differentiated carcinoma. The 5-year survival in well-differentiate tumors was 94.7 %. In contrast very poorly-differentiate tumors global survival is less than 5 years. Survival and recurrence rates after a mean follow-up of 94.3 months were 69.8 % and 27 % respectively.

Conclusion
In our experience, WHO classification was an independent prognostic factor in NF-pNETs survival.
Prognostic impact of the number of positive lymph nodes and lymph node ratio on the outcome of patients after resection of pancreatic adenocarcinoma

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Background
The presence of metastases in the lymph node in pancreatic adenocarcinoma is considered to be a factor that affects the survival of patients after resective surgery. The aim was to examine the effect of the number of positive lymph nodes and the lymph node ratio (LNR) on the outcome of patients after pancreatic carcinoma resection.

Methods
A retrospective study was performed at the Department of Digestive Surgery, Clinical Center of Serbia, Belgrade, including 41 patients treated with radical surgery for pancreatic carcinoma (PC).

Results
Negative lymph nodes had 14 patients, whereas 27 (65.5%) had positive lymph nodes. Median survival of all patients was 14 months. Patients with 2 or more metastatic lymph nodes had worse survival rate compared to patients with 0 or 1 lymph node (log rank p = 0.007), while individuals with LNR≥0.2 had worse outcome than patients with LNR <0.2 (log rank p = 0.049). According to our results factors associated with poorer survival were R1 surgical margin status (p = 0.049) and the presence of 2 or more metastatic lymph nodes (p = 0.015). Independent predictor of survival rate in our study were presence of ≥ 2 metastatic lymph nodes in patients with PC (p = 0.026).

Conclusion
The number of positive lymph nodes is more important prognostic factor than LNR in patients with resection of pancreatic carcinoma. Patients with 2 or more positive lymph nodes had a significantly shorter survival than those without positive or with 1 positive lymph node.
Prognostic nomogram with radiological parameters to predict overall survival in pancreatic carcinoma after pancreatectomy and venous reconstruction

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Background
Pancreatic cancer is mainly diagnosed at an advanced stage when adjacent vessel invasion is present. We address this issue by establishing an effective prognostic nomogram with CT parameters for pancreatic carcinoma after pancreatectomy and venous reconstruction.

Methods
Primary data were derived from 201 patients who received pancreatectomy and venous reconstruction confirmed pancreatic cancer in four hospitals from January 2012 to December 2015. Only the demographic parameters and radiological parameters were evaluated using univariate and multivariate Cox regression analyses. The final nomogram were evaluated by concordance Harrell’s C-index, calibration curve and externally validated in 65 patients from 2015 to 2016 at the same institutions. The pathological correlation of radiological parameters was analysed by Chi-square test.

Results
Age, length of tumor contact and vascular abnormalities were independent factors for survival. The nomogram had a good calibration curve for probability of survival. The C-index of the model for predicting OS was 0.801 and 0.805 for primary and validation cohorts, respectively. Seven image features of vascular abnormalities were confirmed and classified into 4 types by computed tomography (P < 0.0001). The pathological correlation of radiological parameters was high (P < 0.0001).

Conclusion
The nomogram with radiological parameters can accurately predict OS for patients with pancreatic carcinoma after pancreatectomy and venous reconstruction.
Prognostic value of mural nodules and their size in IPMN of the pancreas: high-volume center experience, systematic review and meta-analysis

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Background
Mural nodes (MN) are well-established predictors of malignancy in IPMN and are a major indication for surgery for Guidelines. Less is known about whether their size might play a role in risk assessment.

Methods
A systematic review of the literature was carried out following the PRISMA statement. A meta-analysis was conducted on selected studies reporting MNs size and final IPMN pathology. The random effect model was adopted and the pooled SMD (standardized mean difference) obtained. The IPMN surgical series of a single high-volume Institution was retrospectively reviewed. Only patients with comprehensive data about MN at MRI were included in the study.

Results
The systematic review included 70 studies. Overall, the presence of MN had a positive predictive value for malignancy of 60.1%. The meta-analysis carried out on the 7 studies considered as eligible suggested that the size of MN has a considerable effect in predicting malignancy in IPMNs, with a mean SMD of 0.79. Of 317 resected IPMNs at our Institution, 102 (32.1%) had a preoperative diagnosis of MN. MN is the only independent predictor of malignancy for both branch duct IPMN and for IPMN with main pancreatic duct involvement.

Conclusion
The presence MN is a reliable predictor of malignancy in IPMNs. Contrast enhanced endoscopic ultrasound seems to be the best tool in characterizing MNs’ size obtaining the best accuracy in predicting malignancy. Further studies will have the aim to identify potential MN dimensional cut-offs.
Pseudoaneurysm of the hepatic artery after pancreaticoduodenectomy

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Background
Despite low mortality, postoperative complications are still relatively frequent after pancreaticoduodenectomy (PD). Pseudoaneurysm of the hepatic artery is an uncommon but extremely severe complication. Currently there is not consensus on the management of this entity.

Methods
A retrospective descriptive study of all patients who had undergone a hepatic artery pseudoaneurysm (HAP) extracted from the PD database of the HPB Surgery from October 2010 to January 2017.

Results
We present a serie of 4 patients who presented a HAP following PD. A woman and 3 men, aged between 44 and 74 years. In 100% of the cases, patients presented with a pancreatic fistula and the initial debut was upper gastrointestinal bleeding (UGB) and in 75% an urgent surgical reintervention was necessary, all of which had a previous diagnosis by angioCT. In one of the cases, it could be resolved by interventional radiology. Overall survival has been 75%.

Conclusion
HAP is an uncommon but extremely severe complication following PD. We must think about it whenever a patient presents an UGB. The HAP is related in 100% of cases of our series to a pancreatic fistula, that produces an erosion of the artery wall that allows the formation of the pseudoaneurysm, and when it fissures, the bleeding runs through the jejunal loop or stomach. Whenever possible, at the slightest suspicion it is necessary to perform an angioCT. It is essential to carry out a multidisciplinary management, counting whenever possible with a interventional radiology.
Pseudopapillary Solid Neoplasms of the Pancreas - Monsters, Inc

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Background
Pseudopapillary solid neoplasms of the pancreas (PSNP) are rare entities (0.13 to 3%), of unknown etiology. Described for the first time in 1959 only in 1996 were defined as an entity by WHO. They present a reduced incidence of metastasis with overall survival of 95% at 5 years. They preferentially affect young women (F: M 10: 1).

Methods
Retrospective analysis of patients with the histological diagnosis of PSNP between 2006 and 2016.

Results
This series, referring to the last decade, presents 8 cases, predominantly female (7F: 1M), with a mean age of 31 years. All patients were asymptomatic. The lesion was solid in 2 and heterogeneous in 6. FNA was performed in 5 patients. The lesions were located in the head in 2 patients, body in 2 and in the tail in the others. Regarding the surgery we performed 2 duodenopancreatectomy, 1 distal pancreatectomy and 5 distal splenopancreatectomy (3 of which by laparoscopy). There was no mortality in this series. The 30-day morbidity was 25% (1 case grade III). All patients are alive, with an average follow-up of 28 months.

Conclusion
In PNSP, resection surgery is the only effective treatment and responsible for the good prognosis associated with this type of lesion. Since pancreatic surgery is associated with high morbidity, these patients should be oriented to reference units.
Quarter century experience of pancreatic surgery in a high volume Center - a SWOT analysis of 2925 consecutive pancreatic resections

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Background
Pancreatic surgery at high volume centers has undergone major changes over the last decades. However, the quality of surgery remains to be considered as one important factor for achieving long-term survival especially in patients at advanced stages of disease.

Methods
Between January 1990 and September 2016 2925 consecutive patients have undergone pancreatic resection at our institution. A SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis of all relevant parameters was performed.

Results
A total of 2176 pancreatic head resections (74%), 475 distal pancreatectomies (16%), 190 total pancreatectomies (7%) and 84 other resections (3%) were performed within our study period. Additional vascular resections were performed in 262 patients (9%). 164 patients (6%) underwent additional liver resection. Postoperative morbidity occurred in 750 patients (26%). Perioperative mortality occurred in 88 patients (3%). Overall survival strongly depended on the underlying disease, as well as on lymph node stage (p = < 0.001) and surgical radicality (p = <.001).

Conclusion
The decentralization of pancreatic surgery over the last decades has led to a focus on high-volume centers for extended procedures in complex patients. Present SWOT analysis underlines the significance of a centralization of pancreatic surgery for patient safety and to increase the chance of even long-term survival.
Pancreas surgery: Clinical
Sym27.06

R0 vs R1 resection in pancreatic cancer: is there a genuine prognostic importance?

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Background
Many R0 pancreatic cancer (PDAC) resections are revealed to be R1 resection upon exact histological examination. Thus, the true prognostic importance of R0 vs. R1 resection for survival in PDAC is yet to be uncovered.

Methods
Medical databases were screened for prognostic publications that reported adjusted hazard ratios (HR). Furthermore, our prospective institutional database was retrospectively screened for curative PDAC resections according to inclusion criteria (n=254 patients) between 07/2007 and 10/2014.

Results
In the meta-analysis, R0 was associated with an improved overall survival [HR 1.45 (95%-CI 1.37-1.52)] and disease free survival [HR 1.44 (1.30-1.59)] in PDAC when compared to R1. Importantly, this effect was present only for pancreatic head resections, both in the meta-analysis [CRM≤1mm: HR 1.21 (1.05-1.39) vs. CRM≥1mm: HR 1.66 (1.46-1.89)] and in our cohort (R0≤1mm: 28.8 vs. 14.5 months, p<0.0001; R0≥1mm, 41.2 vs. 16.8 months; p<0.0001). Moreover R1-resections were associated with advanced tumor disease, as indicated by larger tumor size, lymph node metastases, and extended resections. Multiple Cox proportional hazard model revealed G3, pN1, tumor size and R1 (0mm/1mm) as independent predictors of overall survival.

Conclusion
R-Status is not a valid prognostic marker in publications before 2010 due to inhomogeneity of cohorts and of histopathological examination. Upon standardized pathological examination, R-status’ prognostic validity is confined only to pancreatic head resections.
Radical Antegrade Modular Pancreatosenplectomy (RAMPS) in left sided pancreatic cancer

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Background
RAMPS is a technique described by professor Strassberg in 2003. The objective is to achieve maximum oncological radicalism in the treatment of pancreatic body and tail carcinoma, both by the dissection planes chosen to obtain negative margins (anterior pararenal space), and associated lymphadenectomy. This maximizes the circumferential resection margin obtained in the surgical piece. Two variants of RAMPS are described, anterior and posterior, depending on whether resection of the left adrenal gland is associated (posterior RAMPS, for cases in which the neoplasia affects the posterior capsule of the pancreas).

Methods
We present in the video the case of a 62-year-old female patient with a 4-month weight loss history accompanied by abdominal pain. Diagnostic techniques revealed the existence of a neoplasm at the pancreatic body level.

Results
She was operated on and a anterior RAMPS was performed. The section at the level of the neck of the pancreas was performed with the Echelon ® stapler protected with Seamguard ®. The duration of the intervention was 210', with minimal blood loss. Postoperative course was uneventful, with a hospitalary stay of 6 days.

Conclusion
RAMPS is a safe and oncologically ideal intervention for the treatment of patients with pancreatic cancer affecting to body and tail.
RAMPS – Surgical Treatment for a Pancreatic Tumor

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Background
Radical antegrade modular pancreatosplenectomy (RAMPS) is not the standard procedure for cancers of the body and tail of the pancreas but this approach provides improvement in the establishment of an operation with oncologic rationales both for the dissection planes used to achieve negative margins and the extent of lymph node dissection. The authors present a clinical case report.

Methods
The authors present a clinical case report.

Results
55-year-old lady, without comorbidities, felt epigastric pain and noted weight loss (10Kg) for a month. Had a CT scan that showed a pancreatic body mass (4x2cm) with splenic vessels encasement and segmental involvement of splenoportal confluent.

The case was discussed in a multidisciplinary meeting and decided with surgery. We performed a radical antegrade modular pancreatosplenectomy with side wall portal resection. This procedure has complicated with the development of diabetes and a type b pancreatic fistula (conservative treatment). Pathology showed an invasive pancreatic ductal adenocarcinoma (6.5cm) with perineural invasion and metastases in 9 of 27 identified lymph nodes (pT4N2).

Conclusion
RAMPS procedure for lesions of the body and tail of the pancreas can retrieve significantly more lymph nodes than standard distal pancreatectomy and splenectomy and, therefore, improving tumor staging and outcome.
Rare case of pancreatic pseudo tumor

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Background
Since malignancies are the largest subgroup of solid pancreatic lesions surgical exploration and resection are the most important treatment options.
We describe a case of an inflammatory pseudotumor of the pancreas mimicking an inoperable pancreatic malignancy.

Methods
It's the case of a 71 y/o male with upper abdominal pain, a 2.3 x 3 cm solid lesion in the pancreatic head, two liver lesions and enlarged peripancreatic LN. EUS showed no signs of vascular invasion but portal hypertension was seen.

Results
On surgical exploration the hepatic lesions were benign on frozen section. Portal hypertension was severe and mainly present cranially to the celiac trunk. Portal vein bypass was impossible due to a missing remnant of the VMS below the pancreas. Therefore no resection was performed but extensive samples of the pancreatic head were taken.
These showed no signs of malignancy.
Therefore the therapy of the pancreatic pseudo tumor is cortisone.

Conclusion
Although the patient presented with all signs of a disseminated pancreatic carcinoma we decided to explore the patient. Surprisingly it turned out to be post inflammatory phenomena. He responded well to an corticoid therapy and further examinations will show the follow up on the pancreatic pathoanatomy. Most patients with such findings have inoperable conditions, however very rarely inflammatory pseudotumors can mimick their appearance and surgical exploration provides the necessary safety to conduct a cortisone therapy that would be detrimental otherwise.
Rare zystic pancreatic mass

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Background
The prevalence of cystic tumors of the pancreas is increasing in recent years. They yield the difficulty of correct assessment by conventional diagnostics and still bear the risk of malignancy. Surgical resection is often the only way to achieve reliable results to determine the dignity of a cystic process of the pancreas.

Methods
Here we describe a case of a 72 y/o male patient who presented with non specific upper abdominal pain. Ultrasound showed a pancreatic mass and was followed by MRI, CT and Endosonography. The latter showed a 60 x 60mm cystic lesion in the pancreatic corpus with a honeycomb like pattern. CT scan was indecisive in terms of vascular infiltration but showed no signs of metastatic dissemination. Intraoperatively there were no signs of vascular infiltration so therefore a left pancreatic resection, splenectomy and lymphnode dissection were performed.

Results
Interestingly pathology showed the rare entity of a microcystic adenoma.

Conclusion
This is a rare benign entity which is commonly diagnosed by MRI and endosonography, but since fine needle biopsy does not yield sufficient safety, surgery is commonly the only method to determine the dignity of these findings. Although microcystic adenomas are usually rather large their appearance on CT, MRI or endosonography should not detain from surgical exploration in order to remove the process.
Recurrence after endoscopic treatment of pancreatic pseudocysts - a long-term follow-up

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Background
Pancreatic pseudocysts (PPC) are collections of fluid encapsulated within a well-defined inflammatory wall that develop during pancreatic inflammation. Internal drainage represents the standard of care in lesions. Only limited data are available on long-term results. Thus, the aim of the present study was to analyse the long-term outcome after endoscopic drainage of PPC.

Methods
Patient data were retrospectively collected. We assessed the clinical short-term outcome within 30 days after initial drainage procedure, medium-term outcome within 6 months after initial drainage procedure and long-term outcome. We performed statistical analysis to identify possible risk factors for recurrence of PPC.

Results
We identified 51 patients with initially successful endoscopic drainage of the PPC. Among this cohort, 43 patients were available for assessment of medium-term results. In 82.9% of these 43 patients the drainage could be removed after successful treatment of the PPC. Thirty patients were available for long term follow-up with a mean observation period of 42.2 months. 7 of these had recurrent PPC. Approximately half of the recurrent cysts arose in different anatomical regions and most patients with recurrence had chronic pancreatitis.

Conclusion
For most patients endoscopic drainage of PPC is sufficient. However, recurrences occur. Because most of these occur in chronic pancreatitis and different anatomical locations we conclude that these might be new PPC and not persistence of old PPC.
Relation of gut hormone and gastric motility after PPPD; initial experience

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Background
Delayed gastric emptying is a frequent complication after pylorus preserving pancreaticoduodenectomy. It remains incompletely understood despite persistent improvements in perioperative patient management. In this study, we evaluate the relationship of gut hormone and gastric motility for finding physiologic features of delayed gastric emptying.

Methods
Between 2016.06.01~2018.05.31, 50 patients will be enrolled. Secretin, ghrelin level will be checked on preoperative day, and 1,2,3,5,7 postoperative days. Pre-prandial gastric motility will be checked using electrogastrography at same time. Stomach transit time will be assessed using Radio-opaque Kolomark at preoperative day, and 3,7 postoperative days.

Results
So far, 25 patients were enrolled. Among them, delayed gastric emptying was diagnosed in two patients. Electrogastrography showed reduced normogastria and stomach transit time was decreased at 3 postoperative days in normal patients.

Conclusion
We will find relationship between gut hormone and gastric motility after enrolling more patients. Physiologic features of delayed gastric emptying will be observed. Finally, we hope to predict delayed gastric emptying before meals.
Relevance of Day 3 Amylase in defining clinically relevant postoperative pancreatic fistula (CRF) following Pancreaticoduodenectomy

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Background
ISGPF defined POPF in 2005 based on drain amylase on or after day3. Still exact incidence is not known due to discrepancy in considering Grade A fistulas as true fistulas. In 2016, Grade A fistula is considered as Biochemical leak and no longer a true fistula. Our aim is to see if we can avoid the term Biochemical leak in defining POPF by considering Amylase on or after Day5

Methods
Retrospective study included all patients who underwent Pancreaticoduodenectomy during Jan2014-Nov2016. Serum and Drain amylase were analyzed on Day3. Those who met criteria of POPF, underwent repeat amylase on Day5. These patients were divided into 2 groups. Group A includes patients whose Day5 amylase normalized and Group B where elevated Amylase persisted. Outcomes compared in 2 Groups in terms of clinically relevant POPF (CRF), DGE, Hemorrhage (PPH), hospital stay and 30 Day mortality. Results were analysed and p value <0.05 was considered significant

Results
Of 110 patients, 44(40%) met ISGPF criteria. Of 44, 36(82%) had normalized Amylase on Day5 (Group A). Only 8(18%) had persistent elevated amylase (Group B). None in Group A had CRF, whereas in Group B, 6(75%) had CRF and 2(25%) had only biochemical leak (p<0.0001). DGE was significantly higher in Group B (87.5% vs 33.3%; p=0.013). PPH was seen in only 1 patient (Group A). Duration of hospital stay and 30 day mortality were similar

Conclusion
Amylase levels on or after Day5 in defining POPF may avoid the term Biochemical leak and it is also a better predictor of Clinically relevant POPF.
Resection of complex pancreatic injuries: Benchmarking postoperative morbidity using the Accordion Severity Grading System

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Background
This study benchmarked the severity of complications using the Accordion Severity Grading System (ASGS) in patients undergoing resection for severe pancreatic injuries.

Methods
A prospective database of 461 patients with pancreatic injuries treated from 1990 to 2015 was reviewed. 130 patients with AAST grade 3, 4 or 5 pancreatic injuries underwent resection (pancreatoduodenectomy (PD) n=20, distal pancreatectomy n=110), including 30 who had damage control laparotomy (DCL) and later definitive surgery. Uni- and multivariate logistic regression analysis was applied.

Results
Overall 238 complications occurred in 95 (73%) patients of which 73% were ASGS grades 3-6. 19 patients (14.6%) died. Patients more likely to have complications after pancreatic resection were older, had RTS <7.8, were shocked on admission, had grade 5 pancreatic injuries with vascular and duodenal injuries, required a DCL, received a larger blood transfusion, had a PD and repeat laparotomies. Applying univariate logistic regression analysis, mechanism of injury, RTS <7.8, shock on admission, DCL, increasing AAST grade and type of pancreatic resection were significant variables for complications. Multivariate logistic regression analysis however showed that only age and type of pancreatic resection (PD) were significant.

Conclusion
ASGS-assessed morbidity after pancreatic resection for trauma was high. This detailed outcome analysis serves as a reference for future institutional comparisons.
Results of 27 pancreas – preserving duodenectomies not associated with FAP

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Background
Pancreas – preserving duodenectomies (PPD) are uncommon procedures usually reserved for duodenal adenomas associated with familial adenomatous polyposis (FAP). PPDs performed for other entities are much more rare operations.

Methods
To assess possibility of PPD use for lesions not associated with FAP
Prospective analysis of 27 consecutive cases of PPD (2006 – 2016). with assessment of preoperative (US, CT, MRI, EUS) and histological diagnosis, short- and long–term results, including QoL for benign and survival for malignancy

Results
Duodenal dystrophy in 14 cases, duodenal GIST in 10 cases, villous adenoma, gigantic leiomyosarcoma, paraganglioma and solitary endometrial cancer metastasis in 1 case each were met. In 22 cases the diagnosis was established before surgery. The most precise diagnostic modalities were CT and EUS. The main symptoms were pain(12), GI bleeding(11) and vomiting(4). Infrapapillary duodenectomy(ID) was performed in 12 cases, one with aorta and inferior vena cava resections, and in 50% of cases duodenal resection with replantation of common bile and main pancreatic ducts in neoduodenum was performed. Morbidity rate 29%. One patient with duodenal sarcoma had died on 100th day after ID due to complications of pancreonecrosis. Other patients are alive demonstrating long-term survival and good QoL.

Conclusion
Well-timed PPD is an efficient method of treatment as for benign so as for some malignant duodenal lesions and can be an alternative for pancreaticoduodenectomy
Results of the new approach to patients with acute necrotizing pancreatic infection in a single Hospital

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Background
Management of acute necrotizing pancreatic infection (ANPI) has changed during last years to less aggressive approach. We present our experience in a tertiary University Hospital.

Methods
Retrospectively collected data from consecutive patients (p) with ANPI treated in our Hospital from 2010-2016. Definition of pancreatic infection was established by positive culture of pancreatic and/or peripancreatic necrosis and/or presence of gas in TCscan.

We analyze our results according to treatment approach: 1) only antibiotic treatment (ABT), 2) ABT+drainage 3) ABT+drainage+surgery (open or endoscopic) and 4) ABT+open surgery.

Variables recorded: Atlanta 2012 classification, hospital stay, mortality, type and mean time to surgery (MTS).

Results
Sixty patients had ANPI. Global mortality was 25%.

Group1: 14p (2 severe, 12 moderate). Hospital stay 28 days. Mortality 1p.
Group3: 14p (9 severe, 5 moderate). Stay 61 days. Mortality 1p. MTS 82 days. 3p were treated endoscopically. 11p open surgery (8 necrosectomies, 2 cystgastrostomies, 1 first necrosectomy and later retroperitoneoscopy).
Group4: 19p (12 severe, 7 moderate). Stay 32 days. Mortality 12p. MTS 8 days. All were open necrosectomies.

Conclusion
Only ABT is effective in selected p. Up to 45% of p can be treated without surgery. Delayed surgery is recommended but in p without organic failure. Patients who needs early surgery still have a high mortality. Treatment should be tailored to p clinical condition.
Retroperitoneal-placed modified hyaluronic acid and carboxymethylcellulose film to prevent delayed gastric emptying after distal pancreatectomy

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Background
Delayed gastric emptying (DGE) is one of the troublesome complications following distal pancreatectomy (DP). We hypothesized that the main cause of DGE after DP is adhesion between the retroperitoneum and stomach, and investigated the efficacy of a retroperitoneal-placed modified hyaluronic acid and carboxymethylcellulose film (Seprafilm®).

Methods
We examined the incidence of DGE among 32 patients who received DP at our hospital between 2009 and 2016. Patients were divided into three groups. In Group R, DP was performed using a retrograde approach and only one sheet of Seprafilm was placed under an abdominal incision (n=14). In Group A, an antegrade modular approach was adopted and this group was divided into two subgroups: Group A1 involving one sheet of Seprafilm placed as in Group R (n=12), and Group A2 involving a second sheet of Seprafilm placed on the retroperitoneal wall (n=6). DGE was determined using the ISGPS definition, and oral calorie intake according to POD#14.

Results
DGE occurred in 9 cases (28%) and all were Grade A. The incidence of DGE was significantly higher in Group A (p<0.05) compared to Group R (44% vs. 7%). However, there was no significant difference between Group A1 and A2 (42% vs. 50%). Average oral calorie intake was very similar among the 3 groups (72%/50%/67% in Group R/A1/A2).

Conclusion
We did not demonstrate the efficacy of retroperitoneal-placed Seprafilm; however, the strategy should be used to prevent DGE after DP, especially through an antegrade modular approach.
Risk factors for major intraoperative bleeding during pancreaticoduodenectomy and the impact of bleeding on postoperative outcome

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Background

Pancreaticoduodenectomy (PD) is a complex surgical procedure associated with a high risk for complications. The aim was to identify preoperative risk factors for patients with major intraoperative blood loss and to outline the postoperative outcomes.

Methods

Patients registered in the Swedish National Quality Registry for Pancreatic and Periampullary Cancer that underwent PD 2011-2016 were included. Major intraoperative bleeding was defined as ≥1000 ml (4th quartile).

Results

In total 1,864 patients were included. The median blood loss was 600 ml, and 502 patients had a bleeding ≥1000ml. The transfusion rate in the group with major bleeding was 56% (control group 9%). Preoperative independent risk factors associated with major bleeding were BMI (p<0.001), diabetes (p=0.044), biliary drainage (p<0.001), and neo-adjuvant treatment (p=0.002). Further, operative time was longer (p=0.013), and vascular resection more common (p=0.016). Postoperative ICU stay (p<0.001), reoperations (p=0.035), surgical infections (p=0.036), and bile leakage (p=0.045) were more common in the group with major bleeding, but not complications like pancreatic fistula and delayed gastric emptying. The 30-day mortality was 5% compared to 1.6% in the control group (p<0.001).

Conclusion

Independent risk factors for intraoperative blood loss during PD could be identified. The tumors were more advanced, based on a higher proportion of venous resection. Postoperative surgical infections and bile leakage were more frequently noted.
Robotic pancreaticoduodenectomy-initial experience in Germany

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Background
Pylorus preserving pancreaticoduodenectomy is one of the most complex procedures in general surgery. Laparoscopic pancreaticoduodenectomy was initially described in 1994. However, its worldwide distribution is limited to only a few specialist centers. Robotic surgery using the DaVinci®-system can overcome many limitations of laparoscopic surgery.

Methods
Video presentation

Results
The video presents a robotic pylorus preserving pancreaticoduodenectomy for periampullary carcinoma in a female patient. Alternate types of reconstruction are demonstrated and discussed. The clinical course was uneventful, the patient was discharged on day 10.

Conclusion
Robotic pancreaticoduodenectomy is feasible and safe. The Robotic system is a promising tool for a more widespread introduction of minimally invasive surgery for pancreatic disease.
Role of inflammatory and nutritional scores for predicting complications after major pancreatic resections

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Background
Inflammatory and nutritional scores (INS) were originally reported as survival prognostic factors of different cancers.
Aim: to evaluate these scores as predictors of complication after major pancreatic surgery.

Methods
Prospective case-control analysis of 33 patients undergoing major pancreatic resection from Jan 2015 to Dec 2016. Glasgow Prognostic Score (GPS), Prognostic Nutritional Index (PNI), Neutrophil-Lymphocyte Ratio (NLR), Platelet-Lymphocyte Ratio (PLR) were calculated before surgery and complications were registered up to discharge. SPSS 18.

Results
Sex: 60.6% males. Age: 62±11 years old. GPS(0 points=51%, 1=28%, 2=21%) PNI=46±6.2, NLR=1.8±0.7, PLR=108±34. overall complication 75% (Clavien≥3=30%), gastroparesis 31%, fistula 24%, hemorrhage 21%, SSI 18%. Statistical differences were found as follow; GPS: overall complications (0=59%, 1=89%, 2=100%, p=0.02). Clavien≥3(0=12%, 1=45%, 2=57%, p=0.04). Grade B/C Hemorrhage(0=0%, 1=22%, 2=43%, p=0.01). Mean PNI was lower among patients with overall complications than in those without them (44.8±5.8 vs 50±6.3 p=0.035), among patients with morbidity Clavien≥3(42.7±4.2 vs 47.5±6.44 p=0.037), among patients with grade B/C hemorrhage (40.5±2 vs 47.1±6.2 p=0.026). Mean PLR and NLR were higher in patients with SSI (144.7±41.4 vs 100.4±27.4 p=0.003) (2.4±0.8 vs 1.7±0.7 p=0.036) respectively.

Conclusion
Reports about the role of INS as predictors post-pancreatectomy morbidity are scarce. Our results show that patients who suffered them had worse preoperative INS.

References:
Routine use of chest computed tomography may avoid futile resections in patients with suspected pancreatic head carcinoma

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Background
The diagnostic value of routine chest computed tomography (CT) in addition to abdominal CT in the work-up for pancreatic head carcinoma is unclear. The study aim was to determine if routine chest CT altered the management of patients with suspected pancreatic head carcinoma.

Methods
A single center retrospective cohort study was performed including all patients who were referred with suspected pancreatic head malignancy between 2005-2016. Patients who were referred without chest CT underwent one by local protocol and were included in this analysis. The primary study endpoint was the proportion of patients in which the additional chest CT led to change of management.

Results
Out of 848 patients, 203 (24%) were referred without chest CT and subsequently underwent one. Chest CT revealed suspected lesions (not seen on abdominal CT) in 20 patients (9,9%). Of those, additional diagnostic procedures revealed distant metastases precluding resection in ten patients (4,9%). In two patients a second primary tumour was found and treated. Both patients subsequently underwent surgical exploration. Eight patients were false positive and subsequently underwent staging laparoscopy. Chest CT combined with subsequent diagnostic procedures led to a positive predictive value of 60% (95% CI of 43-74%).

Conclusion
Routine use of chest CT in the diagnostic work-up for pancreatic head carcinoma has significant diagnostic yield and may avoid futile resections in 5% of patients.
Safety and efficacy of perioperative chemoradiotherapy of resectable pancreatic cancer.

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Background
A novel treatment method involving neoadjuvant chemoembolization of tumor vessels prior to intraoperative radiotherapy followed by adjuvant chemotherapy was established for patients with resectable pancreatic cancer. The aim of the present study was to assess the safety and efficacy of this novel treatment scheme.

Methods
Records of 114 patients with PDAC treated in Botkin Hospital between 2013-2016 were reviewed. In 28 cases a combination of neoadjuvant chemoembolization (NACE) and pancreatic resection was used. 33 patients underwent complex treatment (IORT and pancreatic resection). In 23 cases perioperative chemoradiotherapy (PeriCRT), a novel method, was used. 30 patients were treated by a standard scheme (pancreatic resection and adjuvant chemotherapy). Afterward a histological examination and electron microscopy of irradiated resection margin were performed.

Results
All 114 patients underwent gross total resection. By the end of the study only patients in the control group had local recurrence (3/30). The estimated median survival was 336, 356, 359 and 333 days. Long-term survival was 78.6% (NACE), 87.9% (IORT), 95.7% (PeriCRT), 73.3% (control) for one-year survival, respectively (P=0.0257, 95% CI). All treatment methods were well tolerated by all patients, with few adverse effects and no serious complications.

Conclusion
Excellent local control and one-year OS for resected PDAC was achieved by using novel PeriCRT treatment method.
Safety and feasibility of pancreaticoduodenectomy in antiplatelet-burdened patients with arterial thromboembolic risks

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Background
The effect of antiplatelet therapy (APT) on surgical blood loss (SBL) and post-pancreatectomy hemorrhage (PPH) has not been well investigated.

Methods
Consecutive 100 patients receiving pancreaticoduodenectomy (PD) at our hospital between 2005 and 2016 were reviewed. APT was regularly used in 31 among the cohort. Our perioperative management included maintenance of preoperative aspirin monotherapy and early postoperative reinstitution in patients at high thromboembolic risks. Outcome variables of patients with APT (APT group) were compared with those without APT.

Results
This series included 31 pancreatic, 27 bile duct, and 19 ampullary cancer. In APT group, 18 required preoperative APT continuation. APT group showed significantly high frequency of history of cerebral infarction and percutaneous coronary intervention. Totally 18 pancreatic fistulas (grade B,C, 18%) were observed but the mortality was zero. There was only 1 thromboembolic event in a whole cohort, whereas increased SBL (>=1000mL) and PPH occurred in 11 and 6, respectively. Multivariate analysis showed high BMI (>=30) is the only significant risk factor for both increased SBL and PPH (HR=13.64 and 27.27, p<0.05), whereas either APT or preoperative APT continuation did not affect both bleeding events.

Conclusion
PD is safely performed even in APT-burdened patients with arterial thromboembolic risks, although this patient population is still challenging and should be rigorously managed to prevent both bleeding and thromboembolic complications.
Safety of Blumgart’s Anastomosis During Traverso Operation is Independent of Diagnosis and Risk Factors for Pancreaticojejunal Anastomotic Failure

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Background
The partial pancreaticoduodenectomy, either known as pylorus-preserving Traverso-Longmire procedure, is a sophisticated operation which is associated with a high morbidity. Morbidity is primarily caused by leakage of the pancreatic anastomosis with its consecutive complications like fistula. We investigated the safety of the Blumgart’s anastomosis during Traverso operation and analysed well-established risk factors regarding an association to pancreatic anastomotic failure.

Methods
In this retrospective study we included 133 consecutive patients, who underwent a Traverso-Longmire operation from 2007-2014. Analysis contained risk factors (gender, age, ASA, BMI, final diagnosis, prolonged jaundice, presurgical pancreatic duct stenting, operating room time, postoperative morbidity, length of postoperative hospital stay) hospital mortality, surgical and perioperative management. Chi-Square Test was used to analyze a statistical significance.

Results
The overall pancreatic anastomotic failure rate was n=21/133 (15,8%). Most events were pancreatic leakage grade A (n=14/133; 10,5%). Grade B occurred in 5 cases (n=5/133; 3,8%), grade C occurred in 2 cases (n=2/133; 1,5%). Mortality was 1,5% (n=2/133). No suggestible or independent risk factors were detected as predictors of postoperative anastomotic failure.

Conclusion
The Blumgart anastomosis during Traverso operation is a safe technique and its feasibility is independent of diagnosis and risk factors for pancreaticojejunal anastomotic failure.
Sarcopenia is an independent risk factor for delayed gastric emptying after pancreaticoduodenectomy

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Background
Sarcopenia is defined as the degenerative loss of skeletal muscle and can be measured using the cross-sectional diameter of the psoas muscle as found on computed tomography. This measure of preoperative nutritional status has been found to impact peri- and post-operative outcomes in a variety of surgeries including pancreaticoduodenectomy (PD). We propose sarcopenia acts as an independent factor predictive of delayed gastric emptying (DGE) after PD.

Methods
A prospectively maintained database of all patients undergoing elective pancreaticoduodenectomy at our single surgeon centre was conducted. For each patient, the grade of delayed gastric emptying and the preoperative cross sectional diameter of psoas muscle at the lower border of L4 on preoperative imaging was calculated.

Results
Of the 57 patients included, 17 (29.8%) were classified as sarcopenic. In total, 12 patients (21.1%) suffered DGE of whom 9 were had sarcopenia (p = 0.007). Sarcopenia was more common in women (p = 0.001) although not the obese (p = 0.092) or patients with hypoalbuminaemia (p = 0.118). Ductal adenocarcinoma was found in 39 of the cases and was not significantly associated with DGE (p = 0.315).

Conclusion
Our preliminary analysis suggests that sarcopenia is a predictor of DGE after PD. Other factors, such as pathological diagnosis, did not appear to hold predictive value. Further investigation into the nature of this relationship is warranted.
Sarcopenic Obesity promotes invasive carcinomas in patients with IPMN or PANin

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Background
Muscle protein breakdown precedes pancreatic tumor development. We investigated a potential relation between the loss of muscle mass and the occurrence of invasive carcinoma in patients with intraductal papillary mucinous neoplasm (IPMN) and pancreatini neoplasia (PANin).

Methods
We reviewed 177 patients (98 male, 79 female) who underwent surgical resection for histologically confirmed IPMN and PANin. Loss of muscle mass was defined as sarcopenia and sarcopenic obesity using the skeletal muscle index (SMI) and co evaluated with additional demographic, clinical, and imaging data for possible correlation with IPMN or PANin-associated carcinoma.

Results
33% patients showed invasive malignancies, 23% of the patients were sarcopenic and 7% had sarcopenic obesity. Patients with sarcopenia had a 6 times higher risk to develop an invasive carcinoma (OR: 6.14; CI 95%: 1.23-6.19, p=0.013), sarcopenic obesity even exerted this risk to 8 times (OR 7.6; CI95%: 0.33-0.7, p=0.008). In multivariate analysis sarcopenic obesity evaluated against other known predictors for malignancy (C reactive protein, white blood cell count, platelets, age, comorbidities and sarcopenia defined by the SMI) showed the highest association with the occurrence of invasive carcinomas (OR: 2.84; CI95%: 0.43-1.27, p=0.05).

Conclusion
Sarcopenic obesity is an independent predictive marker for invasive IPMN and PANin related carcinoma.
Sealing with NHS-PEG patch to prevent postoperative pancreatic fistula after pancreatojejunostomy

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Background
Postoperative pancreatic fistula (POPF) is a common and most severe complication following pancreatoduodenectomy (PD) (9.8% to 34.2%). POPF not only prolongs hospital stay and increases healthcare costs, but also plays a central role in the development of life-threatening events such as intra-abdominal abscess and postoperative hemorrhage. We present a new way to decrease POPF after PD using a NHS-PEG patch envolving duct-to-mucosa pancreatojejunostomy (DTM).

Methods
26 consecutive PD were performed from July 2015 to October 2016, using the same technique, 13 of them sealing with NHS-PEG patch after DTM. Both groups were statistically homogeneus. Demographic data were collected (age, gender, diagnosis, comorbidities), and rates of postoperative complications (pancreatic fistula, biliary fistula, delayed gastric emptying –DGE-, hemorrhage, readmission, exitus, and mean stay).

Results
Postoperative complication rates were (with NHS-PEG patch/without NHS-PEG patch): pancreatic fistula (A: 7.7%/7.7%; B: 0%/7.7%; C: 0%/15.5%); biliary fistula: 7.7%/15.4%; DGE: 7.7%/7.7%; hemorrhage: 7.7%/15.5%; readmission: 7.7%/46%; exitus: 0%/7.7%; mean stay: 21.3/26.1 days; other complications: 61.5%/46.2%.

Conclusion
Sealing with NHS-PEG patch to prevent postoperative pancreatic fistula after DTM can offer a new possibility to decrease POPF, with less fistula rate B and C, less hospital stay an less healthcare costs. Randomized controlled trials with larger number of patients should be performed to support this theory.
Severe post-pancreatoduodenectomy haemorrhage: An analytical review based on 118 consecutive pancreatoduodenectomies

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Background
Bleeding after pancreaticoduodenectomy (PD) has serious implications and substantial mortality rates. We analysed our experience with severe post-pancreatoduodenectomy haemorrhage (PPH) over 7 years.

Methods
All patients who underwent a PD between January 2008 and December 2015 were identified from a prospectively maintained database. Data analysed included demographic information, operative details, anastomotic technique, histology, post-operative complications including pancreatic fistula and PPH, length of hospital stay, need for blood products, special investigations and invasive interventions.

Results
One hundred and eighteen patients underwent PD during the study period of whom 6 (5.0%) died perioperatively. Twenty patients (16.9%) developed a pancreatic fistula and 11 patients (9.3%) had a severe PPH of whom one (9.1%) died. Four patients presenting with PPH in the first 5 days were all successfully managed either endoscopically or surgically. Seven patients developed PPH after 7 days, the majority were bleeding from the gastroduodenal artery stump and were managed angiographically.

Conclusion
Severe PPH is associated with substantial morbidity. Clinical factors including the onset of the bleeding, presentation (either extra and/or intraluminal haemorrhage) and the presence of a pancreatic fistula predict the likely aetiology of the bleeding. A management algorithm based on these factors is presented.
SHAHEED PROCEDURE-New surgical technique in the management of chronic calculous pancreatitis.

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Background
Introduction:
In chronic calculous pancreatitis Pain is predominant symptoms. Intractable hampers activities unresponsive to drug treatment. Surgical treatment combination of resection and decompression. New technique is convenient.

Methods
Materials and method:
Prospective study in Bangobandhu Sheikh Mujib Medical University and private hospital of Dhaka City. Study period from Jan. 2010 to December 2016. Total case is 98. Male 57 and female 41. Age ranges from 15 to 54 yrs. Come from low socio-income group, non alcoholic.

Description of technique:
The transverse colon with mesocolon pulled upwards. Longitudinal incision is given exposing the whole length of the pancreas. The anastomosis made at antero-inferior surface of pancreas most dependent part. Incision reach to the duodenal wall about 1 cm from it. Incision reach near to hilum of spleen in dilated duct. All fragments stone are removed from MPD wirsung Santorini duct inflammatory mass any stricture band with calcification removed. Whole length of duct single channel. The jejunal loop selected for anastomosis 5-6 cm away from DJ flexure, hold by two Babcocks forceps. Anti-mesenteric border jejunum opened by scissors. Using 3-0 PDS anastomosis starts from tail towards head. No roux-en Y anastomosis. Single anastomosis. Shorter operating time. Bleeding minimum. Morbidity mortality zero.

Results
Results:
Total case 98. Malignant cases not included. Total follow up period is 6 yrs. Pain recurrence 3-4 %

Conclusion
Conclusion: small number case, single centre.
Short-term results en bloc pancreaticoduodenectomy for surgical treatment patients with non-pancreatic malignant tumors.

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Background
Improve short-term results en bloc PD for tumors adjacent to the pancreas organs.

Methods
Between January 2004 and December 2016 20 patients were resected for locally advanced cancer and for metastatic disease to the head of the pancreas. There were 7 (35%) patients with gastric cancer, 7 (35%) – colon cancer, 3 (15%) – malignant tumor of the duodenum, 2 (10%) – kidney cancer, 1 (5%) – synchronious tumors of colon and duodenum. Metastatic lesion in the liver was visualized for 1 patient, 2 (10%) patients had direct invading to the liver. In these cases was performed liver resection.

Results
All combined resections was successfully performed. Resection margins in all patients was tumor-free. The mean duration of postoperative period was 17.25 days (12-34 days). Morbidity was 45% (9 patients), including 1 patient with grade IIIa by Clavien-Dindo and 4 – with grade IIIb. The most often of registered complication was pancreatic fistula’s creation (5 patients, 25%) and intraabdominal abscesses (4 patients, 20%). All the complications was successfully cured by operative or conservative treatment. No patient died.

Conclusion
Invasion of the malignant tumor to the head of the pancreas should not be contraindication to performing a combined surgery with PD if other non-resectable signs are absent. Combined resections improve morbidity and don’t improve mortality. One of the most frequent postoperative complications is the formation of a pancreatic fistula that requires special accuracy of anastomosis.
Small intestinal bacterial overgrowth in chronic pancreatitis patients with pancreatic exocrine insufficiency; a prospective cohort study

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Background
Pancreatic exocrine insufficiency (PEI) is a major complication of chronic pancreatitis (CP). Small intestinal bacterial overgrowth (SIBO) worsens symptoms & nutritional status in CP, & prevalence is unclear. We examined SIBO prevalence in idiopathic/alcohol CP patients with PEI (faecal elastase-1 <200ug/g) vs matched controls.

Methods
34 patients & 25 controls (age/gender/smoking matched) underwent hydrogen-breath-testing with glucose substrate. They were excluded if they had previous gastric/pancreatic/intestinal surgery, or antibiotic treatment <4 weeks prior to study. Rise in breath hydrogen 12ppm above basal was diagnostic of SIBO.

Results
Patients/controls were 67%-64% males respectively (P=0.775), a mean (SD) age of 52.4(10.4)& 53.3(10.5)yr respectively (P=0.919), & 47.1%-28% smokers respectively (P=0.143). No association found between SIBO & gender (P=0.156) or PPI use (P=0.328). Positive association found between SIBO & diabetes (P=0.033). The positive association between SIBO & pancreatic-enzyme-replacement-therapy (PERT) use just reached significance (P=0.052).

Conclusion
Prevalence of SIBO was 15%, was not associated with gender/age/PPI use, but was positively associated with PERT use & diabetes. Patients with diabetes may be more likely to suffer from SIBO due to smallbowel dysmotility, whilst SIBO & PEI may coexist. We recommend SIBO be considered in non-surgical CP patients, with GI symptoms that are unresponsive to high-dose PERT, particularly if diabetic.
Solid Pseudopapillary Tumor of the Pancreas: Experience of a Single Institution

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Background
Solid pseudopapillary tumor of the pancreas (SPT) is a rare entity. In this study, clinical and pathological characteristics of patients who underwent surgery for SPT were presented.

Methods
Patients who underwent surgery for SPT between 2005 and 2015 were included in the study. Patient demographics, laboratory findings, operative details, histopathological features of the tumor were documented.

Results
In total, 15 patients with histopathologically confirmed SPT were included with a median age of 29 (17-62). Fourteen patients (93.3%) were female. Most common symptom at the time of presentation was abdominal pain (53.3%) while 4 patients (26.7%) were diagnosed incidentally during routine abdominal imaging studies. Majority of the patients underwent a CAT scan (66.7%). There was only patient with an increased CA 19.9 level. Majority of the tumors were located at the pancreatic head and tail while only 3 patients (20%) had a tumor at corpus. The median tumor diameter was 4cm (1.9-18). The most common surgical procedure was distal pancreatectomy (46.7%). Overall morbidity rate was 26.7%, and there was only one patient in-hospital mortality. A median follow-up of 40 months (range: 16-72 months), these patients were alive with no evidence of recurrence or metastatic disease.

Conclusion
Resection of the tumor with clear margins seems to be the best surgical strategy in the management of SPT. The post-operative follow-up strategy should be personalized based on the presence of risk factors.
Spanish National Registry of patients undergoing pancreaticoduodenectomy for periampullary tumors: Effects of hospital volume on outcomes

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Background
Several studies have reported that hospitals with a high volume (HV) of pancreaticoduodenectomies (PD) have better outcomes and lower mortality rates. Currently, no data describe the situation in Spain. The aim of this study is to assess the effect of hospital volume on outcome after PD in a real situation of clinical practice.

Methods
The Spanish National Registry of PD is a multicenter, web-based registry, which is open to any institution performing PD during 2015. Demographic, perioperative data, and final follow-up were recorded in an electronic Case Report Form. Patients were stratified by annual pancreatic resection volume (low volume (LV)< 9, medium volume 10–25, high > 25).

Results
1,016 patients undergoing PD from 74 hospitals in Spain were registered. Thirty-day mortality was 6.5%. 55% experienced complications. Patients > 70 years were more common at LV hospitals compared with HV hospitals (P = 0.02). HV centers had more vascular resections (P < 0.001), lower mortality (P = 0.007) and a shorter median length of stay (P = 0.01). Total number of examined LN and tumor size were also significantly higher (p < 0.001). There was no significant difference for radicality of the resection, comorbidities, and complications after surgery.

Conclusion
The present study is the first nationwide population-based study to assess the effect of hospital volume on outcome after PD in Spain. Our data suggest that increasing operative volume in DP is associated with significantly better outcomes.
Surgery after downstaging of Stage IV pancreatic carcinoma: are we facing a new scenario?

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Background
Metastatic pancreatic carcinoma (mPDAC) has always been an “off-limits” area for pancreatic surgeons, but recent papers consider surgery as an option for synchronous liver oligometastatic patients. We present our retrospective series of resected mPDAC after neoadjuvant chemotherapy (nCT).

Methods
All patients resected after downstaging of mPDAC (liver as only metastatic site) were included. Downstaging criteria were disappearance of metastasis and decrease of Ca19.9. Type and duration of nCT, last nCT-surgery interval, histology, morbidity and mortality were recorded. Overall survival (OS) and disease free survival (DFS) were analysed.

Results
Twenty four patients out of 535 observed with mPDAC were included. They received Gem alone(21%), Gem+Nab-Paclitaxel(13%) and FOLFIRINOX(66%). Primary tumor size decreased from 30 to 20mm (p:0.01) and so did serum Ca19.9: 596 to 18U/mL (p<0.001). Interval nCT-surgery was 2 months. Mortality was none and postoperative course was uneventful in 34% of cases. Grade B/C pancreatic fistula, bleeding and sepsis occurred respectively in 17/4%, 8% and 12% of cases. Reoperation rate was 4%. R0 resection was achieved in 88% of cases with 17% of complete pathological response. Median harvested nodes was 32 with LNratio of 0.37.

OS was 32 months with 21 months of DFS.

Conclusion
Patients with mPDAC who fully respond to nCT may be considered for surgery with potential benefit in survival: this is supported by results of our retrospective study that is the largest ever reported.
Surgery for elderly patients with resectable pancreatic cancer; comparison with non-surgical treatments.

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Background
Complete resection of affected tissue remains the only curative treatment option for pancreatic cancer. Few studies have assessed the relative benefit of surgical resection in old patients with pancreatic cancer comparing with old patients who did not undergo surgical resection. We designed the retrospective study to compare the prognostic outcomes according to whether or not surgical resection in old patients (≥ 75 years old) with early stage pancreatic cancer.

Methods
We retrospectively analyzed 49 early stage pancreatic cancer patients (Group 1, underwent surgical resection 38 cases; Group 2, did not underwent surgical resection 11 cases) diagnosed from July, 2003 to December, 2014 at the National Cancer Center, Korea.

Results
There was no specific difference in demographics between two groups. Group 1 showed the better overall survival after diagnosis than that of group 2 significantly (2-year survival rate, 40.7% Vs. 0%; log rank test, p = 0.015). Multivariate analysis revealed that no surgical resection [hazard ratio (HR) 2.412, P=0.022] and high Charlson comorbidity index (HR 5.252, P=0.014) were independent poor prognostic factors for overall survival in old patients with early stage pancreatic cancer.

Conclusion
In the present study, surgical resection results in better prognosis than non-surgical resection for elderly resectable pancreatic cancer patients. Without high Charlson comorbidity index, aggressive surgical approach seems beneficial for elderly patients with resectable pancreatic cancer.
Surgical management of insulinomas in 87 consecutive patients

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Background
Insulinoma is rare pancreatic tumor. Incidence is 0.05 – 0.1 / 100,000 inhabitants /year. Incidence is higher in women than men (4 : 1). Surgery is causal treatment in cases of solitary tumors.

Methods
We have operated on 87 patient’s suffering from hyperinsulinism between 2000 – 2016. The localization was most often in the body of the pancreas (29 \%) and in the head (19 \%). Proper localization of the insulinoma was unsuccessful in 8 cases (9 \%) and we did not find the tumor neither preoperatively nor intraoperatively.

Results
Simple enucleation of the tumor was performed in 60 \% patients. Left side resection was the second one most used surgical approach. Intraoperative palpation and ultrasound by an experienced surgeon can effectively solve uncertain preoperative tumor localization. Postoperative complications occurred in 19 \%. Most often it was subphrenic abscess and pancreatic fistula. Four patients were reoperated on after unsuccessful first surgery and in three of them after left resection were insulinoma found in the specimen. Patient after successful enucleation or resection are healed and without any further treatment.

Conclusion
Surgery is the only potentially curative treatment option. Proper localization of the tumor is the key point for successful surgical treatment.
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Surgical management of main duct IPMN and mixed type IPMN: an international survey and case-vignette study among experts

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Background
The risk of malignancy increases up to 60% if the main duct (MD) is involved in intraductal papillary mucinous neoplasms (IPMNs). Therefore most guidelines advice resection in surgically fit patients with MD-IPMNs or mixed type (MT) IPMN but consensus on partial or total pancreatectomy as optimal treatment is lacking. A survey was performed to identify the surgical strategy of international pancreatologists in order to guide the design of future studies and guidelines.

Methods
An online survey including case-vignettes was sent to 210 pancreatologists who had published on IPMN. Diagnostic approach, treatment- and surgical strategy were evaluated.

Results
Overall 59 surgeons (28.1%) and 27 gastroenterologists (12.9%) replied, 41% response rate. The majority worked in an academic hospital (93%), with a median of 15 years’ experience in treating patients with IPMN. PD dilatation (>5mm, <10mm) in the total pancreas was considered a prerequisite for surgical resection by respectively 51.2% of the respondents. Of these, 47.8% would perform a total pancreatectomy, 21.7% a partial resection with frozen section and 26.1% a pancreatodoudenectomy. PD dilatation ( >5mm, <10mm) in the head or tail was considered a prerequisite for surgical resection by 30.2% and 41.9% of the respondents.

Conclusion
This survey identified lack of consensus amongst international pancreatologists regarding the treatment- and surgical strategy in patients with MT- or MD-IPMN which should be addressed in future studies and guidelines.
Surgical outcome of porto-mesenteric resection for borderline pancreatic cancer. A single tertiary referral centre experience

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Background
Although recent series have concluded that major venous resection (VR) for borderline pancreatic cancer (BLPC) with porto-mesenteric involvement may be considered safe with comparable long-term survival compared to standard pancreaticoduodenectomy (PD), the matter is still debated due to controversial evidences. The present study aims to evaluate in-hospital complication rate and surgical outcome after VR in a tertiary referral center.

Methods
A retrospectively collected database running from April 2011 to January 2017 was performed selecting for patients undergoing PD with or without VR for pancreatic cancer. Perioperative data and pathological findings were statistically analyzed.

Results
We identified 314 patients, of whom 277 (88.2%) underwent standard PD and 37 (11.8%) received concomitant VR. No statistically significant differences between the two groups were identified comparing mean age, median CA19.9 level, post-operative morbidity and mortality rate (p>0.05). Conversely, RV was associated with significantly higher median blood loss (p<0.001) and positive margin status rate (43.2% vs 21.7%; p<0.001) compared to standard PD.

Conclusion
Porto-mesenteric resection for BLPC is feasible and safe when performed by experienced surgeon with overall morbidity and mortality comparable to standard PD. However, our series suggests that patients affected by BLPC should be addressed to neoadjuvant treatment first, as upfront VR seems to lead to a significantly lower rate of radical surgery.
Surgical treatment of pancreatic tumors in children.

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Background
Pancreatic tumors in children are uncommon. The knowledge of their presentation accrues principally through institutional case series. The very limited experience, together with the broad histological heterogeneity, has made it difficult to identify possible prognostic factors and develop treatments protocol. The aim of the present paper was perfection treatment of pancreatic tumors in children.

Methods

Results
between 1990 and 2016, 18 children with pancreatic tumors were diagnosed at our institute. 2 patients(11.7%) were treated by chemotherapy, 1 patient (5.6%) was treated by radiological therapy, in 1 case (5.6%) patient underwent symptomatic operation, in 1 case (5.6%) a pancreatic cyst was diagnosed intraoperatively and radical operation was not use. Surgical treatment was achieved in 12 patients (70.6%). RO resection was achieved in all cases. There was no postoperative mortality, but postoperative complications occurred in 1 case (8.3%) and was treated conservatively. At a median follow-up of 43 months (range 12-842 months) there were 2 tumors recurrence (16.7%). No patients had postoperative pancreatic exocrine or endocrine insufficiencies.

Conclusion
In the setting of a high-volume surgical center, radical resection of pancreatic tumors in children is associated with acceptable postoperative morbidity and favorable long-term outcome.
Surgical treatment of complicated pseudocyst of pancreas

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Background
Total mortality of complicated pancreatic pseudocyst is 14%, postoperative - 11%, while complications such as sepsis, bleeding, perforation of the abdominal cavity, it is 40 - 60%.

Methods
The work is based on retrospective and prospective analysis of the results of surgical treatment of 505 patients with pancreatic pseudocyst complicated, divided according to the classification D'Egidio A. and Schein M.(1991). With type I were 81, with type II were 247 and with type III were 177 patients. Used tactics Step-up approach for the treatment of all patients.

Results
At the I type in 77.1% of patients used a percutaneous drainage under ultrasound and laparoscopy. In 32.9% performed open surgery.
In the treatment of patients with type II in 119 (48.2%) completed mini-invasive surgery: ultrasound - percutaneous puncture and drainage under the ultrasound, endoscopic transgastric and transduodenal anastomosis. As the first stage 15 (6.07%) patients, complicated by bleeding in their cavity performed X-ray occlusion of the vessel. Open surgery in patients with type II performed in 128 (51.8%). Were made external drainage (17.1%), internal drainage (76%) and resection methods (6.9%).
In the treatment of type III mini-invasive interventions used in 36 (20.3%) patients. Internal drainage performed in 84 (47.4%), external drainage in 8 (4.5%), resection surgery in 46 (26%) patients.
Total mortality was 0.79%.

Conclusion
Our results indicate that the preferred treatment strategy is a minimally invasive Step-up approach.
Surgical treatment of paraduodenal pancreatitis

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Background
Cystic inflammatory transformation of duodenal wall described as a "paraduodenal pancreatitis" (PP). We evaluated the clinical efficacy of the surgical treatment of PP

Methods
90 patients with PP were retrospectively included over 12 years. Initially, all patients received conservative therapy. 80 patients required surgical treatment after conservative treatment with a median duration of 2 years. 37 patients underwent pancreaticoduodenectomy (PD), 21 - duodenum resection, 18 – duodenum-preserving pancreatic head resection (DPPHR), 4 - palliative operations. 10 non-operated patients remained under observation. 4 of them required various palliative endoscopic procedures. Long-term results were evaluated in 50 patients, the median follow-up was 47 months

Results
PP was associated with chronic pancreatitis (CP) in 93%. Clinical course of PP consisted of the typical symptoms of CP: abdominal pain in 98.8% of patients, body weight loss - 65.5%, duodenal obstruction - 64%, biliary hypertension - 36%. The overall postoperative morbidity was 33.8%, mortality - 1.25%. After surgical treatment 66% of patients had no clinical symptoms, 32% - significant improvement and no clinical effect was in 2%

Conclusion
Typically PP occurs in patients with CP. The treatment of patients with PP should start from conservative therapy. Surgery is indicated for patients with a persistent abdominal pain and a presence of a CP complications. Procedures of choice are PD and DPPHR
Sustainability of an enhanced recovery program for pancreaticoduodenectomy

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Background
Enhanced recovery programs (ERP) for pancreaticoduodenectomy have become standard care in many institutions. Little is known about adherence rates and sustainability of the programs. This study aims to assess adherence and continued outcome.

Methods
Consecutive patients undergoing pancreaticoduodenectomy at the Dept. of Surgery, Skåne University Hospital, Lund, Sweden were followed, after implementation of ERP October 2012. In April 2015, some items in the ERP were modified, namely earlier removal of nasogastric tubes and abdominal drain. The patients were analysed in three groups, the implementation group (control) and two post-implementation groups; intermediate and modified group. Sustainability was assessed according to adherence rate.

Results
In total, 160 patients were identified. The overall protocol adherence increased from 62% to 77%. While the pre- and perioperative protocol items were fulfilled to more than >90% in all groups, the postoperative items were fulfilled to a lesser extent, but increasing over time; 46%, 48% and 57%. Postoperative complications (median CCI) were in control 12,2, intermediate 12,2 and modified group 22,6 (p=0.123). Hospital length of stay (median days: control 10, intermediate 12, modified group 13, p=0.301) did not change significantly.

Conclusion
The positive outcome of an enhanced recovery program for PD, were reasonable well sustained. Compliance with the protocol have increased, but strict adherence remains a challenge, especially with the postoperative items.
Pancreas surgery: Clinical  
Sym2.07

The 2016 update of the definition and grading of POPF: clinical validation on 775 consecutive pancreatic resections

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Background
Postoperative pancreatic fistula (POPF) definition and grading has been recently updated by the ISGPS. Aim of the present paper is to validate the 2016 definition and grading update.

Methods
Prospective surgical series of 775 patients undergoing pancreatic resection at a high-volume Institution from 2013 to 2015 was analyzed. Patients were reclassified according to the newly defined biochemical leak (BL). The new Grades B and C were reclassified.

Results
After applying the 2016 scheme, 207 patients developed a POPF (26.7%) and 135 (17.4%) were included in a different clinical group. Grade B increased from 11.5% to 22.1%, while grade C decreased from 15.2% to 4.6%. BL occurred in 7%, and it did not differ from the no-POPF condition in terms of major surgical complications (Clavien Dindo ≥3; p=0.243) reoperation rate (p=0.686), readmission rate (p=0.835), 90-day mortality (p=1) and in-hospital length of stay (LOS) (p=0.486). Grade B and C sharply differed in terms of ICU staying (0.5% vs. 83.8%; p<0.001), in-hospital LOS (37 days vs. 57; p<0.001), hospital readmissions (7.6% vs. 11.1%; p<0.001), and postoperative mortality (0% vs. 44.7%; p<0.001).

Conclusion
From the clinical standpoint, BL and no-POPF conditions are comparable. Grade B is a wider and more heterogeneous spectrum of clinical conditions, in which the patient is managed generally conservatively. Grade C is more uncommon but identifies a more severe condition characterized by relevant rates of OF, reoperations, and mortality.
The 2016 update of the International Study Group (ISGPS) definition and grading of postoperative pancreatic fistula: 11 Years After

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Background
In 2005, the International Study Group of Pancreatic Fistula (ISGPF) developed a definition and grading of postoperative pancreatic fistula (POPF) that has been accepted universally. Eleven years later, because POPF remains one of the most relevant and harmful complications of pancreatic surgery, the ISGPF classification has become the gold standard in defining POPF in clinical practice.

Methods
The ISGPF re-convened as the International Study Group in Pancreatic Surgery (ISGPS) in order to perform a review of the recent literature and consequently to update and revise the grading system of POPF.

Results
The former “Grade A POPF” is now redefined and called a “biochemical leak (BL)”, because it has no clinical importance and is no longer referred to a true pancreatic fistula. POPF Grades B and C are confirmed but defined more strictly. In particular, Grade B requires a change in the postoperative management; drains are either left in place for more than three weeks or repositioned through endoscopic or percutaneous procedures. Grade C POPF refers to those POPF that require reoperation or lead to single or multiple organ failure and/or mortality attributable to the pancreatic fistula.

Conclusion
This new definition and grading system of POPF should lead to a more universally consistent evaluation of surgical outcomes after pancreatic surgery and will allow for a better comparison of techniques used to mitigate the rate and clinical impact of a pancreatic fistula.
The actual incidence of pancreatic cystic neoplasm related symptoms: are we overestimating a major indication for surgery?

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Background
The incidence of symptomatic PCNs is based on retrospective series that might overestimate the actual incidence and consequently lead to inappropriate indication for surgery.

Methods
Patients with PCNs observed from September 2015 to July 2016 were prospectively enrolled. All patients underwent a specific interview on GI symptoms. An identical survey was carried out on a control population in which any pancreatic disease was excluded by MRI. The two populations were then matched for age and sex with propensity score matching.

Results
PCNs have a greater prevalence of abdominal pain (31.9 vs. 22.6%, p= 0.01). PCN location did not affect the prevalence of pain (head PCNs, 31.8 vs. 22.6%, p= 0.06 - body-tail PCNs, 33 vs. 22.6%, p= 0.06) that was indeed greater for presumed IPMN (33.1 vs. 22.6%, p= 0.01), but not for presumed MCN-SCN (29.3 vs. 22.6%, p= 0.2) even considering lesions < 30 mm (IPMN 33.3%, p= 0.02, MCN-SCN 26.8%, p= 0.2). There was no difference in pain between PCNs with and without high-risk stigmata according to IAP guidelines (22.2% vs. 27.3%, p= 1).

Conclusion
Overall, patients with PCNs have an increased prevalence of abdominal symptoms compared with a matched cohort of patients without any pancreatic disease. The connection with the pancreatic ductal system seems to be the main determinant of this finding, independently from cyst size or location. Abdominal pain is not correlated with the presence of high-risk stigmata, therefore it seems not to be a clinical predictor of malignancy.
The consequences of associated major visceral vascular injuries on outcome in patients with pancreatic injuries: a case-matched analysis

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Background
This case-matched analysis assessed the influence of associated visceral vascular injuries on outcome in pancreatic injuries.

Methods
Sixty-eight patients with a Pancreatic Injury with a visceral Vascular Injury (PIVI group) were matched one-to-one to 68 similar Pancreatic Injury patients without a vascular injury (PI group). Using univariate and bivariate logistic regression analysis outcomes measured were complication rates, length of hospital stay and 90 day mortality rate.

Results
The two groups were well matched. Mortality in the PIVI group was 41% compared to 13% in the PI alone group. On univariate analysis the PIVI group were significantly more likely to be shocked on admission, have an RTS <7.8, require damage control surgery, receive a blood transfusion, develop a major postoperative complication and die. On logistic regression analysis, the need for damage control surgery was a significant variable (p=0.015, OR 7.95, CI 1.50-42.0). Mortality of AAST grade 1 and 2 pancreatic injuries combined with a vascular injury was 18.5% compared to an increased mortality of 56.1% of AAST grade 3, 4 and 5 pancreatic injuries with vascular injuries (p=0.0026).

Conclusion
Pancreatic injuries associated with major visceral vascular injuries have a significantly higher complication and mortality rate than pancreatic injuries without vascular injuries. The addition of a vascular injury with an increasing AAST pancreatic injury grade of exponentially compounds mortality rate.
The diagnostic dilemma of highly suspicious solid pancreatic head lesions: repeated tissue diagnosis may not be necessary.

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Background
For unresectable pancreatic cancer a repeat tissue diagnosis is usually required for chemotherapy, even if the 1st tissue is ‘suspicious for cancer’. We aimed to determine whether ‘suspicious’ tissue alone or in combination with a suspicious imaging and/or elevated CA19-9 might be sufficient to confirm the diagnosis of cancer.

Methods
Information was gathered from a prospective database (2005-2013) for all pancreatic head lesions that underwent an EUS(Endoscopic Ultrasound) guided tissue diagnosis. Data was analysed using Microsoft Excel and IBM SPSS21.

Results
772(69.5%) of 1125 EUS-FNA patients had a suspicious solid pancreatic head lesion on initial imaging. 238(21%) patients required >1 attempt at tissue diagnosis. Suspicious cytology/histology alone had 97.2% specificity for diagnosing malignancy. Suspicious imaging + Ca19-9≥100 + suspicious cytology/histology, was 99.8% specific.
Suspicious pancreatic mass with metastasis + Ca19-9 ≥800, without any histology/cytology was 99.8% specific.
All of the above had sensitivities of 13.8 – 78.2%.

Conclusion
A combination of a strongly suspicious imaging, a suspicious cytology or histology and CA19-9 ≥100 is highly specific(99.8%) for pancreatic adenocarcinoma or cholangiocarcinoma. Therefore such patients may not require any further tissue diagnosis. Similarly the combination of a suspicious pancreatic mass with metastatic disease on imaging and CA19-9 ≥800 is also highly specific(99.8%) and therefore such patients may not require any tissue diagnosis at all.
**The effect of neoadjuvant therapy on tumor characteristics in pancreatic ductal adenocarcinoma – a systematic review with meta-analysis**

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**Background**
Due to increasing rates of tumor resectability after neoadjuvant regimes/NTx reaching up to 60%, NTx are on spotlight of actual trials in patients with pancreatic ductal adenocarcinoma/PDAC. Nevertheless, no meta-analysis of the true impact of NTx on histopathological features of PDAC patients has been performed yet.

**Methods**
Databases of Pubmed, Scopus, Embase and Google Scholar were systematically screened for predefined searching terms. Afterwards, a systematic review and meta-analysis were performed by using the PRISMA-guidelines.

**Results**
9,000 studies could be identified analysing the effect of NTx in PDAC. After exclusion of irrelevant papers according predefined criteria, 35 studies could be included in the systematic review. Comparative data between NTx and up-front surgery were extracted and meta-analyses were conducted. Importantly, NTx was associated with a more favourable T stage (T1/2: RR 2.87; 95% CI: 1.52-5.42; p=0.001; T3/4: RR 0.78; 95% CI: 0.69–0.89; p=0.0002), N-Stage (N0: RR 2.14; 95% CI: 1.85–2.46; p<0.0001), more R0-rates (RR 1.13; 95% CI: 1.08-1.18; p=0.0001), less rates of Pn-stage (Pn: RR 0.78; 95% CI: 0.73-0.83; p<0.0001) and of lymphatic vessel invasion (RR 0.50; 95% CI: 0.36-0.70; p<0.0001).

**Conclusion**
This study revealed a beneficial effect of NTx on all important histopathological features in PDAC. Therefore, prospective, controlled randomized trials are urgently needed to underline these findings and to assess the impact of NTx on patients’ outcome.
The impact of hospital volume and charlson score on postoperative mortality of pancreatic surgery for tumors. A Nationwide Study of 12286 patients

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Background
No recent study has investigated the impact of hospital volume (HV) on hospital mortality (HM) of pancreatic surgery according to Charlson Comorbidity Index (ChCI). The objective was to identify the impact of HV according to ChCI on HM in pancreatic surgery.

Methods
All Patients undergoing pancreatic surgery from 2012 to 2015 were identified in the French nationwide database (N=12,286). The 90-day HM was analyzed according to HV (very low:< 10, Low: 10-19, intermediate: 20-49 and high ≥ 50 cases/year) and ChCI.

Results
The overall 90 day HM was 6.9%. The rate of HM was correlated to ChCI (ChCI0-2:4.7%, ChCI3:7.2%, ChCI≥4:10.2%, p<0.001). The 90 day HM were 1.9 and 1.5-fold increased in very low (9.1% vs 4.8%, p<0.001) and low HV (8.1% vs 4.8%, p<0.001) in comparison with high HV respectively, while there was no difference between intermediate and high HV centers (5.8% vs 4.8%, p=0.08). For low risk patients (ChCI:0-2), 90 day HM was significantly higher in low and very low HV compared to intermediate and high HV centers (6.1% vs 3.7, 3.3%, p<0.001). A significant decrease in postoperative hemorrhage rates was observed with increasing center volume. In multivariate analysis, very low and low HV were associated with higher risk of mortality.

Conclusion
Intermediate and high HV centers were associated with a lower risk of postoperative hemorrhage and death after pancreatic surgery whatever the ChCI. To improve HM, pancreatic surgery should be centralized.
The laparoscopic approach should be the standard for central pancreatectomy: analysis in 52 patients.

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Background
Central pancreatectomy (CP), performed for low potential malignant diseases, is an excellent indication to the laparoscopic approach because theoretically there is no technical or oncological contraindication. Our aim was to report our large single center experience.

Methods
Pure laparoscopic approach was performed with one layer pancreatico-gastric anastomosis, nasogastric aspiration for one week and parenteral nutrition. Demographics, operative and postoperative data were studied. Pancreatic fistula was classified according to ISGPF.

Results
Since July 2011, 52 patients underwent laparoscopic CP for NET (14), IPMN (12), SCPP (8), Mucinous cyst (5), disconnected duct syndrome (5) and other (8). Mean age was 56 year (17-77), 33 were females (64%), and the mean BMI was 25 (18-34) kg/m2. The mean operative duration was 193 mn (120-285), mean blood loss was 106 ml (0-800). No mortality and overall morbidity (37;71%), represented mainly by pancreatic fistula (29; 56%) including 12 (23%) of grades B+C, drained collections (2;4%), bleeding (6;11%), re-intervention (4;8%), mean hospital stay of 22 days (13-54) and readmission (2;4%). On histology, the mean size of the resected lesion was 2 cm (0.5-5), the mean length of the resected pancreas was 5.1 cm (1-8.50).

Conclusion
Laparoscopic CP should be the gold standard because high applicability rate, preservation of the pancreatic function and parietal advantages because these procedures are performed in young with excellent long-term prognosis.
The presence of acute cholangitis defined by 2013 Tokyo Guidelines (TG13) in acute necrotising pancreatitis is associated with poor outcomes

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Background
It is difficult to establish whether acute cholangitis (AC) co-exists as an independent entity with acute necrotising pancreatitis (ANP) owing to overlapping of laboratory liver test results and systemic inflammatory response between entities. Also, the ascending route of the bile duct has been reported as a source of infection in ANP. The aim of our study was to determine whether the presence of AC according to TG13 is associated with poor outcomes in ANP.

Methods
Data of thirty-seven consecutive patients with ANP from our prospective database were analysed. Outcomes analysed were: persistent organ failure (POF), persistent multi-organ failure (PMOF), mortality, duration of hospital stay, intensive care unit (ICU) admission, infected pancreatic necrosis (IPN) with positive culture after necrosectomy, and need for an interventional procedure against necrosis. AC was defined according to TG13 in all patients between admission and the first week post ANP onset.

Results
A positive TG13 AC was found in 7 (18.9%) patients, and was associated with POF (71.1% vs. 20%, p=0.016), PMOF (57.1% vs. 13.3%, p=0.027), ICU admission (57.1% vs. 13.3%, p=0.027), mechanical ventilation (57.1% vs 10%, p=0.015), and IPN (42.9% vs. 6.7%, p=0.037). No association was found regarding hospital stay, need for an interventional procedure and mortality.

Conclusion
In our series, ANP with acute cholangitis defined by TG13 is associated with poor outcomes, including necrosis infection. Large series are needed to confirm these findings.
The role of double balloon enteroscopy in the diagnosis and treatment of chronic pancreatitis surgery complications

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Background
To assess double balloon enteroscopy for diagnostics and treatment of pancreatojejunostomy complications after pancreatic resection

Methods
During 2010 till 2016 of 25 patients with suspected of pancreatojejunostomy complications was held transoral (antegrade) double balloon enteroscopic (Fujinon, Japan) inspection

Results
Pancreatojejunostomy inspection was performed in 19 cases (76%). We didn't have complications after this procedure. In the 12 cases was identified postoperative pancreatojejunostomy complications (stricture and failure of pancreatojejunostomy, anastomotic stricture of intrapancreatic bilioenteric anastomosis, residual stone in pancreatic duct). It was performed 12 double balloon enteroscopy minimally invasive operations of pancreatojejunostomy using a surgical laser. In 4 cases double balloon enteroscopy examinations revealed indications for open surgery

Conclusion
Double balloon enteroscopy has allowed to diagnosis specific complications of pancreatojejunostomy after resection-drainage pancreatic operations. It is a useful tool in the survey of pancreatojejunostomy when we have pain recurrence
The role of extra-pancreatic infections in the prediction of severity and local complications in acute pancreatitis

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Background
The aim of our study was to determine the predictive power of extra-pancreatic infections (EPI) for assessing severity and local complications in AP including infected pancreatic necrosis (IPN)

Methods
Clinical data of 154 AP patients prospectively enrolled were analysed. EPI analysed were bacteraemia, pneumonia, urinary tract infection and catheter line infection. Severity outcomes assessed were persistent organ failure (POF), persistent multi-organ failure (PMOF), mortality, hospital stay and intensive care unit (ICU) admission. A comparison using APACHE-II>8 points was made. For local complications, 37 consecutive patients with acute necrotising pancreatitis (ANP) were enrolled. IPN was defined as a positive culture after necrosectomy. The predictive accuracy of EPI was measured using area-under-the-curve (AUC) receiver-operating characteristics

Results
Thirty cases of EPI were found (19.5%). Blood cultures type matched the IPN cultures in all cases (5). Fifty percent (8) of the blood cultures were of non-enteric origin. Bacteraemia showed the best accuracy in predicting significantly POF, ICU admission and dead (AUC 0.756, AUC 0.76, AUC 0.745 respectively) and also for local complications including IPN and need for an interventional procedure against necrosis (AUC 0.82, AUC 0.817 respectively) compared with pneumonia or APACHE-II>8 points. Bacteraemia preceded IPN in all cases

Conclusion
In our study, EPI, particularly bacteraemia, played a role in predicting severity and local complications in AP
The role of laparoscopy in the diagnosis and treatment of pancreonecrosis

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Background
Wide implementation of endovideosurgery in different phases of acute pancreatitis (AP) can significantly lower toxicity and in most cases in combination with complex conservative therapy to stop the pathological process.

Methods
During the period 2011-2015 in RRCEM researching shows hospitalized with a diagnosis of AP in 1654 patients treated conservatively in 1112 (67.2%), 357 (21.6%) operated have been applied including laparoscopic methods 185 (34.1%).

Results
At the same time in 39 (21.1%) revealed edematous form fat focal pancreatic verified in 97 (52.4%) and hemorrhagic necrotizing pancreatitis in 49 (26.5%). These caused following laparoscopic procedures: laparoscopic sanitation stuffing bags with drainage of the abdominal cavity - 35 (18.9%); laparoscopic cholecystectomy sanitation drainage of omental and abdominal cavity - 68 (36.7%); laparoscopic cholecystectomy common bile duct drainage by Pikovsky sanitation drainage of omental and abdominal cavity - 82 (44.3%).

Conclusion
In patients with acute destructive pancreatitis in the absence of complications of pancreatic necrosis extraorganic retroperitoneal laparoscopic procedures is a valuable alternative for the traditional operations and reduces the incidence of postoperative complications from 35.4% to 18.5%, and mortality from 13.4% to 7.4% herewith the necessity of re-intervention occurs only in 4.3% of cases in the total population increases the effectiveness of therapeutic laparoscopy to 88.9%.
Total Duodenopancreatectomy and Splenectomy with portal vein resection for borderline pancreatic cancer after neoadjuvant chemoradiotherapy

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Background
Pancreatic cancer is a high lethal neoplasm with a chance of curative resection less than 30%. The aim is to present a video with the surgical approach used in a case of successful downstaging after neoadjuvant chemoradiotherapy of a borderline pancreatic cancer.

Methods
A previously healthy 42 y/o woman, presented with abdominal pain and jaundice. She was diagnosed of borderline pancreatic cancer by a 4 cms tumor at the neck of pancreas with encasement of portomesenteric axis and partial contact at the level of common hepatic artery. An endoscopic biliary stent and neoadjuvant chemoradiotherapy based on Gemcitabine-Paclitaxel plus 45Gy was proposed to her. After complete chemoradiotherapy a re-staging study showed partial response of tumor and no systemic progression.

Results
A total duodenopancreatectomy and splenectomy with portal and superior mesenteric vein resection was performed with a end to end vascular anastomosis. Reconstruction after resection was done by hepaticojejunostomy and gastrojejunostomy using a single intestinal loop. The postoperative course was uneventful.
Pathological study showed a 2x1.7cms mucinous adenocarcinoma of head/neck of pancreas with local infiltration of portal vein without surgical border affected by neoplasm; and 29 no infiltrated lymphatic nodes (pT3N0M0).

Conclusion
The treatment of borderline pancreatic neoplasm could be feasible when a multidisciplinary approach is used and the surgical team had experience in vascular reconstruction of porto-mesenteric vessels.
Total pancreatectomy: Short- and long-term outcomes at a high-volume pancreas center

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Background
Enthusiasm for total pancreatectomy (TP) has varied with time. It is still a topic of controversial discussions even since surgeons realized its feasibility. The aim of this study is to identify the current indications and outcome of TP in the spectrum of pancreatic resections in this high volume center.

Methods
A single institutional retrospective study of patients undergoing total pancreatectomy from 1995 to 2014 was performed.

Results
One hundred three patients underwent total pancreatectomy for indications including: Pancreatic ductal adenocarcinoma (n = 42, 40.8%), intraductal papillary mucinous neoplasms (n = 40, 38.8%), chronic pancreatitis (n = 8, 7.8%), pancreatic neuroendocrine tumors (n = 7, 6.8%), and miscellaneous (n = 6, 5.8%). The mean age was 66.2 years, and 59 (57.3%) were female. Twenty-four patients (23.3%) underwent a laparoscopic total pancreatectomy. Splenic preservation and portal vein resection and reconstruction were performed in 24 (23.3%) and 18 patients (17.5%), respectively. The 90 d major complications, readmission, and mortality rates were 32%, 17.5%, and 6.8% respectively. The 1-, 3-, 5-, and 7-year survival for patients with benign indications were 84%, 82%, 79.5%, and 75.9%, and for malignant indications were 64%, 40.4%, 34.7% and 30.9%, respectively.

Conclusion
Total pancreatectomy, including laparoscopic total pancreatectomy, appears to be an appropriate option for selected patients when treated at a high-volume pancreatic center and through a multispecialty approach.
Treatment of postoperative chyle leak after pancreatic surgery – a single center experience

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Background
Postoperative chyle leak (CL) is a common complication in pancreatic surgery, where extensive soft tissue clearance is indispensable. Currently, the efficacy of different treatment options for CL is unclear. The aim of the present study was to evaluate treatment options of patients with CL after pancreatic surgery.

Methods
CL was defined according to the recently published definition of the International Study Group of Pancreatic Surgery. 228 patients with CL or serous drainage after pancreatic surgery between 01/2014 and 03/2016 were included in this retrospective analysis. Early (≤5 days) and late drain removal were compared regarding the risk for CL and morbidity. A subgroup analysis on those patients who had drain removal despite of persistent CL with respect to the need of subsequent CT-guided drainage within three months postoperatively was performed.

Results
At total of 60 patients with CL was identified. 41 patients with CL were treated with medium-chain triglyceride-diet, with a median duration of therapy of 12 days. Early drain removal is associated with a decreased risk or detection rate of CL (p = 0.008) and is not associated with an increased morbidity. After drain removal despite of persistent CL, none of the patients had CT-drainage with proof of CL within three months postoperatively.

Conclusion
Early drain removal and removal of the surgical drains despite of persistent CL may be as safe as continuous drainage until complete resolution of CL.
Tumor-specific intraoperative detection of pancreatic ductal adenocarcinoma using multimodal molecular imaging.


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Background
Two major predictors of long term survival of pancreatic cancer are the ability to resect tumor with cancer free margins and absence of systemic metastases. Unfortunately, margin positive resections are a frequent phenomenon as is the emergence of distant metastases soon after surgery. The use of tumor targeted molecular imaging has the potential to provide crucial information to surgeon, both in the form of fluorescent and photoacoustic imaging. Here, we report the use of Cetuximab-IRDye800, a near-infrared fluorescent agent, that binds to EGFR for intraoperative detection of pancreatic cancer.

Methods
A dose escalation study of Cetuximab conjugated to IRDye800 was performed in patients (n=7) undergoing surgical resection of pancreatic cancer. Safety and pharmacokinetic data were obtained up to 30 days after infusion. Multi-instrument fluorescence and photoacoustic imaging was performed both in the operating room and ex vivo.

Results
There were no grade 2 or higher adverse events attributable to the intravenous injection of cetuximab-IRDye800. Fluorescence imaging successfully differentiated tumor and positive lymph nodes from normal tissue during resection with average tumor-to-background ratio of 8.7. Ex vivo fluorescence, photoacoustic and pathologic examination confirmed correlation between tumor and fluorescent and photoacoustic signal.

Conclusion
This study demonstrates safety and feasibility of tumor-specific Cetuximab-IRDye800 for multimodal molecular intraoperative imaging of pancreatic cancer.
Understanding antibiotic use in acute pancreatitis.

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Background
Antibiotic prophylaxis is not recommended in acute pancreatitis. According to current international guidelines antibiotics together with further intervention should be considered in the setting of infected necrosis. This study examines antibiotic use in acute pancreatitis in a tertiary centre using the current IAP/APA guidelines for reference.

Methods
Data were collected on a consecutive series of patients admitted with acute pancreatitis over a 12 month period. Data were dichotomized by patients admitted directly to the centre and tertiary transfers. Information was collected on clinical course with specific reference to antibiotic use, episode severity, intervention and outcome.

Results
111 consecutive episodes of acute pancreatitis constitute the study population. 31 (28%) were tertiary transfers. Overall 65 (58.5%) received antibiotics. Significantly more tertiary transfer patients received antibiotics. Mean person-days of antibiotic use was 23.9 (sd 29.7) in the overall study group but there was significantly more use in the tertiary transfer group (40.9 sd 37.1 vs 10.2 sd 8.9; P<0.005). Thirty four (44%) of patients with clinically mild acute pancreatitis received antibiotics.

Conclusion
Antibiotic over-use is seen in mild acute pancreatitis. Better consideration must be given to identification of prophylaxis or therapy as indication. In relation to repeated courses of antibiotics in severe disease there must be clear indications for use on each occasion.
Updated validation of the PREPARE score from a Spanish prospective cohort of major pancreatic resections

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Background
To date, there are only two external validations of Preoperative Pancreatic Resection Score, including our published preliminary analysis from a prospective cohort of 18 patients.

Aim: re-evaluate this score after recruiting more patients.

Methods
Prospective analysis of 33 patients undergoing major pancreatic resection at a Spanish HPB Surgery unit from January 2015 to December 2016.

PREPARE score was calculated and postoperative complications (Clavien’s classification) were registered up to discharge.

Statistical analysis SPSS 18.

Results
Sex: 60.6% males. Age: 62±11.1 years old. Albumin: 3.6±0.5 gr/dl. Cardiac rate: 77.2±13.4 bpm. Systolic blood pressure: 130.6±19.5 mmHg. Hemoglobin: 13.3±1.5 gr/dl. Pancreatic origin: 57.6%. Procedure: 72.7% Whipple’s, 27.3% others (none was an emergency surgery). ASA grade: 12.1% I, 63.6% II, 24.2% III.

Overall Clavien ≥II morbidity: 30.3%.

PREPARE value: 6.8±3.6 points.

PREPARE categories and distribution of severe complications: 15 low risk patients, 8 moderate risk, 10 high risk (6.7%, 37.5%, 60.0% respectively, p=0.011).

ROC curve obtained AUC=0.793(95% CI=0.629-0.958, p=0.008, Hosmer-Lemeshow test p=1.00). High risk patients respect of low risk ones have relative risk = 21.0(95% CI=1.92-229.39, p=0.013) for Clavien ≥III complications.

Conclusion
Despite a short number of patients, our findings confirm that this score can accurately classify patients undergoing pancreatic surgery in order to predict major morbidity.

References:
Validation of 2012 international consensus guidelines for intraductal papillary mucinous neoplasm of the pancreas - a retrospective study

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Background
Intraductal papillary mucinous neoplasms (IPMN) of the pancreas have a malignant potential with unknown frequency and progression. The aim of this study is to validate the clinical usefulness of the international consensus guidelines.

Methods
Between 2007 and 2016, 76 patients who underwent resection for IPMN were reviewed. Based on the 2012 guidelines, high-risk stigmata (HRS) and worrisome features (WSF) were assessed statistically.

Results
Of the 76 patients, 13% were diagnosed with invasive carcinoma. Of the 53 patients without any HRS 11.3% showed high grade dysplasia and 9.4% invasive cancer. Univariate analysis identified abrupt change in MPD diameter (P = 0.024; 95% CI, 1.239-20.990), MPD diameter 5-9mm (P =0.008; 95% CI, 1.686-33.499) as well as total number of WSF present (P =0.024; 95% CI, 1.101-3.551) as risk factors for high grade dysplasia or invasive cancer. MPD diameter 5-9mm also showed statistical significance in multivariate analysis (P =0.047; 95% CI, 1.021-24.894 with an area under the curve of 0.733.

Conclusion
21% of patients without any HRS present showed high grade dysplasia or invasive cancer in postoperative pathology. In these patients MPD diameter 5-9mm was the most accurate predictor of high grade dysplasia or invasive cancer.
Validation of a score to predict blood transfusion following pancreatoduodenectomy demonstrates distinct risk factors for early and late transfusion

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Background
A recently published nomogram, the Blood Use Risk Score (BURS) [1], predicts packed red cell (PRC) use following surgery. Post-pancreatectomy haemorrhage has been defined as early or late (under or over 24 hours after surgery) [2]. This study assessed the BURS among patients exclusively undergoing pancreatoduodenectomy to predict early and late need for PRC.

Methods
Risk factors for early or late PRC use were identified in uni- and multivariable analyses.

Results
Among 628 patients, 99 (16%) and 144 (23%) received early and late PRC. The BURS was associated with early (AUROC 0.700, p<0.001) but not late use of PRC (AUROC 0.525, p=0.360). In multivariable analysis, preoperative haemoglobin and need for venous resection were related to early PRC use. Late PRC use was related with a Whipple resection, lack of biliary stent and narrow pancreatic duct. After accounting for these factors, late PRC usage was associated with post-operative pancreatic fistula (POPF) and increasing severity (OR 2.00, 3.06 and 9.96 for grade A, B and C POPF respectively).

Conclusion
Two largely different sets of variables are related to early and late PRC use following pancreatoduodenectomy. The BURS identified early but not late PRC use. An understanding of POPF risk allows assessment of the need for late PRC use.

References:
Validation of the American Joint Commission on Cancer (AJCC) 8th Staging Edition in Patients with Pancreatic Adenocarcinoma: A SEER Database Analysis

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Background
The 8th edition AJCC staging system for pancreatic cancer incorporated several significant changes. We sought to evaluate this staging system and assess its strengths and weaknesses relative to the 7th edition system.

Methods
Using the Surveillance, Epidemiology and End Results (SEER) database (2004-2013), 8,960 patients undergoing surgical resection for non-metastatic pancreatic adenocarcinoma were identified. Overall survival was estimated using the Kaplan-Meier method and compared using log-rank tests. Concordance indices were calculated to evaluate the discriminatory power of both staging systems. Cox proportional hazards model were used to determine the impact of T and N classification on overall survival.

Results
The concordance index for AJCC 8th staging system (0.60, CI95% 0.59-0.61) was comparable to that for the 7th AJCC staging system (0.59, CI95% 0.58-0.60). Stratified analyses for each N classification system demonstrated diminishing impact of T classification on overall survival with increasing nodal involvement. The corresponding concordance index for N0, N1 and N2 classifications were 0.58 (CI95%:0.55-0.60), 0.53 (CI95%:0.51-0.55), and 0.53 (CI95%:0.50-0.56) respectively.

Conclusion
This is the first large-scale validation of the AJCC 8th edition staging system for pancreatic cancer. The revised system provides similar discrimination as compared to the 7th edition system. However, the 8th edition system allows finer stratification of patients with resected tumors according to extent of nodal involvement.
Validation of the New R-Status Definitions (1mm margin) for Pancreatic Adenocarcinoma resected by Distal or Total Pancreatectomy.

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Background
The definitions for R0 and R1 margin status after resection for pancreatic cancer are controversial. Reported R0/R1 rates and associated survival are highly heterogeneous. A strict definition of R0 requiring a 1 mm free margin is accepted in major centers in Europe, but not internationally. We could recently show that the new R-status is an independent predictor of survival after pancreatoduodenectomy for cancer. The relevance of the R-status for cancers resected by distal pancreatectomy (DP) and total pancreatectomy (TP) remains unclear.

Methods
A standardized protocol with evaluation of circumferential margins and the novel R definitions was introduced into clinical routine in 2005. From a prospective database, patients undergoing DP and TP for pancreatic adenocarcinoma between 01/2006 and 12/2014 were identified. The rates of R0, R1 (≤1mm) and R1 (direct) status and associated survival were assessed.

Results
Of 535 patients with pancreatic adenocarcinoma treated with DP or TP, 122 (22.8%) had R0 and 401 (75.9%) had R1 resections, including 114 (21.3%) R1 (≤1mm) and 286 (53.4%) R1 (direct) resections. The R0 rate was 27.9 % after DP and 18.7% after TP. With R0, R1 (≤1mm) and R1 (direct) status the median survival times and five-year survival rates were 57.2, 23.2 and 16.9 months and 48.9, 16.2 and 11.5%, respectively (p<0.0001).

Conclusion
The new R-status is confirmed as an important determinant of post-resection survival after DP and TP for pancreatic adenocarcinoma.
Pancreas surgery: Clinical
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Variation in hospital mortality after pancreateoduodenectomy is related to failure to rescue rather than major complications: a nationwide audit

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Background
Failure to rescue (FTR) is death of a patient after a major complication. The Dutch Pancreatic Cancer Audit is a mandatory nationwide audit of pancreatic surgery. We aimed to compare the rate of major complications and FTR after pancreateoduodenectomy (PD) between low- and high mortality hospitals and to develop a prognostic model for FTR.

Methods
Patients undergoing PD in 2014-2015 were included. Hospitals were divided into quartiles based on inhospital mortality rates. The risk of a major complication (Clavien-Dindo ≥3) and death after a major complication (FTR) was compared between the quartiles. A nomogram was developed.

Results
Out of 1,342 patients, 29% developed a major complication. FTR occurred in 14.3% of patients. Mortality was 0.9% in the first hospital quartile (4 hospitals, 327 patients), and 8.1% in the fourth (5 hospitals, 310 patients). Major complication rate increased by 40% (25.7% vs 35.2%) between the first and fourth hospital quartile, whereas FTR rate increased by 560% (3.6% vs 22.9%). Independent predictors of FTR were male sex (OR=2.1, 95%CI 1.2-3.9), age >75 years (OR=4.3, 1.8-10.2), BMI ≥30 (OR=2.9, 1.3-6.6), histopathological diagnosis of periampullary cancer (OR=2.0, 1.1-3.7) and hospital volume <30 (OR=3.9, 1.6-9.6). The nomogram identified groups with 2%, 4%, and 12% risk of FTR.

Conclusion
Variation in mortality between hospitals after PD is explained mainly by differences in FTR, rather than major complications. The nomogram can identify patients at high risk of FTR.
Volume-outcome effects in pancreatic surgery in Germany - an observational study of hospital discharge data

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Background
Several studies have found strong volume-outcome relationships in pancreatic surgery, with high mortality in low-volume facilities. However, reliable data on volume effects are missing for Germany situation.

Methods
We studied all inpatient cases of major pancreatic surgery (n = 60858) in Germany from 2009 to 2014, using nationwide administrative hospital data. We determined the absolute number of patients and the in-hospital mortality according to hospital volume quintiles. Multiple regression models were used to assess the effects of hospital volume on in-hospital mortality, major complications, and failure to rescue, adjusting for age, sex and coexisting conditions.

Results
Risk-adjusted in-hospital mortality varied widely across hospital volume quintiles, from 6.5 (6.0–7.0)% in very-high-volume hospitals to 11.5 (10.9–12.1)% in very-low-volume hospitals (OR 0.47, 95% CI 0.41–0.54). 51% of all inhospital deaths occurred in hospitals of the very low and low volume category that account for 80% of all hospitals performing major pancreatic resections. Moreover, rates of postoperative interventions necessary for complications and mortality in patients with major complications significantly decreased with increasing hospital volume.

Conclusion
Our results suggest that compliance with already existing minimum caseload requirements could instantly reduce morbidity and mortality of pancreatic surgery in Germany.
Which suture material is better for preventing pancreatic fistula (PF) after pancreaticoduodenectomy (PD)

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Background
Pancreatic fistula is a severe complication after pancreaticoduodenectomy and reported to be between 2-24% of all cases and also the cause of other complications. Risk factors for PF after PD are well defined and include age, gender, smoking, DM, BMI >25, intraoperative transfusions, diameter of pancreatic duct and type of anastomosis. There is no definition with the use of different suture materials. We tried to detect of suture material on anastomoic problems in our PD patients.

Methods
We retrospectively analysed the records of patients underwent PD in our clinic. Between January 2010 and December 2016 72 PD and wirsungo-jejunostomies (WJ) were done in our clinic. All operations was done by the same team (two stuff surgeons). WJ consisted of two layers interrupted anastomosis. The outer layer was done with a non-absorbable 5/0 monoflament suture. The WJ has changed over years. Until May 2014 it was done with 6/0 monoflament absorbable suture (Group 1) and since May 2014 until December 2016 it has been done with 5/0 non-absorbable monofilament suture (Group 2). PF was defined according the ISGPF criteria. The results were compared statistically.

Results
We performed 72 PD+WJ during this time and 32 before and 40 after May 2014. The fistula rate in Group 1 was 37.6% and 19.4% in Group 2. There was a statically significant difference between two groups.

Conclusion
This study is retrospective evaluation of our clinical experience. The results are important but need to verified with RCTs.
Why we don't need hepatic artery reconstruction during DP-CAR? Experience of 20 modified Appleby procedures

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Background
Distal pancreatectomy with celiac artery resection (DPCAR) is in use for borderline-resectable pancreatic cancer. It is believed that considerable reduction of the liver arterial supply after DPCAR may cause severe liver ischemia. Although the artery reconstruction is not a problem anymore the decision to reconstruct artery has to be justified.

To study liver collateral arterial supply after temporary CHA, right gastroepiploic and accessory/replaced left hepatic arteries (a/rLHA).

Methods
Arterial anatomy, diameters of CHA, proper hepatic (PHA), gastroduodenal(GDA) and pancreatoduodenal arteries(PDA) were registered before surgery in 110 consecutive patients with pancreatic body/tail cancer(n35), gastric cancer with pancreatic involvement(n30) and liver tumors(n45)by CT. For DPCAR(n20) these data were obtained after surgery as well. Diameters of peripancreatic arteries and mean systolic blood velocity in hepatic arteries before and after CHA clamping were measured intraoperatively by Doppler ultrasound.

Results
Pulse disappeared in 19 (17 %) cases after clamping of CHA,RGEA and aLHA/rLPA. Collateral arterial blood flow in the liver parenchyma was revealed in all cases. DPCAR led to increase of GDA, rRHA, PDA and RGEA blood flow in 0,9-12 times

Conclusion
Doppler ultrasound is a reliable modality for intraoperative assessment of liver arterial blood supply after DPCAR; Hepatic artery reconstruction may be necessary after DPCAR in case of disappearance of arterial US signal upon the liver parenchyma.
Worldwide survey on opinions and use of minimally invasive pancreatic resection

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Background
The introduction of minimally invasive pancreatic resection (MIPR) into surgical practice has been slow and the worldwide utilization and attitudes towards MIPR remain unknown.

Methods
We developed an anonymous online survey (61 questions) in order to gain knowledge on opinions and use of both, laparoscopic and robot-assisted pancreatic resections. The survey was sent to all surgeon members of the 6 largest hepato-pancreato-biliary associations.

Results
In total, 435 surgeons from 50 countries completed the survey. Responders performed a median of 22(IQR:0-450) pancreatic resections as primary surgeon annually. Minimally invasive distal pancreatectomy (MIDP) was performed by 345(79%) surgeons with a total median experience of 20(IQR:10-50) MIDPs. Of surgeons performing MIDP, 338(98%) surgeons considered the overall value of MIDP superior or equivalent to the open approach. Minimally invasive pancreatoduodenectomy (MIPD) was performed by 124(29%) surgeons with a total median experience of 12(IQR:4-40) MIPDs. Of surgeons performing MIPD 96(77%) considered the overall value of MIPD superior or equivalent compared to open. The most important reason for not performing MIPR was a lack of specific training.

Conclusion
This worldwide survey on MIPR shows that the current median annual number of MIPRs performed per surgeon remains low. Whereas most surgeons considered MIDP superior or equivalent to open distal pancreatectomy, this was not the case for MIPD. Defined training in MIPR appears necessary.
αSMA activity but not the activated stroma index/ASI is associated with the generation of postoperative pancreatic fistula after distal pancreatectomy

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Background
Pancreatic fistula is the most feared complication after pancreatic left resection and can reach an incidence up to 49%. The early detection of pancreatic fistula for a timely and targeted intervention is essential. We aimed to verify, whether the activated stroma index/ASI (= αSMA / collagen1) is able to objectively characterize the pancreatic stiffness and with this predict pancreatic fistula formation after pancreatic left resection.

Methods
For this, we evaluated the histopathological sections and clinical data of 205 patients with pancreatic left resection. Immunohistochemistry was performed at the transection area with αSMA and collagen-specific aniline blue. Pancreatic fistula was classified according to the recommendation of the ISGSPS and correlated with individual ASI-scores.

Results
It was evident that individual ASI scores were neither able to predict the prevalence of pancreatic fistula (p=0.323) nor its graduation (p=0.597). However, patients with lower αSMA-Activity demonstrated more postoperative pancreatic fistula (p=0.002). Considering the different tumor entities, patients with pancreatic cancer and low αSMA activity were more often associated with a pancreatic fistula (p=0.043).

Conclusion
The comprehensive determination of the ASI could not convince as a powerful clinical tool in the detection of postoperative pancreatic fistula. However, it seems that within this context αSMA-and pancreatic stellate cell activity seems to play a potential role which has to be investigated in future studies.
Pancreaticojejunostomy drainage in chronic pancreatitis surgery

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Background
Pancreaticojejunostomy (PJ) leakage is one of the most dangerous complications. Prevention and treatment of PJA leakage is an unsolved problem of pancreatic surgery. Patient nutritional status affects to the level of postoperative complications. Almost in all types of chronic pancreatitis procedures used Roux loop therefore PJ drainage can improve treatment outcomes.

Methods
316 patients with chronic pancreatitis (CP) were operated during the period from 2010 to 2016 years. PJ drainage was performed in 64 cases (20,3%). For 46 cases PJ drainage was performed through the cystic stump and intrapancreatic biliojejunostomy, 14 - through Roux loop jejunostomy as Vitzel procedure, 4 - through the pancreas cyst wall in the case of pancreatocystojejunostomy. In 20 cases PJ drains used for early enteral nutrition (Peptamen, Nestle).

Results
In postoperative period we detect decrease of the complications level from 18,3 % to 12,4%. PJ leakage no observed in cases with PJ drainage. Roux loop jejunostomy (n=3) was performed as additional procedure in the treatment of PJ leakage. Early enteral nutrition through PJ drain improved patients protein status.

Conclusion
PJA drainage through Roux loop can prevent and treatment of PJ leakage, as well for early enteral nutrition.
“Duodenal dystrophy”, or “groove pancreatitis”, or “paraduodenal pancreatitis?” Does it matter which name you choose? Lessons of 76 cases.

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Background
The term “paraduodenal pancreatitis (PP)” was proposed as an umbrella for cystic dystrophy in heterotopic pancreas (duodenal dystrophy, DD), paraduodenal cyst and groove pancreatitis, by reasoning that these conditions mimic pancreatic head tumors and share certain histological evidences. The reasons for amalgamation of these terms are unclear.

Methods
Prospective analysis of 76 cases of DD (2004-2016), comparing 65 preoperative and 57 histopathological findings; Assessment of clinical presentation and the results of DD treatment.

Results
Preoperative diagnosis was correct in all cases except one (1.9%). Patients were presented with abdominal pain (100%), weight loss (76%), vomiting (30%) and jaundice (18%). CT, MRI and endoUS were the most useful diagnostic modalities. Nine patients were treated conservatively, 35 underwent pancreaticoduodenectomies (PD), pancreatico- and cystoenterostomies (8), Nakao procedures (4), duodenum-preserving pancreatic head (DPPH) resections (5), and 14 pancreas-preserving duodenal resections (PPDR). No mortality. Full pain control was achieved after PPRDs in 93%, PDs in 83%, and after PPPH resections and draining procedures in 18% of cases. Diabetes mellitus developed thrice after PD. In 3 PD cases only moderate pancreatitis was revealed in specimen.

Conclusion
The diagnosis of DD can be confidently determined by modern methods preoperatively; Early diagnosis of DD saves pancreas. The efficacy of PPDR proves DD is an entity of duodenal, but not paraduodenal origin.
**A propensity score-matched analysis of modified Blumgart vs Cattell-Warren duct-to-mucosa pancreatojejunostomy in robotic pancreatoduodenectomy**

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**Background**
The modified Blumgart pancreatojejunostomy (mB-PJ) reduces the incidence of pancreatic fistula (POPF) in open pancreatoduodenectomy (PD), but no information is available for robotic PD. We present a propensity score-matched analysis of mB-PJ vs Cattell-Warren pancreatojejunostomy (CW-PJ) in robotic PD.

**Methods**
Inclusions criteria were: cases operated on after completion of the learning curve and Clinical Risk Score (CRS) stratification for POPF. Clinically relevant POPF (CR-POPF) was the primary endpoint. Study groups were compared using a propensity score-matched analysis.

**Results**
Out of 129 robotic PDs, 75 cases were eligible for this study: 12 mB-PJ and 63 CW-PJ. CR-POPF occurred in no patient after mB-PJ and in 15 patients after CW-PJ (23.8%) (p=0.10, OR 0.12).

Patients (mB-PJ vs. CW-PJ) were then stratified according to CRS for POPF in negligible risk (8.3% vs 3.2%), low risk (25.0% vs 9.5%), intermediate risk (58.3% vs 68.3%) and high risk (8.3% vs 19.1%). CR-POPF occurred after CW-PJ in 27.9% and 25.5% of the patients at intermediate and high risk, respectively. After matching, CR-POPF occurred in 3 CW-PJ patients (37.5%) (p=0.20, OR 0.09).

**Conclusion**
The number of mB-PJ is still too small to give to this study enough statistical power. With this limitation, our data suggest that improvements seen in open PD with a mB-PJ could be reproduced in robotic PD. Since POPF is rare when the risk is negligible or low, these patients could be selected for robotic PD.
Automated evaluation of spatial heterogeneity of extracellular matrix and modeling its degradation in pancreatic ductal adenocarcinoma (PC)

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Background
PC represents an aggressive cancer with an intense desmoplastic reaction. Although, genetic/epigenetic alterations are involved in its development, the tumor microenvironment is recognized as pivotal factor for its onset/poor outcome.

Methods
Formalin-fixed and paraffin-embedded pancreatic natural/inflammatory/neoplastic tissue sections from 18 patients were investigated. A computer-aided image analysis system was applied to evaluate the Sirius-red stained collagen fibers amount (CF), their spatial organization, and to simulate the impact of stromal deposition/degradation.

Results
An increased deposition from natural pancreatic tissue (nPA: 2.23±0.28%) to chronic pancreatitis (iPA: 14.27±1.27%) to PC (22.30±2.031%), (p<0.0001) and a statistically significant difference in the spatial organization between nPA (1.35±0.02) vs iPA (1.70±0.01) and PC (1.73±0.01) (p<0.0001) were found. A lower CFs spatial organization was detected in iPA and in PC vs nPA, but not between iPA and PC. CFs degradation was longer and slower in iPA and PC, respectively.

Conclusion
The increased amount of irregularly shaped CFs is accompanied with a compact organization and characterizes iPA and PC. A proper knowledge of their peculiar structure/spatial distribution in iPA/PC may improve our diagnostic/therapeutic procedures and patients’ outcome.
Biperiden and Mepazine inhibit MALT1 paracaspase activity and tumor growth in pancreatic cancer

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Background
MALT1 is a key mediator of NF-κB signaling playing a crucial role in pancreatic ductal adenocarcinoma (PDAC). In this study, the role of MALT1 paracaspase activity in PDAC and the effects of its deactivation by mepazine and biperiden were studied.

Methods
MALT1 expression was analyzed by immunohistochemistry in 310 patients with PDAC. MALT1 paracaspase activity assays were performed with recombinant MALT1 protein and MALT1 protein from lysates of cancer cells upon biperiden and mepazine treatment. MALT1 protein and mRNA expressions were analyzed by Western blots and qRT-PCR. PDAC cell proliferation and apoptosis were assessed by MTT, Ki67 and cleaved caspase 3 assays in PDAC cell lines upon treatment. The effect of mepazine and biperiden on tumor size was evaluated by a xenograft mouse model. Neurologic scoring was performed to assess adverse effects.

Results
MALT1 is expressed in 75% of PDACs but is absent in regular exocrine pancreatic tissue. MALT1 paracaspase activity was highly active in PDAC cells and was inhibited by both biperiden and mepazine, leading to reduction of nuclear c-Rel translocation and reduction of proliferation. MALT1 paracaspase activity is inhibited by mepazine and biperiden. Biperiden and mepazine reduced PDAC tumor progression showing only minor adverse effects in mice.

Conclusion
MALT1 paracaspase activity is crucial for PDAC tumor progression and can be effectively inhibited by mepazine or biperiden leading to reduction of tumor growth.
Can hemostasis products prevent postoperative pancreatic fistulas after distal pancreatectomy? An animal model trial

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Background
Hemostasis products are used in clinical practice for sealing the pancreatic stump after distal pancreatectomy. The aim was to examine this technique.

Methods
In vitro, hemostasis products were exposed to enterokinase activated pancreatic juice for up to 7 days and physical stability was determined at different times. In vivo laparoscopic assisted distal pancreatectomy was conducted in nine pigs. Closure of the stump was either obtained by Sealant A (based on glutaraldehyde), Sealant B (based on two polyethylenglycols) or no closure at all. On POD#5 animals were sacrificed and the stability of pancreatic stump closure was evaluated by burst pressure experiments. Histology and immunohistochemistry was performed.

Results
All hemostasis products based on collagen or fibrin completely lost their integrity in activated pancreatic juice in less than 6 hours. In vitro, two sealants showed acceptable stability in activated pancreatic juice on day 7 (S_A: 578mmHg ±90; S_B: 126 mmHg ±15). In vivo, burst pressure applied to the pancreatic duct confirmed the macroscopically visible lack of adherence of S_A with a significant lower burst pressures than S_B and control animals (S_A 81 ±24 mmHg, S_B 242 ±12 mmHg, control 218 ±7 mmHg p<0.05).

Conclusion
Hemostasis products on basis of fibrin or collagen are not suitable to prevent POPF after pancreas resection. Polyethylenglycol based sealants may have the capability to support healing of the pancreatic stump after distal pancreatectomy.
Circulating microRNAs as dynamic biomarkers of response to treatment with FOLFIRINOX in advanced pancreatic ductal adenocarcinoma

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Background
With novel treatments arising rapidly, biomarkers for personalized medicine are essential. Only one third of the patients with advanced pancreatic ductal adenocarcinoma (PDAC) show clinical benefit from FOLFIRINOX chemotherapy. Circulating microRNAs (miRNAs) have been proposed as minimally-invasive biomarkers. Our aim was to identify blood-based miRNAs as predictive and monitoring biomarkers.

Methods
Patients with advanced PDAC receiving FOLFIRINOX therapy (n=54) were prospectively enrolled. MiRNAs were isolated from plasma collected at several time points. In a first “discovery cohort”, differentially expressed miRNAs were identified using a microarray panel. Emerging miRNAs were evaluated by RT-PCR in a “validation cohort” in extracellular vesicles of 16 non-progressive patients.

Results
MiR-29a emerged as a potential biomarker in both analyses. In particular, it was significantly upregulated (2·36-fold change, p<0·0024) in extracellular vesicles after five cycles of FOLFIRINOX in non-progressive disease. Interestingly, the expression of circulating free miR-29a was significantly lower than miR-29a expression in extracellular vesicles than (p<0·0001).

Conclusion
Altered levels of miR-29a in plasma and extracellular vesicles can anticipate progression of PDAC and guide more effective therapeutic strategies. These findings open new opportunities to explore blood-based miRNA profiles and specific miRNA candidates to select patients most likely to respond to FOLFIRINOX.
Development and preclinical validation of an Integrin αvβ6-targeting imaging agent for near-infrared fluorescent-guided surgery in pancreatic cancer

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Background
Margin positive resections or early recurrence due to occult metastases after surgery of pancreatic ductal adenocarcinoma (PDAC) are common. Intraoperative near-infrared fluorescent (NIRF) imaging allows cancer visualization to improve surgical accuracy, however targeted agents are lacking. Integrin αvβ6 is a target specific for PDAC, able to detect positive lymph nodes and differentiate between pancreatitis and PDAC. We developed R01-MG-IRDye800, a clinically translatable αvβ6-targeting NIRF agent, based on a cysteine knot peptide, to visualize PDAC.

Methods
The applicability of the tracer was tested for cell and tissue binding using cell-based plate assays, and subcutaneous (BxPC-3, αvβ6 positive), orthotopic pancreatic (AsPC-1, αvβ6 positive), and spontaneous transgenic PDAC-mouse models. The agent was compared to a scrambled control peptide. NIRF signals were visualized using PEARL imaging system.

Results
R01-MG-IRDye800 accumulated selectively in PDAC with highest tumor-to-background ratios of 7.6, which proved suitable for intraoperative detection and delineation of PDAC and small tumor nodules in mice, between 6 and 24 hr postinjection. The agent outperformed the control peptide. Ex vivo fluorescence and pathologic examination confirmed tumor specificity and distribution.

Conclusion
Our results indicate that R01-MG-IRDye800 shows promise to recognize PDAC for fluorescent-guided surgery. This tracer can help improve the stratification of patients for potentially curative, margin-negative resection.
Expression and regulation of mTOR, a key modulator of ageing and age-related disease, in pancreatic carcinoma

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Background
The mechanistic target of rapamycin (mTOR) is known as key modulator of ageing and age-related disease. The aim of the present study was to investigate the mRNA and protein expression profile and clinical significance of mTOR in pancreatic cancer (PCA) with view to its miRNA operated regulation. As microRNAs (miRNAs) are naturally occurring non-coding regulatory molecules and key control elements of crucial regulatory pathways, we aimed to identify a specific miRNA regulating mTOR in PCA.

Methods
mTOR expression was studied in affected and healthy neighboring tissues from patients with PCA (n = 22) applying qRT, PCR and immunohistochemistry (IHC). Various computer software programmes were employed to identify a specific miRNA that potentially interacts with mTOR. Functional implications of miRNAs with the 3'UTR of mTOR were analyzed by a Luciferase assay system.

Results
mTOR expression was significantly up-regulated in cancer tissue of PCA patients with respect to the healthy neighboring tissue (P < 0.01). Hence, a specific miRNA (miRNA-496) was identified by target prediction programmes to potentially interact with mTOR and subsequently demonstrated to functionally interact with mTOR. Thus, addition of the miRNA-496 led to significant down-regulation of luciferase activity (P < 0.05).

Conclusion
We have demonstrated an aberrant expression profile of mTOR in PCA regulated by miRNA-496. Our results indicate that mTOR expression may play a specific role in PCA which may be regulated by one or more miRNAs.
Expression of Tn antigen promotes pancreatic carcinogenesis in a transgenic mouse model

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Background
Dysfunctionalities of Cosmc result in the expression of Tn antigen (Tn) and thereby in formation of truncated O-GalNAc glycans with pathophysiological implications [1]. Tn expression also arises in up to 90% of pancreatic ductal adenocarcinomas (PDAC) and is associated with poor prognosis [2]. This is of particular relevance, since PDAC is one of the most aggressive human tumors with a dismal overall prognosis[3]. The aim of this study was to investigate the effect of tumor-associated O-glycosylation on PDAC development in vivo.

Methods
Generation and phenotyping of a transgenic mouse model with a conditional Cosmc knockout and concomitant activation of oncogenic KrasG12D, mediated by the pancreas specific transcription factor 1a (Ptf1a)-cre mouse strain. Tn-modified proteins were identified using the plant lectin Vicia villosa agglutinin (VVA) for purification and subsequent mass spectrometric proteome analysis.

Results
Additional deletion of Cosmc in Ptf1a+/Cre;Kras+/G12D mouse strain induces Tn expression in murine pancreas. Histopathological analyses reveal an advanced tumor stage in Ptf1a+/Cre;Kras+/G12D,Cosmc−/− mouse strain with elevated CA 19-9 levels at the age of 12 months.

Conclusion
Altogether, in our transgenic mouse model presented here, causality between Tn expression and carcinogenesis of PDAC is shown, which highlights the pathophysiological relevance of truncated O-glycan formation.

The identified Tn-modified proteins may also be relevant as potential new biomarkers for early detection of PDAC.

References:
Extensive desmoplasia is associated with high expression of ZEB1 in pancreatic cancer cells and cancer associated fibroblasts determine prognosis


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Background
We investigated the tumor-stroma interplay and the role of the transcription factor Zinc finger E-box binding homeobox 1 (ZEB1) in pancreatic ductal adenocarcinoma (PDAC) and evaluated the prognostic value of cancer associated fibroblasts (CAF).

Methods
A standard pathology protocol, including CAF activation assessment as either Grade 0 or Grade +, was applied for specimen of patients operated for PDAC. Interaction between a spectrum of pancreatic cancer cell lines and mouse embryonic fibroblasts (NIH 3T3) was assessed in a conditioned medium experimental set-up.

Results
N=119 patients were analysed. In univariate analysis CAF + was negatively associated with survival (p=.032) and positively correlated with nuclear ZEB1 expression in cells from the tumor center (p=.001), high T-status (p=.025) and tumor grade (p=.017). Medium conditioned by pancreatic cancer cells (PCC-CM) led to a spindle-like morphology and increased proliferation in NIH 3T3 fibroblasts. Paracrine effects of NIH 3T3 fibroblasts promoted motility in all PCC. PCC-CM by poorly differentiated PCC led to a higher expression of vimentin in NIH 3T3 cells, whereas PCC-CM by well-differentiated PCC led to a down-regulation. NIH 3T3 fibroblast matrix decreased the proliferation of all PCC and led to up-regulation of ZEB1.

Conclusion
CAF is a negative prognostic factor for PDAC. Physical growth limitation by stromal matrix leads to a ZEB1 upregulation, suggesting an interlink of stromal activation and epithelial-mesenchymal transition processes.
Fractional uptake of Circulating Tumor Cells across liver-lung compartments during resections of periampullary cancer aimed at cure

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Background
Circulating Tumor Cells (CTC) are prognostic in breast- colon- and prostate cancer [1][2][3] and may represent promising biomarkers of pancreatic carcinoma as well, although standardized methods are not yet defined [4]. The aim of the study was to demonstrate a statistically significant porto-arterial difference of CTC during periampullary cancer resections.

Methods
A commercially available instrument (IsofluxR) was used to quantify blood content of CTC in 17 patients with periampullary cancer. Portal and arterial blood were simultaneously collected intra-operatively after surgical dissection close to division of the pancreas for tumor removal. Quantitative CTC analyses were performed according to standardized protocols for immune-magnetic enrichment. Flow cytometry was used for qualitative evaluations of CTC markers.

Results
There was a statistically significant difference in numbers of CTC collected in portal blood [58±43 cells per 100mL (±SD)] versus arterial blood [24±22 cells per 100 mL P<0.0025]. A fractional uptake at 40% across liver and lung compartments of assumed CTC corresponded to the appearance of around 400 tumor cells per minute during pancreatic resections based on estimates of hepatic blood flow, tumor cell mass and proliferation activity.

Conclusion
A significant uptake across liver and lung compartments of potentially CTC from pancreatic carcinoma may be used to capture, define and characterize cell clones with high metastatic potential in liver and lung tissues during surgical resections.

References:
Genetic polymorphisms of interleukin 1β and TNF-α genes and their influence on sporadic pancreatic neuroendocrine tumors predisposition risks

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Background
A recent study suggested the putative role of TNF-a -1031 polymorphism in the development of gastroenteropancreatic neuroendocrine tumors. Additionally, several single nucleotide polymorphisms (SNPs) of the IL-1β gene influence the regulation of its expression and function have been correlated with gastrointestinal cancers, such as gastric, hepatocellular cancer and pancreatic cancer.

Methods
The aim of our study was to analyze TNF-a gene and IL-1β polymorphisms as risk factors for pancreatic neuroendocrine tumors using germline DNA collected in a population based case–control study of pancreatic cancer.

Results
Our findings suggest a role of TNF-a - 1031 polymorphism in the development of pancreatic neuroendocrine tumors and intraductal papillary mucinous neoplasms. The distribution of genotypes for the -511 IL-1β C/T polymorphism in the pancreatic neuroendocrine tumor patient groups showed significant difference compared to the control group. The -511 CT and TT high-expression genotypes were over-represented in pancreatic neuroendocrine tumors patients.

Conclusion
The findings of this study suggested a possible role of IL-1β -511 C/T genotypes in the pathogenesis of pancreatic neuroendocrine tumors and a putative role of TNF-a - 1031 polymorphism in the development of pancreatic neuroendocrine tumor and intraductal papillary mucinous neoplasm.
High infiltration of CD3+ and CD8+ T-Lymphocytes correlates with improved survival in pancreatic cancer

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Background
Tumor microenvironment plays a vital role in the progression of malignancies. Infiltrating lymphocytes may influence prognosis in pancreatic cancer after resection. We have previously established an algorithm to quantify immune cell infiltration in the tumor stroma. We now aimed to establish an immunoscore for pancreatic cancer and correlate immune cell infiltration of B-, T-Lymphocytes, and neutrophils with clinical outcome.

Methods
30 patients operated in 2014 were included. Immunohistochemical staining of CD3, CD8, CD20, and CD66b was performed. The previously established algorithm was used for quantification.

Results
Median survival was 17.5 months with an average follow-up of 16.6 months. High infiltration of CD3+ T-lymphocytes correlated significantly with favorable overall- (p=0.046) and disease free survival (p=0.001). High infiltration of CD8+ T-lymphocytes showed a clear correlation with better overall survival (p=0.006). CD20 and CD66b did not correlate with clinical outcome. Combination of high infiltration of CD3 and CD8 showed a highly significant correlation with improved both overall- (p=0.031) and disease free survival (p=0.004).

Conclusion
High infiltration of CD3+ and CD8+ T-lymphocytes correlates with favorable prognosis. The future use of immunosoring systems may help to predict prognosis after resection.
Interaction between cancer associated fibroblasts (CAFs) and cancer cells in pancreatic cancer – effects on therapy response and migration

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Background
Tumor surrounding stroma and cancer associated fibroblast (CAFs) in particular play a major role in ductal adenocarcinoma of the pancreas (PDAC). The aim of our study was to investigate the interaction between CAFs and PDAC cells in vitro using patient derived CAF cultures.

Methods
CAFs were isolated from tumor tissue, transferred to in vitro setting and phenotypically characterized. Migration capacity and chemo-sensitivity was evaluated in a modified two-well system with established PDAC cell lines. Non-malignant fibroblast from foreskin served as controls. Paracrine interaction via chemokines was measured using elisa.

Results
CAFs resemble activated pancreatic stellate cells. A strong negative effect on the therapeutic response of PDAC cells to Gemcitabine, Notch inhibition (DAPT) and nab-paclitaxel could be observed in direct co-cultures. Indirect co-culturing showed no significant effect on the chemo-sensitivity of PDAC cells but nevertheless resulted in a significant increase of IL-6 levels. PDAC cells showed a higher migration capacity when co-cultured with CAFs. CAFs themselves showed a significantly higher migration capacity compared to non-malignant fibroblasts. This was further boosted in presence of PDAC cells.

Conclusion
We elucidated a strong interaction between PDAC cells and CAFs, which may have a high impact on therapeutic efficiency. Paracrine inflammation response could play a pivotal role in this modification process. Further evaluation is needed to clarify this observations.
Laparoscopic vs Open pancreaticoduodenectomy: Preliminary results from a randomized controlled trial (PADULAP TRIAL)

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Background
Good results of laparoscopic pancreaticoduodenectomy (LPD) have been reported in selected patients, but no RCT’s have been published. We present the interim analysis of RCT of laparoscopic vs open pancreaticoduodenectomy (OPD) according to intention to treat PADULAP trial CCT-NAPN-23575.

Methods
The PADULAP trial was designed for patients undergoing pancreaticoduodenectomy (PD) for any diagnosis. Main endpoints were length of stay and postoperative results. Of 51 cases eligible, 5 were excluded, 24 underwent LPD and 22 OPD.

Results
No differences were found between groups at inclusion. Conversion rate was 32%. Operative time was significantly longer in LPD (496 vs 353 min, p<0.01). In-hospital and 90-days mortality was none in the LPD group, and 9% and 13.6%, respectively in OPD (p=ns). Clinically relevant (grades B and C) pancreatic postoperative fistula (POPF) was 8.3% and 27.3% for LPD and OPD (p=0.01). Reoperation rate was 4.1% in LPD and 18%, respectively (p=0.21). Although postoperative De Oliveira-Clavien complications grades III-IV were 8.3% and 27.3% for LPD and OPD groups, respectively, no significant differences were observed (p=0.09). Harvested lymph nodes were 16 and 17 for LPD and OPD (p=0.67). Length of stay was 14 and 16 days for LPD and OPD groups (p=0.25).

Conclusion
Preliminary results show that LPD is safe and feasible, although high conversion rate when done in non-selected patients. No differences in clinical outcomes were observed between approaches.
Local treatment of pancreatic cancer with magnetic nanoparticles

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Background
Magnetic nanoparticles (MNP) may be utilized for hyperthermic and drug delivery treatment of tumors. After being packed in magnetoliposomes with the chemotherapeutic agent, they are injected into a peripheral vein and accumulated at the cancer site with endoscopically placed magnetic field traps. The MNP are heated by an alternating magnetic field and the drug is released locally. This treatment may be used to achieve secondary resectability. For optimization, we analyzed absorption kinetics of human pancreatic cancer cell lines as well as investigated their response to hyperthermia.

Methods
MNP were embedded in a phospholipid double layer and labeled by fluorescence. They were incubated with pancreatic cancer cell lines and the absorption was measured by fluorescence microscopy and magnetic particle spectroscopy. An alternating magnetic field was applied and the biological effects of magnetic hyperthermia were studied by clonogenic assays, qPCR as well as western blotting.

Results
We found different characteristic saturation concentrations between 30 pg and 90 pg. The MNP were incorporated homogenously within the cell. Magnetic hyperthermia led to significantly reduced colony numbers. We were able to prove oxidative stress. Tumor cells died partially due to apoptosis, but also because of necroptosis.

Conclusion
Treatment of pancreatic cancer with magnetic drug targeting and hyperthermia is possible. Future experiments must investigate these results in animal models.
Pancreas surgery: Experimental
FP24.07

Modeling early genomic events of pancreatic cancer using CRISPR/Cas9

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Background
Duct epithelial cells transform into pancreatic cancer based on specific genetic alterations. Regards the lack of untransformed duct epithelial cell lines, no conclusive in vitro carcinogenesis model exists. A sensitive immortalization strategy (hTERT) was used to establish a new duct epithelial cell line. Subsequently CRISPR/Cas9 genome editing was applied modeling an early genomic event of pancreatic cancer.

Methods
Non-neoplastic pancreatic ducts were isolated and immortalized using a lentiviral transfer-vector containing the hTERT gene. IHC and FISH analyses assessed telomerase expression. Growth rate and cellular kinetics were monitored. Single guide(sg)RNA close to target region were sub-cloned into Cas9n plasmid constructs. These constructs were transfected together with KRAS$^{G12D}$ homology donor. FACS sorted clones are screened using Sanger sequencing technique.

Results
Lentiviral transduction resulted in hTERT expressing cells. After selection, cytokeratin expressing duct cells amplified in a cobblestone pattern with robust cellular kinetics calling for a new Primary Duct Cell Line (PDCL). IHC- and FISH-analysis indicated sustained telomerase activity. Cells were successfully transfected with sgRNA and homology donor, targeting KRAS$^{G12D}$. Following FACS sorting, monoclonal cells were screened for KRAS$^{G12D}$ clones.

Conclusion
We successfully introduced KRAS$^{G12D}$ sgRNA constructs into a new PDCL. This might be the baseline for modeling tumorigenesis in vitro of pancreatic cancer.
Novel TRAIL-based Therapies for Pancreatic Cancer

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Background
Prognosis of pancreatic cancer remains poor. Therefore novel therapeutic strategies are urgently needed. TRAIL can induce apoptosis in cancer cells. However, TRAIL has only shown limited therapeutic benefit in patients. Consequently, TRAIL-based therapies will require the addition of TRAIL-sensitizing agents.

Methods
Tumor and normal tissue of pancreatic cancer patients was analyzed for CDK9 expression and correlated with patients' survival. Moreover, the therapeutic potential of a selective CDK9-inhibitor on pancreatic cancer cells was evaluated alone and in combination with TRAIL by analysis of cell viability, long-term survival and apoptosis and characterized using western blotting and flow cytometry.

Results
Here, we identify CDK9 as an extremely potent TRAIL-sensitizing strategy in pancreatic cancer. CDK9 is overexpressed in pancreatic cancer tissue. In addition high CDK9 expression in tumor tissue is associated with significantly shortened survival. Pharmacological CDK9-inhibition in combination with TRAIL potently and rapidly reduced cell viability in pancreatic cancer cells, potently suppressed long-term survival and induced cell death. Analyzing the molecular mechanism revealed that CDK9-inhibition sensitized to TRAIL-induced apoptosis by suppression of important anti-apoptotic proteins.

Conclusion
Based on the high potency of CDK9-inhibition as a TRAIL-sensitizing strategy, we envisage the development of new, highly effective cancer therapies for pancreatic cancer.
Phosphoproteome networks identify focal adhesion kinase as a new drug target that can be exploited in synergistic combination with paclitaxel

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Background
Pancreatic ductal adenocarcinoma (PDAC) is a lethal disease with a 5-year survival of 7.7% [1]. Treatment with cytotoxic agents extends life expectancy by a few months [2]. To improve this poor outcome new drug regimens against key features of PDAC’s deadly behavior are urgently warranted. This study is the first to employ phosphotyrosine-based kinase screens on (pre)clinical PDAC models and tissues to understand the aggressive nature and identify new drug targets.

Methods
We performed phosphoproteomics on 11 PDAC cell lines, 7 primary cell cultures, 10 patient-derived xenografts (PDX) and 16 human tumors. Tyrosine phosphopeptides were enriched by immunoprecipitation and analyzed by mass spectrometry.

Results
Focal adhesion kinase (FAK) was identified as highly activated and inhibition of this kinase by the tyrosine kinase inhibitor defactinib resulted in reduced proliferation and migration in vitro. Combination with paclitaxel exhibited synergistic lethality. The relevance of FAK was assessed in vivo through analyses of PDX and human tumor kinase phosphoproteomes. This revealed highly similar kinase profiles in the majority of the tumors, highlighting the importance of FAK in PDAC.

Conclusion
Our extensive phosphoproteome analyses of PDAC models revealed a key role of FAK, which showed potential as a new drug target, especially in combination with paclitaxel-based drug regimens. Future clinical trials are needed to investigate the effect of this novel treatment on survival of patients suffering from PDAC.

References:
Possible applications cryodestruction

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Background
to improve life expectancy and the quality of life in patients with pancreatic cancer (PT).

Methods
Cryosurgery (CS) was performed in 54 pts with pancreatic tumors (men-26(48.15%), women-28(51.85%), mean age-54±3 years in the period 2012-2016. Adenocarcinoma was detected in 50(92.6%) pts. Cystadenocarcinoma – in 4(5.3%). Size of the PT - 2.5-10 cm. Simultaneous CS of the PT and liver mts used in 7 pts. Bypasses anastomosis were performed in 38(70.4%) cases. CS was performed on suspicious segment of v.porta after the pancreatic resection in 1. We used Russian devices, as well as porous, spongy TiNi-applicators. We used applicator with a diameter 2-5 cm of the Target T to -186°C, exposure Time – 3-5 min. The number of sessions depended on the size of the tumor and ranged from 1 to 5 (average 2.4). All pts were subsequently conducted adjuvant chemotherapy in 10 cases, supplemented by regional chemoembolization.

Results
Bleeding in 2(3.7%) cases (due to cracks that appeared because of capsule rupture – 1; the artery was damaged during biopsy after cryotherapy – 1); acute pancreatitis – in 3(5.5%); abscess – 2(3.7%). Ascites was detected in 10(18.5%) pts (were treated therapeutically). The survival rate in pts with PC: 6 months – 56%, 12-8%, 24-15%, 28-4.3%.

Conclusion
The proximity of the great vessels is not a contraindication to performe CS of PT. CS for PC at inoperable pts is interference, greatly improving the quality of life of PC, primarily by reducing pain. Survival rates is increased with the use of chemotherapeutic treatment.
Protection of acute renal injury in severe experimental acute pancreatitis

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Background
Acute renal failure is a serious early complication in patients with acute pancreatitis (AP) significantly increases mortality rates. Thus, it is essential to protect renal function in patients with severe AP.

Methods
Acute necrotizing pancreatitis was induced by L-ornithine in 26 Wistar rats. 16 rats served as control. We administered enoxaparin in 10 rats after induction of acute pancreatitis during 5 days. The effect of enoxaparin was evaluated by determining the levels of serum amylase, creatinine, hydrogen sulfide, and fibrinogen, time of recalcification, activity of NO-synthase and myeloperoxidase (MPO) in pancreas.

Results
The concentration of creatinine in serum is increase at 86.86%. It was noticed that the level of creatinine significantly directly correlated with the concentration of MPO and activity of iNOS in the pancreas, amylase in serum blood, and reverse with the concentration of H2S in serum. Renal failure in rats was accompanied by a hypercoagulation, determined by probable direct correlation between the levels of creatinine and fibrinogen, inverse relationship between creatinine concentrations and plasma recalcification time. Enoxaparin ameliorates morphology of the pancreas and kidney. The enoxaparin normalized serum creatinine, fibrinogen, amylase, MPO, H2S, decreased activity of iNOS.

Conclusion
Enoxaparin in experimental AP reduces morphological signs of damage in the pancreas and kidneys, the intensity nitrosative stress and inflammation, normalizes hemostasis.
Quantitative proteonomics confirms microRNA targets in pancreas cancer to explain why cetuximab has limited efficacy in prolonging patient survival.

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Background
MicroRNA(miR) are post-transcriptional regulators of protein synthesis. To understand specific miRNA targets bioinformatics programs based on sequence alignment have been developed, however these have a false positive rate of 24–70%. To better elucidate metabolic pathways involved in pancreatic ductal adenocarcinoma (PC) we identified miR and miR-induced changes in protein accumulation.

Methods
Plasma and tissue samples were collected from black African PC and non-PC patients. Plasma miRNA RT-qPCR was performed, normalized and miR identified using geNorm. Protein antibody arrays were performed and expression profiling was completed using Vision QuickSpots. Open source bioinformatics software was used to determine metabolic pathways for both miR and proteins; these were then correlated with each other.

Results
IGF/MAPK, p13k/Akt and ErbB signaling pathways were significantly upregulated.

Conclusion
We have demonstrated a combination of metabolic pathways using two different signaling modalities that have not previously been integrated in PC studies. We confirm the dominance of three pathways: ErbB, PI3K and MAPK, but also show that Insulin/IGF pathway has a significant role and through its independent activation of PI3K and MAPK may explain why ErbB blockade using biologic agents may be ineffective in halting PC tumorigenesis.

Thus the insulin/IGF pathway may drive PC tumorigenesis, bypassing the ErbB signaling pathway, rendering anti-EGFR agents ineffective.
Radiofrequency ablation of Locally Advanced Pancreatic Cancer: Immunostimulation Patterns


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Background
RFA of pancreatic cancer has been demonstrated to be feasible and safe, and data exist showing a positive impact on survival. The aim was to investigate whether an immune reaction is activated after locally advanced pancreatic cancer (LAPC) ablation.

Methods
Peripheral Blood samples were obtained preoperatively and in post-operative days 3-30 from patients treated with RFA for LAPC. Evaluated parameters were: cells [CD4+, CD8+ and Double negative lymphocytes, T-Reg, Monocytes, myeloid and plasmocytoid Dendritic cells (mDC and pDC)] and cytokines (IL-6, SDF-1, IL-1β, TNF-α, IFN-γ, VEGF, RANTES, TGF-β).

Results
Ten patients were enrolled. CD4+ and CD8+ count decreased at day 3, and returned to baseline at day 30, while CD8+ terminal effector memory lymphocytes increased at day 30. The median levels of T-Regs stayed baseline. mDC decreased at day 3 but returned to baseline by day 30. pDC decreased at day 3 and stayed low level at day 30. IL-6 significantly increased at day 3 and returned to baseline at day 30. VEGF levels stayed baseline. Decrease of TGF-β and increase of IFN-γ seen at day 3 persisted at day 30.

Conclusion
Our study provides the first experimental evidence of an immune systemic reaction to RFA in LAPC, supported by the early significant increase of IL-6 proinflammatory chemokine and lack of activation of immunosuppressive lymphocytes, monocytes and pDC. Further studies are needed to provide experimental evidence of antitumor response and its clinical impact.
Staging laparoscopy combined with laparoscopic ultrasound and near-infrared fluorescence imaging to detect occult pancreatic metastases

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Background
Up to 38% of patients with pancreatic cancer undergoing surgery with curative intent turn out to have incurable disease. Staging laparoscopy (SL) is therefore being advocated in selected patients. This study aims to determine if the yield of SL can be amplified by adding laparoscopic ultrasound (LUS) and fluorescence imaging (LFI).

Methods
All patients planned to undergo resection of pancreatic or periampullary cancer were included prospectively. Patients received an intravenous infusion of 10 mg indocyanine green (ICG) 1 or 2 days before surgery to allow LFI of potential liver metastases. Suspect lesions were analyzed via biopsy or resection.

Results
A total of 21 patients is currently included. Suspect lesions were identified in 3 patients: liver metastases (identified by inspection, LFI and LUS), peritoneal metastases (inspection) and a lesion that appeared to be benign afterwards (LUS). Quality of LFI was good in 8/13 (62%) patients dosed 1 day and in 6/7 (86%) patients dosed 2 days prior to surgery. Eighteen patients had no signs of irresectability during SL; the primary tumor was resected in 16 patients. Two out of 8 patients with a follow-up >6 months after resection developed liver metastases.

Conclusion
Despite current preoperative imaging modalities, metastases are still identified during surgery. The current study shows limited added value of LUS and LFI during SL in pancreatic cancer patients. A total of 25 patients will be included and additional follow-up will be available for presentation.
The Kynurenine Pathway as an alternative energy source in Pancreatic Cancer

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Background
Cancer cells are well known for their ability to divide uncontrollably and it was initially thought that high Glucose consumption is the main energy source for proliferating tumor cells, but a large body of recent evidence suggest that most of the cell mass that makes up new cancer cells resulted primarily from amino-acid metabolism

Methods
Secretome survey of chemoresistant PDAC cells was performed using SILAC-based mass-spectrometric analyses. Relative differences in protein-concentrations among samples were investigated and led to the identification of previously unknown proteins. Impact of RNAi-mediated knockdown of selected genes in proliferating PDAC cells were analyzed using MTT assays. Gene- and protein-expression analyses were performed using Real-Time-PCR and immunohistochemistry

Results
SILAC-based identification of the Tryptophan degrading enzyme Kynureninase (KYNU) in chemoresistant PDAC cells revealed an overexpressed and secreted form of KYNU protein. Various external stimuli (Gemcitabine, IFNγ, Hypoxia) were identified as main inducers of KYNU expression and secretion. RNAi-mediated KYNU knockdown was linked to substantially lower proliferation of chemoresistant PDAC cells. Tissue-microarray analyses of PDAC samples (n=368) revealed that high KYNU expression is correlated with worse outcome in PDAC patients

Conclusion
KYNU is overexpressed in a subset of aggressive PDAC cells and is linked to increased cell proliferation. KYNU is a new secreted biomarker of chemoresistant PDAC cells
The role of IL17-A in the second hit of acute pancreatitis

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Background
Acute pancreatitis is characterised by distinct clinical phases. An initial systemic inflammation response syndrome (SIRS) and occasional subsequent 'second hit' usually initiated by systemic sepsis. The pro-inflammatory T-helper 17 pathway has been shown to be an initiator of early SIRS in AP, however to date interleukin-17A has not been evaluated as a marker of the septic second hit in SAP.

Methods
Seventeen patients (aged 28-65) with mild (n=10), moderate (n=1) and severe (n=6) acute pancreatitis were enrolled. Peripheral blood samples were drawn on days 7, 9, 11 and 13 of illness for routine clinical markers as well as cytokine analysis. Flow cytometry was performed using a Th1/Th2/Th17 Cytokine Bead Array (BD Biosciences). Statistical analysis was performed using a Mann-Whitney U tests, with a p-value of <0.05 considered significant.

Results
The mean concentration of IL-17A on days 7, 9, 11 and 13 in mild and severe acute pancreatitis patients were 2.45, 2.11, 2.12, 6.91 and 3.63, 3.48, 5.76, 3.56 pg/ml respectively, with no statistical significance between the two groups. Statistically significant differences exist between the mild and severe acute pancreatitis groups regarding the mean WCC (7.38 & 23.49), CRP (73.6 & 245.3) and PCT (0.37 & 20.7).

Conclusion
The IL-17A concentration in the study population did not statistically identify the second hit of acute pancreatitis. Further studies to confirm this are underway.
Visceral adipose tissue and skeletal muscle index distribution predicts development of severe pancreatic fistula after pancreaticoduodenectomy

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Background
Pancreatic fistula (PF) development after pancreaticoduodenectomy (PD) remains a life-threatening complication. In this study, we investigated the impact of body composition on PF development after PD.

Methods
Ninety-nine patients with pancreatic and extrahepatic biliary malignancy following PD who were treated in our department between 2006 and 2016 were enrolled. Univariate and multivariate analyses were performed to investigate variables associated with PF. The 2005 international pancreatic fistula criteria were used to define PF.

Results
The median age of subjects was 72 years and 69 patients were male. The overall mortality and morbidity rates were 1.0% and 36.4%, respectively. The severe PF (grade B, C) was developed in 30 patients, of which 25 patients (25.3%) were classified as grade B in and 5 patients (5%) were classified as grade C. Univariate analysis identified that body mass index ≥25 kg/m² (p=0.032), vesicle adipose tissue area (VATA)/skeletal muscle index (SMI) ≥2.0 (p=0.002), main pancreatic duct diameter ≤3 mm (p<0.001) and drain amylase (Amy) at postoperative day (POD) 1 ≥5000 U/L (p<0.001) were significantly associated with severe PF after PD. Multivariate analysis indicated that VATA/SMI ≥2.0 (p=0.009), pancreatic duct diameter ≤3 mm (p=0.003) and drain Amy at POD1 ≥5000 U/L (p=0.032) were independent risk factors for PF.

Conclusion
Preoperative assessment of VATA/SMI has an important role in predicting PF development after PD.