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913A rare cause of mechanical Ileus: Dislocated jejunal-tube

(Abstract ID: 199)

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Background:

Foreign Body Ingestation is a rare cause for a mechanical bowel obstruction. In the literary research the findings are only about case reports. PEG associated obstructive complications are very rare. In the most cases the patients needed a surgical treatment to remove the foreign material. In our case the problem was a dislocated jejunal tube. The jejunal catheter could be removed endoscopically without any surgical treatment. In order to prevent this rare complication of PEJ-tube dislocation its very important to check the correct position of the tube

Materials and methods:

Case Report

Literature recherche

Results:

PEG associated complications are rare. Only a few case reports exist in the literature describing mechanical ileus due to dislocated PEG-inner-bumpers (Ref.). In most cases the foreign material needed to be surgically removed after prior endoscopic retrieval failed Spontaneous perforation of the small bowel due to dislocated foreign material is the most severe complication

Conclusion:

In order to prevent this rare complication of PEJ-tube dislocation, the need for jejunal tip placement should be repeatedly re-evaluated. In addition, correct position of the tube should be checked frequently

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Picture:

Jejunalsondenileus

Contemporary endoscopic treatment of anastomotic leakage after Ivor Lewis oesophagectomy – Report from a high volume center.

(Abstract ID: 244)

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Background:

Anastomotic leakage (AL) following Ivor Lewis oesophagectomy is a severe complication with a high mortality. Beside surgical renewal of the oesophagogastrostomy, endoscopic stent placement and Endoscopic Vacuum Therapy (EVT) have established as therapeutic alternatives. In this analysis, we report about our experience with these two treatments.

Materials and methods:

From January 2010 until July 2016 AL occurred in 44 patients with oesophagogastrostomy at our institution. In these patients, Ivor Lewis operation was performed in different combinations of minimal-invasive or open technique. In general, stents were used to treat smaller lesions, EVT was used in case of abscess cavity or impaired perfusion. 35 patients were treated with endoscopic stent placement, 9 were treated with EVT. In seven patients the initial stent therapy was changed to EVT because of persistent leakage or stent dislocation. In six patients EVT was changed to stent therapy to reinitiate enteral nutrition or to transfer the patient to ambulatory care.

Results:

In the stent group we achieved a healing rate of 86%, in the EVT group we achieved a healing rate of 67%. Overall mortality was 11%, overall duration of treatment were 40 days. In the patients with the combinatory approach, we observed basically similar healing rates of 86% in the patients with initial stent therapy and of 60% in the patients with initial EVT. Mortality and duration of treatment were markedly increased in these patients. Baseline characteristics identified these patients as being older, more obese, more likely to be smokers and more likely to be diagnosed with pulmonary disease or diabetes. There was no difference regarding neoadjuvant therapy at baseline.

Of the five cases with persistent AL, 3 patients died during the hospital stay and 2 were discharged home with ongoing stent treatment.

Conclusion:

Our data indicates that endoscopic stent placement or EVT is a powerful tool for therapy of AL with sufficient healing rates. Each treatment option is effective, a combination of both therapies is suitable and allows für individualized patient management.

New classification and therapeutic algorithm for esophageal perforations

(Abstract ID: 334)

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Background:

Perforations of the esophagus are associated with a mortality rate ranging from 15-50%. For a long time, surgical therapy and lately also stenting were considered standards of care. Due to the emergence of novel therapeutic strategies, such as endoscopic vacuum therapy (EVT), the decision-making process of managing this condition has become even more challenging. We reviewed our experience on esophageal perforations in order to analyze and classify the disease and to propose a treatment algorithm to best manage spontaneous and iatrogenic esophageal perforations.

Materials and methods:

A retrospective analysis of all iatrogenic, traumatic and spontaneous esophageal perforations between 2002 and 2016 was performed. Data collection for each patient included etiology, size and location of the perforation as well as ASA status (American Society of Anesthesiologists Physical Status Classification System), choice of therapy and outcome. Since 2011, all four treatment options (conservative therapy, surgery, stent and EVT) have been available in our clinic. EVT describes placing an open-pore polyurethane foam drainage either intracavitary or intraluminal and redirecting the tube through the nose. A negative pressure of 125mmHg was applied to set up a vacuum. Sponge changes were then performed every 3 to 5 days.

Results:

A total of 56 patients were included in our study with an average age of 64,2 years. 46,4% (n=26) of the patients were stated ASA 3, 21,4% (n=12) even ASA 4. In 12 patients a mucosal lesion or a perforation smaller than 1cm was found (grade I). 14 patients showed a defect between 1 and 2 cm (grade II), 13 between 2 and 5 cm (grade III). A perforation bigger than 5 cm or an extraluminal wound cavity was identified in 13 patients (grade IV). The perforations were located in the proximal (a) (n=15), medial (b) (n=13) and distal (c) esophagus (n=24). Regarding the primary treatment, operative intervention was employed in 17 patients, 16 patients were treated with EVT. An esophageal stent was placed in 6 patients and 17 patients underwent conservative treatment (antibiotics and nil per mouth). 31 patients (55,4%) recovered under primary therapy. The primary success rate of an operative intervention was 35,3% (n=6), 50% (n=3) with stent therapy and 58,8% (n=10) with conservative treatment. Employing EVT as primary therapy, 75% of the patients (n=12) were healed, with particularly good results for proximally (85%) and medially located perforations (100%). The overall primary success rate of EVT was significantly higher compared with operative procedures (p=0,029).

Conclusion:

We propose a new classification of esophageal perforations considering the size (grade I-IV) and the localization of the perforation (a-c). Based on the classification we provide a therapeutic algorithm which comprises conservative approaches (grade I) and operative procedures (grade IV) as well as emphasizing the role of EVT predominantly for grade II and grade III lesions in these patients.

Refluxassociated injury of the remnant esophagus after Hybrid Ivor Lewis esophagectomy – Gastrointestinal Function Testing Using the new laryngopharyngeal PH Probe (Restech) in a human reflux model

(Abstract ID: 344)

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Background:

Gastro-esophageal reflux is a common problem following Ivor Lewis esophagectomy and reconstruction with gastric interposition. Previous studies have shown that due to the loss of the lower esophageal sphincter and other anatomical alterations, these patients can ideally serve as a human reflux model. Aim of this study is to further evaluate the acid exposition based on laryngopharyngeal PH monitoring (Restech) in this reflux model and to correlate the results with conventional esophageal pH monitoring.

Materials and methods:

An research grant application for this prospective clinical trial was submitted and approved by our academic center (project no. 176/2016, volume € 18,510). All patients undergoing hybrid Ivor Lewis esophagectomy are prospectively entered in our IRB approved database and undergo a routine check-up program with yearly surveillance endoscopies and further exams following surgery. Only patients with a complete check-up program and reflux symptoms were included into this study and evaluated using 24-h laryngopharyngeal and concomitant esophageal pH-monitoring. Subsequently, the relationship between the two techniques was evaluated.

Results:

The first 20 patients were enrolled in this prospective study. 69% of the patients had a pathological laryngopharyngeal pH Metry. In these patients, laryngopharyngeal reflux was more present in the upright (100%, mean Ryan Score 118 [range, 10-316]) than in the supine position (33%, mean Ryan Score 20 [range, 2.2-149]). GERD related symptoms were found in all patients: heart burn (66%), dysphagia (22%), regurgitation (89%), cough (33%), hoarseness (12%), globus sensation (30%), and retrosternal pain (55%).

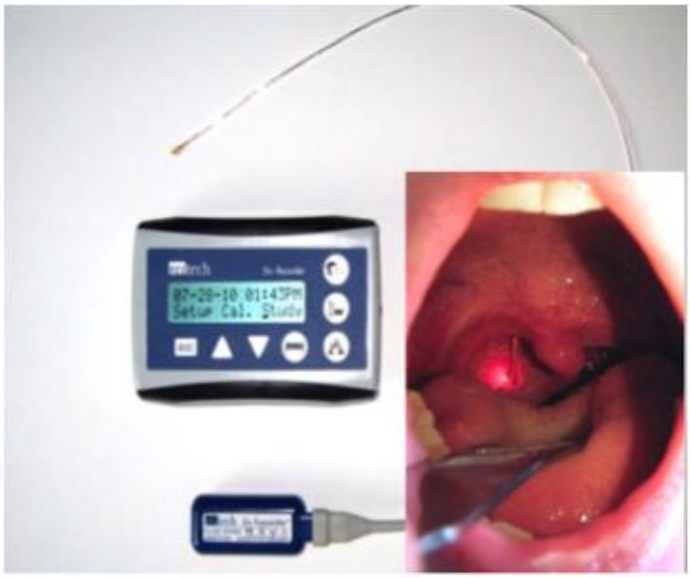
All patients with positive supine laryngopharyngeal reflux were also positive for supine esophageal reflux measured by conventional esophageal pH metry. In this human reflux model, esophageal pH metry correlated well with laryngopharyngeal pH metry. Having a volume of >200 esophagectomies in 2015, we expect a continuous recruitment of 5 patients per month that will prospectively be included in this study and presented.

Conclusion:

Patients following esophagectomy and reconstruction with gastric interposition do ideally serve as a human reflux model. Interestingly, laryngopharyngeal reflux phases occur mainly in the upright position. Further validation of the laryngopharyngeal pH-Metry seems possible with further constant recruitment of patients in this study.

Picture:

Months Follow-up	3	6	9	12	18	24	36	48	60
Physical Examination	✔	✔	✔	✔	✔	✔	✔	✔	✔
Blood sample	✔	✔	✔	✔	✔	✔	✔	✔	✔
Tumor marker	✔	✔	✔	✔	✔	✔	✔	✔	✔
Abdominal US	✔		✔						
Thoracic X-Ray	✔		✔						
Abdominal/thoracic CT scan		✔		✔	✔	✔	✔	✔	✔
Endoscopy		✔		✔	✔	✔	✔	✔	✔



Follow up plan following hybrid Ivor-Lewis esophagectomy

Recent experiences with different treatment options of anastomotic leakages after esophageal or stomach resection

(Abstract ID: 494)

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Background:

Anastomotic leakages (AL) represent major complications after upper gastrointestinal surgery with prolongation of hospitalization and an increase of perioperative mortality. Early detection and therapy of an AL is an important step to prevent further complications as mediastinitis and sepsis. Besides reoperation, for early AL endoscopic therapy with stent or vacuum therapy represent current and novel therapy methods.

Materials and methods:

Out of a prospective maintained database including all patients with carcinoma of the esophagus or stomach operated in the Surgical Department, University of Heidelberg from 2001-2016 we selected patients with an anastomotic leackage after esophagectomy or (partial)gastrectomy between 2013 and to date, as vacuum therapy was introduced in 2014 in our institution.

Ordinal values are compared using chi-square test, continous variables are presented as median and compared by Mann-Whithney-U-test.

Results:

51 patients had an AL in the postoperative course (anastomotic leakage rate 8,9%), 1 patient (pts) after subtotal gastrectomy (GE), 7 pts after total GE, 14 pts after transhiatal extended GE, 27 pts after abdominothoracal esophagectomy and 1 pts after transhiatal esophagectomy. Diagnosis of AL was done by endoscopy. The median day of diagnosis was on POD 7. 8 pts (15.7%) could be treated without intervention, 9 pts were reoperated primarily (17.6%), 26 pts had an endoscopically placed metall-stent and 8 pts (15.7%) were treated with endoluminal vacuum therapy. 17 pts (33.3%) additionally received an interventional drainage, in 21 pts (41.2%) there was need for an operative drainage. Comparing the two endoscopic treatment options, the primary therapy was successful in 65.4% after stent therapy and in 100% after endovac therapy (p=0.052). Complications by stent or endovac therapy occurred in 26.9% during stent therapy (4: stentdislokation, 1: arrosion, 1: perforation, 1: erosive, bleeding lesions) and 12.5% during endovac therapy (1: aspiration) (p=0.400). There was no significant difference in the amount of necessary re-endoscopies (median stent 3, endovac 4, p=0.413), but endovacs had to be changed more often than stents (median 3 vs 0, p<0.001). Therapy could be terminated after a median of 42.5 days after stent therapy versus 17.5 days after endovac therapy (p=0.023). There was no difference in length of hospital stay (median stent 57.5 versus endovac 49 days, p=0.676) or stay in the intensive care unit (median 32 versus 32.5 days, p=0.270).

Conclusion:

We present early initial results for the comparison of an endoluminal vacuum therapy and stent for AL. Endoluminal vacuum therapy appears favorable as success of therapy was 100% and complication due to therapy only occurred in 1 patient. Endovacs had to be changed more often, but there was no

difference in number of re-endoscopies. Further data with a higher patients' number are necessary to draw final conclusions.

Endoscopic Vacuum Therapy (EVT) of Duodenal Leakage with Open-pore Polyurethanefoam Drainage (OPD) and a new Open-pore Film Drainage (OFD)

(Abstract ID: 535)

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Background:

Endoscopic Vacuum Therapy (EVT) has been developed to treat gastrointestinal defects with intracorporal negative pressure. It has been refered for rectum and esophageal leakages in several studies. We adaped EVT to treat duodenal defects.

We report EVT in a series of 7 patients with duodenal leckage.

Materials and methods:

Open-pore polyurethanefoam drainage (OPD) devices were constructed out of a piece (approx. 1,5 cm x1,5 cm x 3 cm cm) of open-pore polyurethanefoam which was fixed surround a tip of a drainage tube. Open-pore film drainage (OFD) device was constructed with a strip of a very thin open-pore double layered film(Suprasorb ®CNP, Drainage Film, Lohmann & Rauscher International GmbH & Co.KG, 56579 Rengsdorf) which was wrapped surround the tip of a drainage tube. Therefore OFD is much smaller in diameter than an OPD.

OPD is inserted transorally by grasping the foam with endoscopic forceps and guided to the duodenal lumen. After correct placement into the duodenal lumen, the tube is guided nasally, connected to a electronic vacuum device and negative pressure applied.

OFD insertion is similar to placing a gastric or intestinal feeding tube. OFD is inserted nasally and pushed into the stomach, then grasped with endoscopic forceps and guided into the duodenal lumen. OFD is connected to an electronic vacuum device and negative pressure applied.

We used standard negative pressure of 125 mmHg, continuous suction, intensity 10.

Results:

In 6 patients we used OPD device, in one patient OFD. In two patients EVT was used as a complimantary therapy to operative procedures.

Application of negative pressure results in collaps of the duodenal lumen suround the open-pore foam or film with closure of the defect zone. By active manner doudenal secrets are guided intraluminal with negativ pressure.

All leakages (100%) were healed after a treatment period of 3-13 days of EVT.

Conclusion:

EVT can be adapted to treat duodenal leakages. OFD is a new small bore open-pore drainage which can be used for intracorporal vacuum therapy. Advantage of OFD is the small diameter which allows placement procedure through small openings and nasally insertion. Placing procedure with an OFD device is an easy common endoscopic technic.

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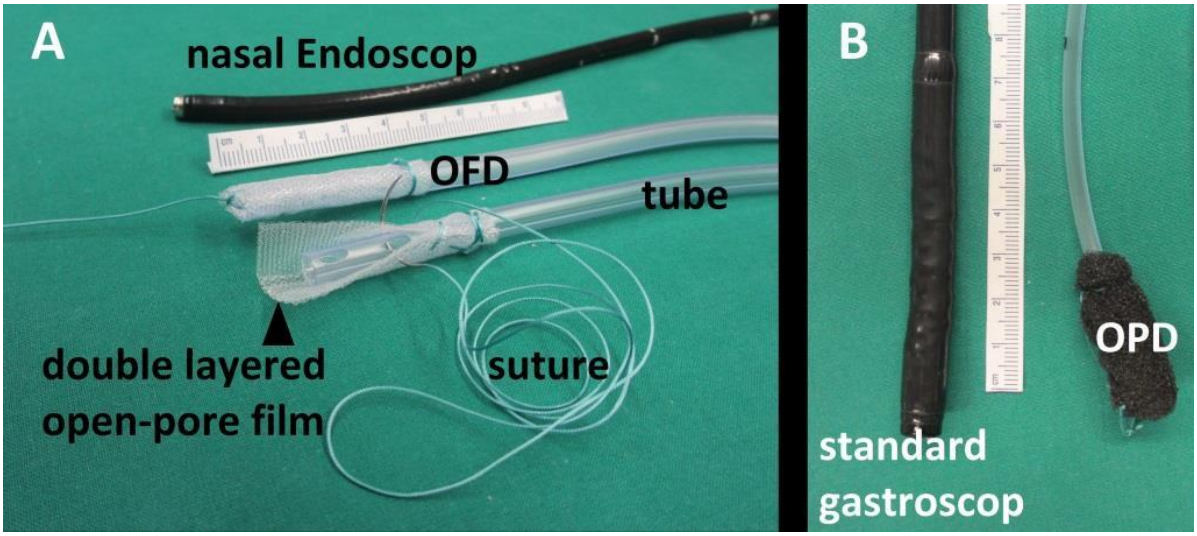
Picture:



A: construction of a small bore open-pore film drainage (OFD), advantage is the small diameter of 4-6 mm; B: open-pore polyurethane foam drainage (OPD), diameter 15 mm

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Intraluminal Endoscopic Vacuum Therapy of spontaneous esophagus perforation using a double lumen vacuum drainage with intestinal feeding tube

(Abstract ID: 569)

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Background:

Endoscopic Vacuum Therapy (EVT) has been developed to treat intestinal leckages. To enable simultaneous enteral nutrition in intraluminal EVT of esophagus a double lumen drainage with intestinal feeding tube was constructed for a vacuum drainage. We demonstrate the use of this new device in a case of spontanous esophageal perforation in a 31 yo patient. Perforation was caused by a bolus in a pseudodivertikulosis of the esophagus. The defect (from 26 cm to 32 cm) ocurred after vomiting.

Materials and methods:

To construct a double lumen vacuum drainage with intestinal feeding tube we used a triluminal tube (Freka®Trelumina, CH/Fr 16/9, 150 cm, Fresenius Kabi AG, Bad Homburg, Germany). First the tube was inserted nosily and lead out orally. Then all openings of the drainage component were wrapped with a 15 cm long open-pore polyurethane foam which was fixed with suture. Drainage was inserted endoscopically and intestinal feeding component placed in the stomach.

The open-pore polyurethane foam wrapped part of the tube covered the perforation region of the esophagus completely. After application of vacuum with an electronic vacuum device (KCI V.A.C. Freedom®, KCI USA Inc., San Antonio, Texas setting -125 mmHg, continuous, intensity 10) esophageal lumen collapsed surround and with the foam.

Results:

Treatment started within 24 hours after perforation. Intraluminal EVT treatment duration was 5 days. Intestinal feeding was done via the intestinal feeding tube of the double lumen drainage.

Complete healing was achieved in follow up endoscopies. No operative therapy was necessary.

Conclusion:

Double lumen vacuum drainage with intestinal feeding tube enables full enteral nutrition from the beginning of intraluminal EVT.

Endoscopic vacuum therapy in the lower GIT: 3 difficult cases

(Abstract ID: 683)

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Background:

Endoscopic vacuum therapy has become a wide spread method in the treatment of postoperative leakages in the GIT in Germany. In some cases sufficient endoscopic vacuum therapy seems to be impossible due to hindering anatomy (e.g. complete missing or only fistula-like orifice to the covered abscess cavity or obtained stool passage beside the abscess).

Materials and methods:

Three cases will be presented with difficult obstacles where modified strategies for endoscopic vacuum therapy lead to successful therapy.

First case: Patient with a presacral abscess cavity and upstream anastomotic stenosis after remodeling of coloanal anastomosis because of rectal cancer. CT-guided drainage was technically not possible. Endoscopy: no opening of the abscess cavity to the gut was visible. The anastomotic stenosis was recanalized by Hegar dilatation and afterwards EUS marking of the abscess cavity was done using a clip. A wide opening from the anastomosis through the presacral region to the abscess cavity was made under endoscopic control by a needle knife. This wide access was used to establish a sufficient endoscopic vacuum therapy.

Second case: Patient presented with an 8 cm long fistular-like chronic anastomotic leakage after lower rectal resection. The diameter of the fistula was 4 mm, so standard sponge therapy was not possible. Here a nasal gastroscope (d=4,9 mm, Olympus GIF 180 N) was used to push a 12 Ch suction catheter covered with a multi perforated folia (Lohmann & Rauscher) inside the fistula to create a negative pressure in the fistular cavity. Vacuum therapy was performed by a pump (KCI Medical).

Third case: Patient presented with a recurrent pelvic abscess one month after ileostomy-reversal. Earlier a first abscess after anastomotic leakage was treated initially by CT-guided drainage. A repeated stoma formation was refused by the patient. Here several methods to clean the colon and modified vacuum therapy were performed to create a sufficient suction even in retained stool passage.

Results:

All three patients were treated successfully by endoscopic vacuum therapy. Special tricks (presented here) were necessary to install an efficient vacuum therapy.

Conclusion:

Endoscopic vacuum therapy is a sufficient method to treat abscess cavities caused by acute or chronic anastomotic leakages. Difficult anatomy however sometimes makes standard endoscopic vacuum therapy impossible. Then modified access ways, special material and unusual application-techniques can help to solve these apparently difficult cases.

Endoscopic vacuum therapy in the lower GIT: Results in 98 cases

(Abstract ID: 694)

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Background:

Endoscopic vacuum therapy has become a wide spread method in the treatment of postoperative leakages in the Gut in Germany. Surgical reintervention, conservative management or CT guided abscess drainage seem to have suboptimal outcome. Randomized studies are missing yet. Initial publications of endoscopic vacuum therapy were performed with quantity about 30 patients and short follow up. Long time results and further data regarding negative outcome after endoscopic vacuum therapy are missing yet.

Materials and methods:

From February 2009 until January 2014 98 patients with postoperative leakages after lower GI resection were treated in our department by endoscopic vacuum therapy. In average 6 endoscopic vacuum therapies (endo sponge, BBraun Aesculap) were performed (range 1- 18) with a total amount of 578 sessions. In 55 patients the leakage was discovered within the first 4 weeks after surgery. 34 patients presented with chronic leakage and abscess cavities. Delay from 1 month up to 9 years. In 29 patients vacuum therapy was the sole treatment. In 60 patients it was combined with a rinsing therapy. At the end of endoscopic vacuum therapy patients were instructed to clean the rectum and remaining minor anastomotic defects themselves at home with a new, especially developed rinsing catheter for several weeks (average 6 weeks) to avoid a recurrent abscess. Follow up after ending the therapy was minimum one year (range 1-8 years).

Results:

In 9/98 patients the endoscopic vacuum therapy was not finished due to medical reasons (n=5; severe bleeding, exitus, fistula etc.) of technical reasons (n=4; impossible to create a pelvic negative pressure due to open abdomen or multiple leakages). We evaluated clinical results regarding success of complete healing of anastomotic leakage, rate of stoma reversal and complications as incomplete healing or recurrent abscess after finished vacuum therapy. No significant difference regarding complete healing between the acute and chronic abscess cavities was seen. A significant difference regarding complete healing appeared in comparing the endoscopic vacuum therapy alone (success rate 79%) and the combination of vacuum therapy and rinsing catheter (95%). Further significant difference between both therapeutic groups occurred regarding recurrent abscess after finished vacuum therapy (8 vs. 1).

Conclusion:

Endoscopic vacuum therapy proved to be a safe and effective method. Even in chronic abscess cavities the positive effect for wound healing was obvious, not worse than in acute cases. Recurrent pelvic abscesses can occur up to 6 months after vacuum therapy. Best results to achieve complete healing and avoid later recurrent pelvic infection were achieved by the combination of endoscopic vacuum therapy followed by rinsing (using a new, especially for this indication developed catheter). So 95% success vs. 79% using the vacuum therapy alone could be achieved.

Assessment of Endoscopic Doppler to Guide Hemostasis in High Risk Peptic Ulcer Bleeding

(Abstract ID: 695)

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Background:

Rebleeding after endoscopic therapy of peptic ulcers is associated with high rates of morbidity and mortality. Endoscopic doppler (ED) to guide targeted therapy to the supplying vessel has been suggested to improve outcome parameters in patients with high risk gastroduodenal ulcers. This retrospective study assessed its efficacy to guide hemostatic procedures in daily clinical practice.

Materials and methods:

60 patients with hemorrhage from a peptic ulcer (stage Forrest Ia, Ib and IIa, resp.) were included into the study. Patients were randomly allocated to one out of seven endoscopy rooms, 4 of which were equipped with an endoscopic doppler system. Interventions were performed by an experienced endoscopist. All patients received combined injection therapy using epinephrine and fibrin glue, individual patients were treated using hemoclips as needed. In the non-doppler (ND) group the injection was directed by the visual aspect of the ulcer, whereas in the ED group, submucosal vessels were localized by endoscopic doppler that specifically targeted the injection procedure until the supplying vessel was occluded. Data were analysed according to the usage of ED or not (ND). Primary outcome parameter was the rate of recurrent bleeding, secondary outcome parameters consisted of the need for surgical intervention, number of blood transfusions, length of hospital stay, and 30 day mortality.

Results:

35 patients were allocated to the ED group, and 25 to the ND group, resp. no significant differences in patient or ulcer characteristics were observed, except for a higher number of patients requiring mechanical ventilation in the ND group (44% vs. 14%; P=0.01). Recurrent bleeding was observed in 7/35 (20%) of patients in the ED group and in 13/25 (52%) of patients in the ND group (P=0.01). Fewer ED patients needed surgery for rebleeding compared to the ND group (1/35 vs. 6/25; P = 0.012). Bleeding related, but not all-cause mortality was significantly lower in the ED group (1/7 vs. 6/8, P = 0.019). The number of transfused red blood units (ED: 3.1 units vs. ND: 4.5 units; P=0.244) and length of hospital stay (ED: 8.9 days vs. ND: 10.0; P=0.615) were not different.

Conclusion:

In this comparative analysis, the use of endoscopic doppler to guide hemostatic therapy was associated with a significant reduction in recurrence of bleeding, surgical intervention and bleeding associated mortality. Larger randomized clinical trials are warranted to further investigate this promising therapeutic option.

Endoscopic Submucosal Dissection (ESD) of esophageal neoplasia – clinical and histological outcome

(Abstract ID: 729)

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Background:

Endoscopic submucosal dissection (ESD) is a novel treatment option for benign and early malignant lesions in the esophagus. We report on our experience with the first 32 cases.

Materials and methods:

Between november 2012 and july 2016 all patients undergoing esophageal ESD were collected prospectively

Results:

Out of 32 patients with esophageal ESD there was sqamous cell neoplasia in 6, Barrett`s neoplasia in 21 and other neoplasia like granular cell tumor in 5 cases. Complete resection was achieved in 97 %, en bloc resection rate was 94 %. The complication rate was 12, 5 % with 3 cases of mild mediastinal emphysema (9,3%) und one delayed bleeding (3,1%). Additional esophagectomy was required in 2 patients due to submucosal invasion of the tumor and in 1 patient with a metachronous adenocarcinoma in a Long Segment Barrett Esophagus.

Conclusion:

ESD in the esophagus is a safe and efficient technique for treatment of early esophageal neoplasia.

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Endoscopic Dissection of Zenker`s Diverticulum using a Holmium Laser

(Abstract ID: 730)

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Background:

Endoscopic treatment of Zenker`s diverticulum has been done since 1995 and is widely used at present. Different techniques using argonplasmacoagulation, needle knife or ESD- knives have been described . The aim of our study was to determine the efficacy and safety of endoscopic diverticulotomy using a holmium laser.

Materials and methods:

From February 2013 to September 2016 patients with symptomatic Zenker`s diverticulum were collected prospectively. Dissection of the septum between esophagus and diverticulum and myotomy was performed under conscious sedation using a holmium laser probe via a standard gastroscope without any other additional devices.

Results:

16 patients with symptomatic Zenker`s diverticulum were treated. The median length of the septum was 2,9 cm. 2 patients required a second and 1 patient a third attempt until the septum was cut onto the bottom of the diverticula and/or normalization of dysphagia was achieved . The mean duration of the procedure was 30,9 minutes. All procedures were performed without any bleeding or perforation.

Conclusion:

Endoscopic diverticulotomy using a holmium laser is safe and effective. The main advantages of this technique are completeness of myotomy due to good visualization of the fibers of the cricopharyngeal muscle and the absence of bleeding.

Primary squamous cell carcinoma of the thyroid: case report and systematic review of the literature

(Abstract ID: 507)

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Background:

Primary squamous cell cancer (PSCC) of thyroid is a rare malignancy with poor prognosis. It is mandatory to exclude secondary involvement of the thyroid by panendoscopy, CT-scan and immunohistochemical analysis. As treatment surgery, radiation and rarely chemotherapy is employed.

Materials and methods:

A systematic review of the literature was conducted searching medline and embase database using the medical subject headings "primary squamous cell carcinoma of thyroid" and "primary squamous cell cancer of thyroid", for articles published until March 2016 (n=1733). Of interest were the used treatment modalities and survival outcomes.

Results:

A total of 34 publications reporting on 50 cases including ours were finally analysed. A curative treatment approach was described in 24 patients (50%). Additional radiotherapy, chemotherapy or radiochemotherapy was applied in 17, 6 and 7 patients respectively. Median overall survival was 6 months [range 0-48] for 47 patients. Disease free survival was only achieved in 8 patients with disease limited to the thyroid gland, complete surgical resection and additional radiotherapy or radiochemotherapy [reported median 20 months; range 12-48].

Conclusion:

Reported disease free survival of PSCC of the thyroid was only achieved in patients with complete surgical resection in combination with adjuvant radio- and/or chemotherapy. However long term survival has not been reported in the literature yet.

Significance of minimally invasive surgery in adrenocortical carcinoma (ACC)

(Abstract ID: 617)

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Background:

Adrenocortical carcinoma (ACC) is rare but one of the most malignant endocrine tumors. The role of endoscopic adrenalectomy for ACC is still subject of controversy. Almost all data published refer to the transperitoneal laparoscopic approach. As a specialized center we report on our experience with patients suffering from ACC who underwent surgery via a retroperitoneoscopic approach.

Materials and methods:

We identified 27 patients who underwent 30 operations for ACC between January 2005 and September 2016. 20 patients with primary surgery in our hospital underwent minimally invasive or combined minimally invasive and open surgery. Of these 13 patients had a retroperitoneoscopic adrenalectomy, 2 patients were operated laparoscopically, one patient had a combined laparoscopic/retroperitoneoscopic surgery and 4 patients had a combined minimally invasive and open approach. In addition 4 patients underwent retroperitoneoscopic reoperation after open surgery due to local recurrence (n=2) or lymph node metastases (n=2). Clinical data and surgical procedures were evaluated regarding surgical approach, lymph node dissection, operation time, conversion and complication rates, length of hospital stay, local recurrence and overall survival.

Results:

Perioperative mortality was zero. Macroscopic complete resection was performed in all patients. Conversion to open surgery was necessary in 4 patients due to tumor size (>9cm) or invasive growth. Median tumor size was 10cm (range 3-16cm), median operating time was 150minutes (range 40-415minutes), median hospital stay was 4 days. Complete follow-up data (median 20months, range 3-57months) was available in 15 patients. Of these 12 patients had postoperative additional chemo- or combined chemo-radiation therapy. 3 patients with initial retroperitoneoscopic surgery showed both local recurrence and distant metastases, while 7 patients developed distant metastases and 5 patients are disease free after a median follow up of 23 months (range 6-57months). 5 patients died within 12 months after surgery (range 3-24months).

Conclusion:

For organ-confined disease, minimally invasive adrenalectomy offers comparable surgical quality to open surgery. The retroperitoneoscopic approach allows for keeping a retroperitoneal malignant disease in the retroperitoneal space and avoids potential tumor spillage into the abdominal cavity. However, overall and disease free survival rates are poor.

Repetitive Pancreatic Surgery in Multiple Endocrine Neoplasia Type 1

(Abstract ID: 657)

M. B. Albers[1]

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Background:

Pancreatic neuroendocrine neoplasms (pNEN) are one of the most common manifestations and causes of death in MEN1 patients. Surgical resection is recommended for functioning pNEN and pNEN exceeding 20mm. Aim of the present study was to evaluate the frequency, associated complications, and morbidity of reoperations for metachronous pancreatic manifestations during long term follow up.

Materials and methods:

A since 1992 prospectively collected database of 83 MEN1 patients treated at our institution was retrospectively analyzed for pancreatic surgery, complications, and morbidity during long term follow up.

Results:

Of 83 MEN1 patients, 58 (64%) received surgical treatment for pNEN (47 for non functioning pNEN, 11 for Insulinoma). First surgery included 11 enucleations, 26 distal pancreatic resections (DPR) 9 DPR plus enucleation, 1 middle pancreatic resection (MPR) and 9 partial pancreatico-duodenectomies (PPD).

During a mean follow up period of 151 months (12,6 years) 11 (13%) patients underwent reoperation (5 enucleations, 3 DPR, 1 DPR plus enucleation, and 2 PPD). 3 (3,6%) patients underwent a third operation of the pancreas (3 DPR). Second and third operations resulted in rest pancreatectomy in 3 patients (3,6%).

The complication rate (mainly pancreatic fistula grade A and B) did not differ between first operation and reoperation. Morbidity was caused by loss of endocrine and exocrine pancreatic function.

Table:

Procedures performed for first operations and reoperations		
First Operation	58	
	enucleation	11
	distal pancreatic resection	26
	distal pancreatic resection + enucleation	9
	middle pancreatic resection	1
	partial pancreaticoduodenectomy	9
	total pancreatecomy	0
Second Operation	11	
	enucleation	5

	distal pancreatic resection	3
	distal pancreatic resection + enucleation	1
	partial pancreaticoduodenectomy	2
	rest pancreatecomy	2
Third Operation	3	
	distal pancreatic resection	3
	rest pancreatectomy	1

Conclusion:

Reoperations for pancreatic manifestations of MEN1 are well feasible and not associated with increased perioperative complications. Rest pancreatectomy is rarely necessary.

Long acting somatostatin analogues delay the progression of pNEN in a MEN1 knockout mouse model

(Abstract ID: 658)

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Background:

Long acting synthetic somatostatin analogues (SSA) are an essential part of the treatment of neuroendocrine tumors. We evaluated the chemopreventive effects of a long acting somatostatin analogue on the development of pancreatic neuroendocrine neoplasms (pNEN) in a MEN1 knockout mouse model.

Materials and methods:

MEN1 knockout mice were treated with monthly subcutaneous injection of the somatostatin analogue lanreotid (Somatuline Autogel©, Ipsen Pharma) or a placebo, starting at the age of 35 days. Mice were killed after 6, 9, 12, 15, and 18 months (5 mice per group). The size of pNEN was histologically and compared between groups.

Results:

The median tumor size of pNENs differed significantly between groups after 9 months (control group 706.476µm2 vs. SSA group 195.271µm2; $p<0.001$), 12 months (control group 822.022 µm2 vs. SSA group 255.482 µm2; $p<0.001$), 15 months (control group 1,992.568 µm2 vs. SSA-group 273.533 µm2, $p<0.001$), and after 18 months (control group 1,328.299 µm2 vs. SSA group 864.587 µm2; $p<0.001$).

Conclusion:

Long acting somatostatin analogues may be an effective chemopreventive approach to delay the progression of MEN1 associated pNEN. In consequence to our preclinical results we strongly recommend the evaluation of SSA effects in a prospective clinical trial.

Minimally Invasive Surgery in Pediatric Pheochromocytomas and Retroperitoneal Paragangliomas: Results in 41 Patients

(Abstract ID: 764)

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Background:

Pheochromocytomas and paragangliomas are rare tumors in children accounting for about 1% of the pediatric hypertensive cases. While minimally invasive surgical techniques are well established in adult patients with pheochromocytoma, the experiences in children are extremely limited. To the best of our knowledge, we herewith present the largest study of young patients operated on chromaffine tumors by minimally invasive access.

Materials and methods:

In a setting of a prospective study (January 2001 to September 2015), 41 consecutive children and adolescents (32 m, 9 f; age: 15.8 ± 3.0 years, range: 8.4-19.9 years) were operated on. Thirty-four patients suffered from inherited diseases (23 VHL, 6 SDHB, 3 SDHD, 1 MEN 2A, 1 MEN 2B). Twenty-three patients received alpha-receptor-blockade preoperatively. From the whole group, 24 patients had pheochromocytoma (18 unilateral, 6 bilateral), 12 presented retroperitoneal paraganglioma and 5 patients suffered from pheochromocytoma and paraganglioma. Of 29 children with pheochromocytoma, 17 had unilateral and 12 bilateral disease (6 synchronous, 6 metachronous). Altogether, 56 tumors (size: 3.2±2.2 cm) were removed (39 pheochromocytomas, 17 paragangliomas). All operations were performed by a minimally invasive access (30 retroperitoneoscopic, 9 laparoscopic, 1 combined, 1 extraperitoneal). In 34 pheochromocytomas, 4 total and 30 partial adrenalectomies were performed.

Results:

One patient with a left-sided pheochromocytoma died after introduction of anesthesia before the intended laparoscopic operation due to cardiac arrest. Following alpha-blockade, resuscitation including open heart massage was unsuccessful. All other complications were minor. Conversion to open surgery was necessary in two cases with paragangliomas and vessel adhesions. Operating time for unilateral pheochromocytomas was 62±25 minutes, in bilateral cases 115±22 minutes, 169±133 minutes in paragangliomas and 238±226 minutes in combined cases. Median blood loss was 20 ml (range: 0-500). No blood transfusion was applied in any case. Intraoperatively, systolic peak pressure was 171±47 mmHg with alpha-blockade and 184±43 mmHg without alpha-blockade (not significant). Median postoperative stay was 4 days. After a mean follow-up of 6.0 years, two patients with VHL presented recurrent disease of the ipsilateral adrenal gland (after 19 and 22 months). Both were removed by minimally invasive surgery as well. In the bilateral pheochromocytoma group all 12 patients are steroid independent postoperatively.

Conclusion:

Pheochromocytomas and/or paragangliomas in children and adolescents should preferably be removed by minimally invasive surgery. Partial adrenalectomy provides long term steroid independence in bilateral pheochromocytomas and a low rate of ipsilateral recurrence. Alpha-receptor-blockade has no relevant influence on intraoperative systolic peak pressures.

Changing trends in surgical treatment for anaplastic thyroid cancer

(Abstract ID: 811)

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Background:

The prognosis of anaplastic thyroid cancer (ATC) is poor. Despite various attempts to modify common treatment modalities including surgery, external beam radiation and chemotherapy, no standardized treatment is available yet. There are especially controversies regarding the aggressiveness of tumor resection. This study aimed to analyse the changing trends in surgical treatment for ATC before and after the year 2000.

Materials and methods:

A retrospective analysis was conducted on 48 patients with histologically confirmed ATC who had been treated between 1994 and 2016 by evaluating hospital case notes. The outcome measures included the evaluation of changing trends in surgical treatment before and after the year 2000. Therefore, patients were divided in group A (patients with ATC treated before the year 2000) and B (patients with ATC treated after the year 2000).

Results:

A total of 48 patients were identified with ATC. Seven patients were included in group A with a mean age of 61,6 years and a female to male ratio of 1,3:1. Three patients in this group were staged as stadium IVB, four as stadium IVC. Every patient received a thyreoidectomy (TTX) including a radical neck dissection and resection of infiltrated nerves, vessels or muscles. Two sternotomies were done. No negative surgical margin status was reached. Postoperative three patients received an adjuvant radiation, no chemotherapy was done.

Group B included 41 patients with a mean age of 67,2 years and a female to male ratio of 0,83:1. Three patients in this group were staged as stadium IVA, 23 patients as stadium IVB and 15 patients as stadium IVC. All patients staged as IVA received a TTX including a neck dissection resulting in a negative margin situation and a postoperative adjuvant radiation. Twenty-one of 23 patients staged as IVB were operated, only in three cases a resection of nerves/muscles/vessels was done, no sternotomy was performed. In no case a negative margin status was achieved. Postoperative sixteen patients were treated with a radiation or a concomitant radiochemotherapy, two patients received novel therapeutic options like tyrosine kinase inhibitors (TKIs) and seven patients were treated palliatively without any further therapy.

Eleven of 15 patients staged as stadium IVC received a palliative tumor debulking operation, in one case with a concurrent tracheotomy. Nine of these 15 patients received a palliative radiation and/or chemotherapy. Postoperative six patients were treated palliatively without any further therapy.

Conclusion:

In view of the poor prognosis and outcome of patients with ATC stadium IVB and IVC disease the surgical treatment changed in the last 24 years. Before 2000 every patient received a TTX including radical neck dissection, sternotomies and resections of infiltrated vessels, nerves or muscles.

Due to novel therapeutic strategies this procedure changed to less radical resections, multimodal treatment including the use of postoperative concomitant radiochemotherapies and new therapeutic options like TKIs.

How to Diagnose Recurrent Nerve Palsies in Thyroid and Parathyroid Surgery? Direct Flexible Laryngoscopy (DFL) versus Transcutaneous Laryngeal Ultrasonography (TLUS)

(Abstract ID: 855)

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Background:

In thyroid or parathyroid surgery recurrent laryngeal nerve (RLN) injury is one of the most serious complications. Usually direct flexible laryngoscopy (DFL) is the golden standard to examine vocal cord function pre- and postoperatively but is associated with major discomfort for patients. A new alternative offers the transcutaneous laryngeal ultrasonography (TLUS). We tested both methods in 120 consecutive patients with thyroid or parathyroid surgery.

Materials and methods:

In a setting of prospective study, 120 patients (100 female, age: 23-76 years) were included from two tertiary referral centers of endocrine surgery. Altogether, 64 total thyroidectomies (7 with neck dissection), 26 lobectomies, 26 parathyroidectomies, and 4 total parathyroidectomies were performed. In all patients, DFL (transnasal route) served as golden standard and was used with TLUS prior surgery and on the first postoperative day. TLUS was performed by B-scan (probe 5-13 MHz, aperture 40 mm).

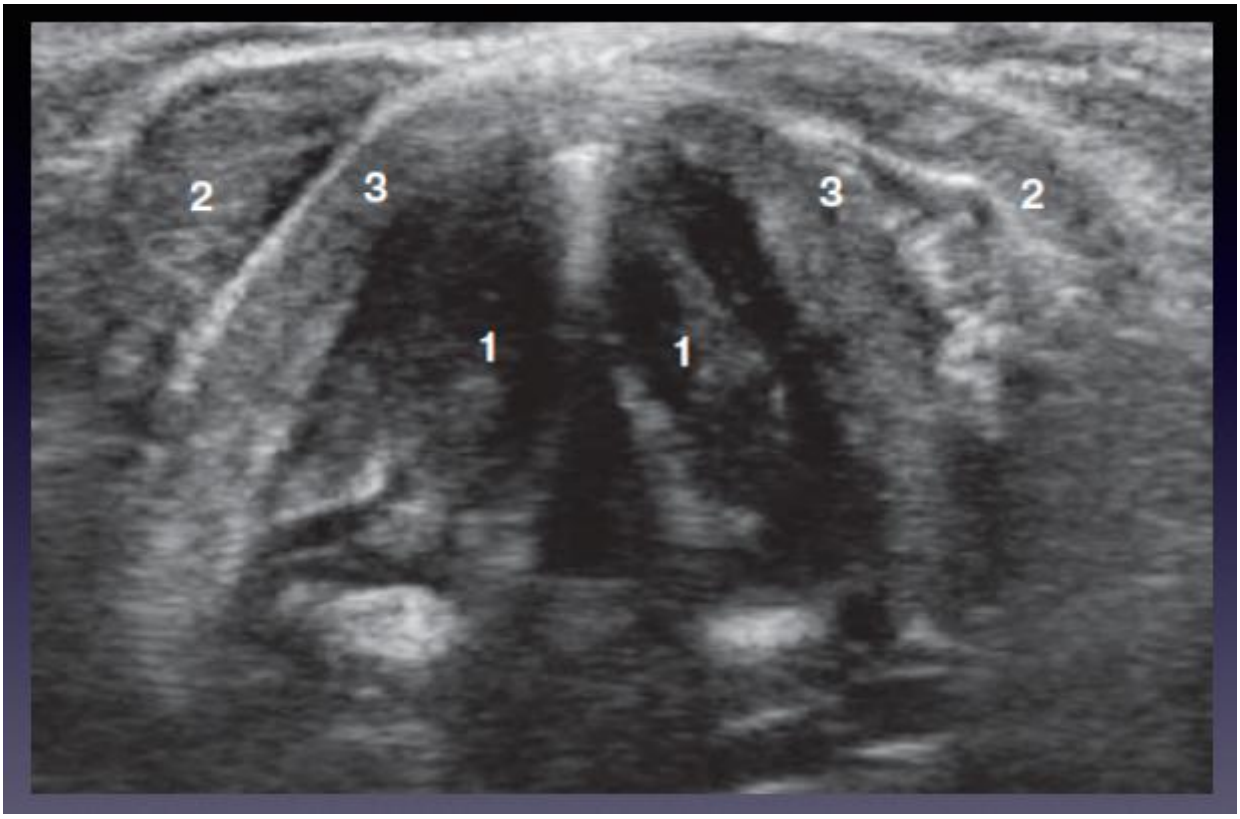
Results:

In sum, 188 nerves at risk were analyzed by TLUS and DFL. In pre-surgical examination one patient had RLN palsy due to previous neck surgery (visible in both methods). In preoperative TLUS, 78.3 % of vocal cords could be seen with a relevant difference between female and male (91.4% vs. 15.7%) due to frequent laryngeal calcification in male. Postoperative DFL demonstrated 6 new RLN palsies (3.1% of nerves at risk). TLUS found 5 of these 6 without any false positive case. One lesions were missed due to laryngeal calcification. The sensitivity of TLUS reached 73,3% with the specificity of 100%.

Conclusion:

This pilot study demonstrates feasibility of TLUS in controlling the vocal cords mobility following thyroid and parathyroid surgery. It has a potential to replace the DFL in the majority of cases especially in female patients.

Picture:



Ultrasound picture of the vocal cords in the open (quiet) position in the B scan. 1 - the true vocal cords 2 - short muscles of the neck; 3 - thyroid cartilage

Using 3D visualization to gain higher performance safety in minimal invasive surgery: interim results of a prospective randomized controlled trial

(Abstract ID: 624)

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Background:

Minimally invasive surgery is common standard in many fields of visceral surgery. It is unclear, if newly developed 3D visualization techniques are really associated with better outcomes (i.e. performance safety), and how learning curve and workload are changing due to this new technology. Since it is known that long 3D movie shows are associated with fatigue, we implemented a prospective-randomized controlled trial (n = 400 surgeries) to identify advantages and disadvantages of the new technology.

Materials and methods:

From 10/2015 to 08/2016 n = 202 patients operated on with minimal invasive procedures were included in the monocentric trial. Interoperative procedures were the same for the 2D control group (n = 94) and the 3D intervention group (n = 108). Surgeries were performed both by assistant physicians and expert physicians. Biometric information of the surgical team (including refraction analysis to assess stereoscopic vision), biometric information of participating patients, intraoperative performance safety (duration of so called indicator steps during surgical procedures), subjective workload of the surgical team (NASA TLX Score), as well perioperative complications were recorded to assess the learning curve and general surgical skills.

Results:

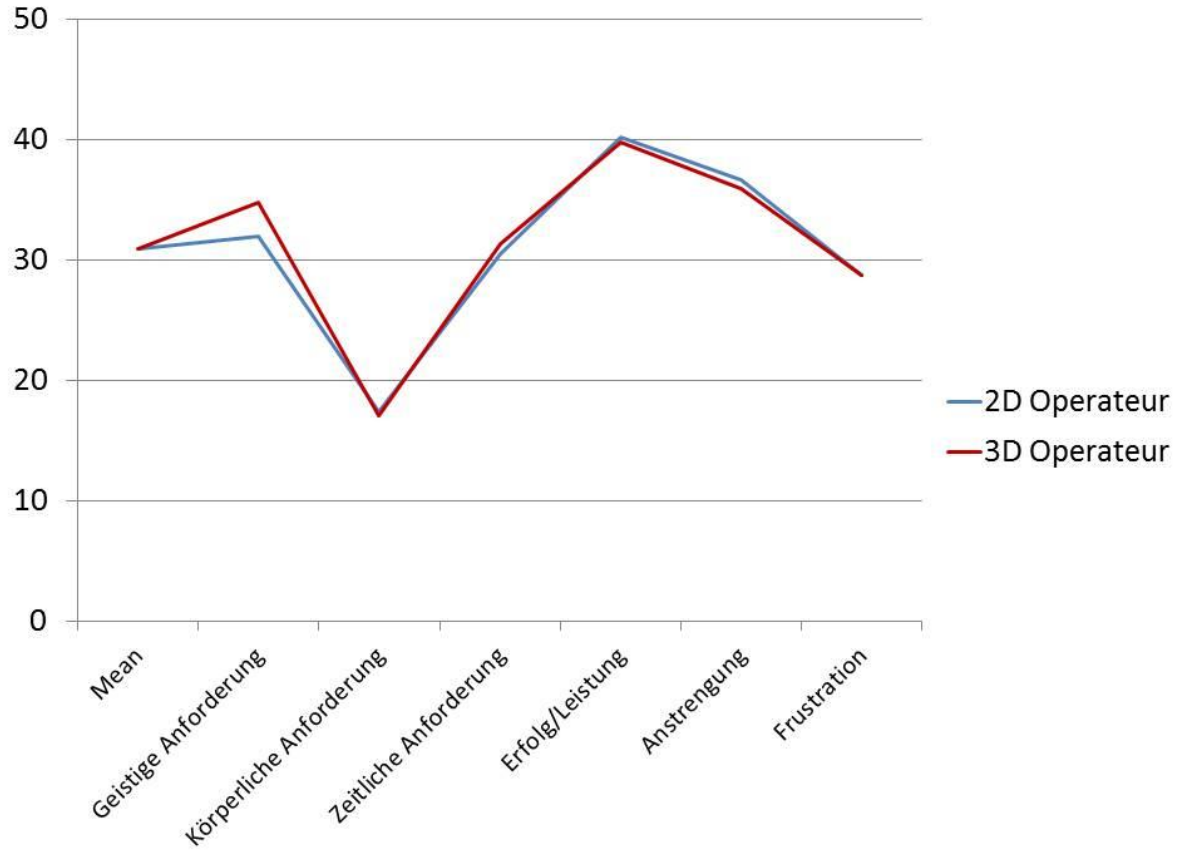
Regarding overall surgery duration there is no significant difference between 2D und 3D visualization. Performance safety as measured by the indicator step duration increases significantly. For instance, median duration of mesh placement during TEP is 15 % faster for 3D than for 2D visualization (Tab. 1) . Individual surgeons even profit by up to 50 % with 3D.

Table:

Chirurg	MW 2D [min]	Stabw 2D	MW 3D [min]	Stabw 3D	Differenz [%]
SURGF1	6.2	3.5	8.9	2.0	-44.2
SURGF2	7.2	2.5	6.5	3.3	9.1
SURGS5	5.5	2.5	4.5	1.1	17.0
SURGS3	4.7	5.1	2.8	1.6	39.7
SURGS4	16.1	10.1	8.7	3.0	45.9
SURGS1	9.8	4.5	5.0	0.3	49.2

Mean values (MW) and standard deviations (Stabw) for indicator step duration [min] for 2D and 3D TEP (mesh placement) of randomly selected surgeons

Picture:



NASA TLX Mean Score and scores for each individual component of the NASA TLX score for each surgeon (2D: n = 87; 3D: n = 105). Given are the mean scores over all surgeries.

Innov Surg Sci 2017; 2, (Suppl 1): s1–s168

Benefit of epidural anesthesia in immunosuppressed IBD patients

(Abstract ID: 637)

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Background:

There is still little evidence on the usage of an epidural anesthesia in immunosuppressed patients. Therefore the purpose of the study was to compare the clinical outcome of patients with and without immunosuppressive therapy who underwent abdominal surgery due to inflammatory bowel disease (IBD) and who did or who did not receive an epidural anesthesia in a matched-pair analysis.

Materials and methods:

In this retrospective study in 6 years 366 patients were included, 252 patients with Crohn's disease and 114 patients with ulcerative colitis. 235 patients received epidural anesthesia, of whom 143 patients also were under immunosuppression (steroids, azathioprine, biologicals, etc) and 92 patients did not take immunosuppressive medication. Clinical data illustrating postoperative recovery and outcome were analyzed statistically (Fisher's exact test).

Results:

In comparison with patients without epidural anesthesia there was a significant reduction of pain in patients with epidural anesthesia from day 0-3 postoperatively (p<0,001). Also patients with epidural catheters needed significantly less opiate medication (day 1: p=0,002; day 2: p=0,009; day 3: p=0,032) and less non-steroidal inflammatory drugs. In addition patients with epidural anesthesia showed a significantly earlier documented first postoperative defecation (p=0,019) and a quicker transition to normal diet (p=0,035). Although revision surgery was less frequent in patients with epidural anesthesia this did not influence the occurrence of anastomotic leaks. Immunosuppression was not a risk factor for epidural anesthesia associated infections. Furthermore subgroup analysis showed that immunosuppressed patients also benefited from epidural anesthesia with a quicker recovery compared with patients without an epidural catheter.

Conclusion:

The use of an epidural anesthesia in patients with inflammatory bowel disease is a safe procedure, independent on concomitant immunosuppressive therapies. Patients with an epidural catheter with and without immunosuppression appear to benefit from the procedure and show a quicker recovery without increasing catheter associated complications.

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Examining operative performance: surgeons' self- and peer assessment skills

(Abstract ID: 843)

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Background:

Standardised rating scales are useful tools in summative and formative assessment. Accurate self- and peer assessments are instrumental for quality control and continued professional development. However, it is unclear how much training is needed to ensure accurate utilisation of rating scales. This study compares self- and peer-assessments performed by surgeons and trainees after standardised instruction in video analysis.

Materials and methods:

Participants who regularly performed laparoscopic cases as primary operator were recruited from a single institution. One session of performance dimension training consisting of a standardised video presentation with example vignettes was held prior to video analysis. Each participant then analysed a peer and a primary operator (self) video for technical skill using the Objective Structured Assessment of Technical Skill (OSATS) rating scale. Participant scores were compared to expert ratings.

Results:

Twelve surgeons and trainees were recruited. Surgeon ratings (self/ peer) were not correlated to the expert ratings. Peer-assessment ratings had a mean absolute difference of 3.5 marks (SD 2.2) on the OSATS scale compared to expert ratings, while the self-assessment rating was worse with a mean absolute difference of 4.4 (SD 3.5) n.s.

Conclusion:

The use of OSATS or similar scoring systems for operative skill is gaining popularity. Our study suggests that effective utilisation of the OSATS scale for both self- and peer-assessment in routine surgical practice requires training beyond the scope of a single orientation session. Reflective video analysis using standardised rating systems has the potential to improve self- and peer-assessments but requires supervised implementation and training to provide accurate analysis for development.

Proteomic profiling of pancreatic cancer and markers of resistance to radiochemotherapy

(Abstract ID: 313)

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Background:

Complete surgical resection remains the only curative option in patients with pancreatic ductal adenocarcinoma (PDAC). The aim of this study was to analyze the total PDAC proteome as to identify proteins and pathways associated with PDAC and early versus late local recurrence (LR) after resection and radiochemotherapy (RCT).

Materials and methods:

Patients with margin positive resection of PDAC consecutively receiving RCT were identified retrospectively. Formalin fixed paraffin-embedded tissue from surgical PDAC specimens was used for proteome analysis by tandem mass spectrometry.

Results:

Overall survival was reduced in patients with early LR as compared to late LR (7 vs. 30 months, p=0.0001). A total of 1878 proteins were quantified in both cohorts. Gene set enrichment analysis revealed a protein and signalling signature characteristic of PDAC. LIMMA method identified proteins significantly up- or down-regulated. Up-regulated proteins in the early LR group were such as MAOA, ALDH1A1, creatine kinase B and mucin-5AC being involved in tumorigenesis. Several roteins were up-regulated in the late LR group including fascin, integrin beta-4, histidine rich glycoprotein and CDC42. Further analysis demonstrated the early LR group to exhibit an exocrine-like phenotype.

Conclusion:

Analyzing proteomic data resected PDAC patients undergoing post-operative RCT, characteristic proteomic expression profiles of PDAC as well as profiles associated with early vs. late post-RCT LR were identified. These proteomic biomarkers may serve to stratify patients according to prognosis and to assess a potential benefit of post-operative RCT.

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Low-glucose condition impairs the metastatic colonization of pancreatic ductal adenocarcinoma via collagen type VI alpha 1

(Abstract ID: 555)

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Background:

Glucose constitutes an essential component of metabolic pathways necessary for pancreatic ductal adenocarcinoma (PDAC) development. However, recent studies revealed that glucose levels in PDAC stroma were rather low, necessitating a nutritional adaptation to low-glucose environments. The biological significance of this low-glucose adaptation remains unclear.

Materials and methods:

Murine PDAC cells were cultured in low-glucose medium in order to induce nutritional adaptation. The biological significance and energy status were investigated in vitro and in vivo, respectively. The transcriptional profiles were analysed by microarray analysis.

Results:

After the adaptation to low-glucose environments, PDAC cells were able to maintain a normal proliferative potential and intracellular energy status as their parental cells. However, they gave rise to less necrotic, yet more angiogenic tumours in vivo compared to control cells. Notably, the capacity of metastatic colonisation was significantly inhibited by the low-glucose adaptation. The transcriptional analysis identified collagen type VI alpha 1 (Col6a1) as a pro-metastatic mediator that is tightly regulated by glucose levels. The overexpression of Col6a1 restored the metastatic colonisation affected by the low-glucose adaptation.

Conclusion:

Hereby, we provide in vivo evidence that the low-glucose adaptation fosters the development of well-perfused PDAC but inhibits the metastatic colonisation. Col6a1 is identified as a novel "glucose-responsive" protein which can be therapeutically explored.

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An oral vaccine against VEGFR-2 induces strong anti-angiogenic immune reactions and improves overall survival in a genetically engineered mouse model of colorectal cancer

(Abstract ID: 884)

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Background:

Colorectal cancer (CRC) is the third most common malignancy and the second leading cause of death in Germany. Despite numerous treatment options, the prognosis especially in metastatic disease is limited. Anti-angiogenesis is a mainstay in the treatment of metastatic CRC; however, the blocking of angiogenic pathways invariably leads to treatment resistance. We therefore intended to employ a novel approach of anti-angiogenic immunotherapy, using VXM01, an oral salmonella-based vaccine against VEGFR-2, to induce an immune reaction against tumor blood vessels. As classical xenograft models have limited predictive power as a result of their inherent immunodeficiency, we used an immunocompetent, genetically engineered mouse model of CRC to evaluate the effects of the vaccine.

Materials and methods:

C57Bl/6 mice with conditional mutations in Apc, Kras and Tp53 were crossed to generate Apc/Kras/Tp53 compound mutant mice. Tumor development was initiated by segmental colon infection with Adeno-cre virus and monitored via colonoscopy. Treatment with VXM01 +/- 5-FU (oral / i.p.) was initiated when established tumors were seen in colonoscopy. End-point of the study was survival. The molecular effects of the treatment were evaluated by histology (microvessel density, pericyte coverage, CD8 T cell infiltration) of the tumors. The immunogenicity of the treatment as well as the VEGFR-2 (KDR) specificity of the immune reaction were evaluated via flow cytometric quantification of the MHC pentamer binding of CD8+ splenocytes.

Results:

VXM01 treatment lead to a significantly longer survival of the animals. No adverse effects of VXM01 treatment were noted. 5-FU treatment did not alter the course of the disease; the combination of 5-FU and VXM01 did not lead to an increased survival than VXM01 alone. The VXM01-treated tumors demonstrated a significantly reduced CD31+ microvessel density, and increased CD8 T cell infiltration. Increased pericyte coverage of tumor vessels indicated vascular normalization. VXM01 treatment initiated a highly specific immune response to VEGFR-2 as seen in the pentamer analysis.

Conclusion:

The salmonella-based oral VEGFR-2 vaccine VXM01 leads to significantly increased survival in a genetically engineered mouse model of colorectal cancer by inducing a tumor vessel-specific immune reaction and subsequent normalization of tumor vasculature. Given the low toxicity of VXM01 seen both in mice and in early-phase studies, clinical trials of VXM01 in colorectal cancer should be considered.

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AQP1-dependent changes of water permeability influence cell motility in human carcinoma cells

(Abstract ID: 913)

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Background:

The water channel protein aquaporin 1 (AQP1) is up regulated in several solid tumors. Its role in cell water permeability has been implicated in mechanisms of tumor cell migration and agility. In this study we aim to shed light on how AQP1 expression influences functional behaviour of human carcinoma cells.

Materials and methods:

Confocal microscopy was used to visualize cell permeability of human carcinoma Nbl cells and was quantified using stopped flow analysis. For assessment of AQP1 dependent cell motility AQP1 knockdown cells were compared to AQP1 positive cells.

Results:

The reaction of carcinoma cells to the osmotic gradient showed significant differences dependent on their AQP1 expression. This effect was visualized by confocal microscopy. Cell motility showed significant differences depending on different levels of AQP1 expression and AQP1 localization.

Conclusion:

Different levels of AQP1 expression modify cell water permeability and motility and thus influence the ability of carcinoma cells to move. The potential of tumor cells to adapt their behavior with changing AQP1 expression might significantly contribute to tumor cell migration and metastases.

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A new elastic mesh for parastomal hernia surgery – establishment of a porcine colostomy model

(Abstract ID: 100)

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[1]*Uniklinik Aachen, Aachen*

Background:

After colorectal surgery, parastomal hernia formation is a frequent complication. Mesh requirements for parastomal hernia repair are challenging, due to the high degree of anatomical variabilities. The aim of this study was to create a new elastic mesh for parastomal hernia surgery and to establish an animal model to evaluate intraperitoneal mesh prosthesis.

Materials and methods:

In 10 female minipigs, open terminal sigmoid colostomy with a 10x10 cm IPST mesh was performed (Elastic TPU n=5, vs. Non-elastic PVDF n=5). After 8 weeks, the animals were euthanized and abdominal walls were explanted for histological and immunohistochemical assessment.

Results:

An elastic parastomal mesh prosthesis was developed. Open terminal sigmoid colostomy creation and parastomal mesh placement were feasible and safe in a minipig model. No parastomal hernia was observed in any animal that survived till the endpoint (n=8). One animal died during anesthesia on day 33 by aspiration and another one was euthanized due to an obstructive ileus on day 14. Postoperative care required great efforts due to a tendency of skin granulation with stoma constriction. Immunohistochemically, the Collagen I/III ratio showed the only difference between study groups. It was significantly higher in elastic TPU meshes after 8 weeks.

Conclusion:

We created a new elastic mesh for parastomal hernia surgery and successfully established a porcine model with terminal colostomy for intraperitoneal mesh prosthesis evaluation. Immunohistochemistry indicates superior biocompatibility of TPU meshes regarding Collagen I/III ratio in comparison to PVDF.

Incisional hernia after liver transplantation. Mesh-based repair and what else?

(Abstract ID: 257)

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Background:

Incisional hernia (IH) after liver transplantation is a common long term complication. Aim of this study is to investigate the long term outcome of conventional mesh-based hernia repair in inlay/onlay technique.

Materials and methods:

The analysis was based on a prospective gathered database which includes all liver transplantat recipients within 1998-March 2013.

Incidences were analyzed regarding time period between liver transplantation and hernia development, size and localization of the hernia, in-hospital stay, immunosuppression, postoperative complications and recurrences. The mean follow-up period was 111.91 (29-181) months.

Results:

Among 200 patients, 23 (11.5 %) developed an IH after a mean period of 27.4 (5-82) months. There were 9 (39%) men and 14 (61%) women, average age was 52.35 years. The mean diameter of IH of 12.9 (2-35) centimeters and in-hospital stay was 5.7 days. Five patients developed mild postoperative complications including two mesh infections. One patient (4.4%) suffered a recurrence.

Conclusion:

Mesh-based hernia repair by use of inlay/onlay technique represents an effective and safe method for liver transplanted patients with IH, without any additional risk due to continuous immunosuppression.

Data-Warehousing: a new strategy for clinical data analysis

(Abstract ID: 281)

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Background:

Since technology is advancing and storage capacities are growing, it is possible to process larger amounts of data. Meanwhile, there is the desire to generate useful knowledge from this aggregated data, which is not found explicitly or can be identified at once in the data. PaDaWaN, a scalable, digitized, double-pseudonymized, daily updated Data Warehouse provides the opportunity to investigate specific problems.

Materials and methods:

By selecting and defining the study cohort "incisional hernia" it is possible to validate the Data-Warehouse using information from the EuraHS database (n=335) and a retrospective case study (n=419). For that purpose risk factors and intra- and postoperative complications are generated from SAP and textual diagnostic findings. Congruence between the information extracted from the different data sources (regarding the exactly same patients) was calculated using the kappa coefficient (IBM SPSS Statistics 22).

Results:

Potential discrepancies between patients' records and medical reports can be found. For no item a kappa greater than 0.8 was found (good correlation: 0.6-0.8; very good correlation: 0.81-1.0). For Bleeding the kappa was 0.67, for ascites 0.49 (medium correlation), for surgical site infection 0.34 (weak correlation) and for intraoperative complications 0.24 (weak correlation). Early results, using PaDaWaN's screening tools for specific requests of established risk factors and complications, show accordance with published data.

Conclusion:

By establishing Data Warehousing as a clinical research platform, data can be structured and generated faster in the future. The dynamic daily automated data update enables clinical staff to validate and evaluate treatment concepts and results more easily. Furthermore recommendations for future medical reports can be given in order to improve information extraction of Data Warehousing. The results also show, that there is a great discrepancy between data regarding one and the same patient, depending on the intention of data collection. The correlation between administrative data (generated for purposes of health care insurance) and clinical data (generated for communication between doctors) needs to be improved (mean kappa: 0.4).

The prophylactic mesh augmentation during initial formation of permanent enterostomy – a complication-burdened intervention?

(Abstract ID: 301)

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Background:

Parastomal hernia is a frequent complication in patients with an ostomy which considerably impairs quality of life. Despite the evidence of clinical studies showing decreased incidence of parastomal hernia and no additional complications after mesh augmentation, this technique is still rarely used.

Question: Is prophylactic implantation of a three-dimensional mesh in IPOM technique associated with increased incidence of peri- and postoperative complications?

Materials and methods:

The perioperative course of 165 patients who received permanent enterostomy with additional mesh augmentation between March 2006 and July 2015 was prospectively studied.

Results:

As presented in Table 1, the mesh augmentation is not associated with an increased rate of infective complications (4.2%). None of the implants had to be removed because of infection. Late postoperative complications such as mesh-related adhesions and ileus occured in seven patients. Three of them required reoperation.

Table:

	n (%)	Reoperation
Peristomal abscess	7 (4,2)	2/7
Stenosis	1 (0,6)	1
Necrosis	9 (5,5)	6
Parastomal Hernia	1 (0,6)	1
Ileus	7 (4,2)	3
1-year mortality	40 (24,2)	

Table 1. Short-term and one-year clinical outcome (n=165)

Conclusion:

Intraperitoneal mesh augmentation during initial formation of a permanent enterostomy with a three-dimensional non-resorbable implant is not associated with an increased rate of peri- and late postoperative complications which means that this technique may be considered as a first choice treatment.

Inter-observer variation in repeated experiments using the DIS model: Is it due to lower baseline pressures?

(Abstract ID: 401)

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Background:

The occurrence of an incisional hernia is still a prevalent complication of abdominal surgery which is affecting up to 37% of patient. To date, the accurate method of mesh fixation, placed in the Sublay or the Intraperitoneal (IPOM) position, is still controversial. The new DIS model permits the evaluation of dynamic intermittent strain on abdominal hernia repair simulating coughing bursts.

Materials and methods:

Dynamesh Cicat® was investigated without fixation on 24 pig bellies with 37.5 mm overlap of a 50 mm hernial orifice. Two separated experiments were carried out by two different investigators (H and S). The DIS model is made using an aluminum cylinder. The cylinder has a hydraulically driven plastic bag that delivers an impact on porcine tissues. The pressure in the bag (from baseline to peak pressure) is controlled by specific program on computer. Once the model was set in action, the movement of the meshes was observed until the full circumference of the tissue defect fully exposed or 425 cycles of dynamic intermittent impacts completed.

Results:

The baseline pressures of the procedures performed by investigator S was lower than investigator H (H = 2 - 5 mmHg, S = -1 - 4 mmHg). The average of coughing bursts which the Meshes tolerated in the experiment by H was 145 (range: 105 to 425) and in the experiment by S was 210 (range: 35 to 425). There were no significant differences between the two observers (P = 0.6 by Mann-Whitney U test).

Conclusion:

Our results revealed a low inter-observer variation. The wider variation of the dislocation rates obtained by investigator S is most likely due to slightly lower baseline pressures.

Leightweight vs. Heavyweight Mesh: Investigating the validity of meta analyses

(Abstract ID: 693)

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Background:

Lightweight Meshes (LWM) were developed to reduce foreign body sensation and post-operative chronic pain by increasing biocompatibility. However, LWM seem to be associated with higher recurrence rates in comparison. Since the power of single RCTs is often too low to answer research questions like this, meta analyses are used to try and investigate those questions. Often enough however, meta analyses dealing with the same research question come to different conclusions, although the data pool used in the respective analyses should be the same.

Materials and methods:

The HerniaSurge group is currently preparing a worldwide guideline containing, amongst others, recommendations for mesh augmentation in inguinal hernia repair. During the compilation of relevant literature three meta analyses with comparable research questions were assessed for their validity:

Currie et al. (2012). Lightweight versus heavyweight mesh in laparoscopic inguinal hernia repair: a meta-analysis. Surg Endosc, 26(8): 2126-2133. Conclusion: short- and long-term outcomes are comparable between LWM and HWM Li et al. (2012). Lightweight versus heavyweight in inguinal hernia repair: a meta-analysis. Hernia, 16(5): 529-539. Conclusion: higher recurrence rate and less chronic pain for LWM Sajid et al. (2013). A systematic review and meta-analysis evaluating the effectiveness of lightweight mesh against heavyweight mesh in influencing the incidence of chronic groin pain following laparoscopic inguinal hernia repair. Am J Surg, 205(6): 726-736. Conclusion: no significant difference in recurrence rate; less chronic pain and less foreign body sensation for LWM Criteria for the analysis of the validity of the respective meta analyses were 1. inclusion of relevant literature, 2. Data handling, and 3. correct use of statistical models.

Results:

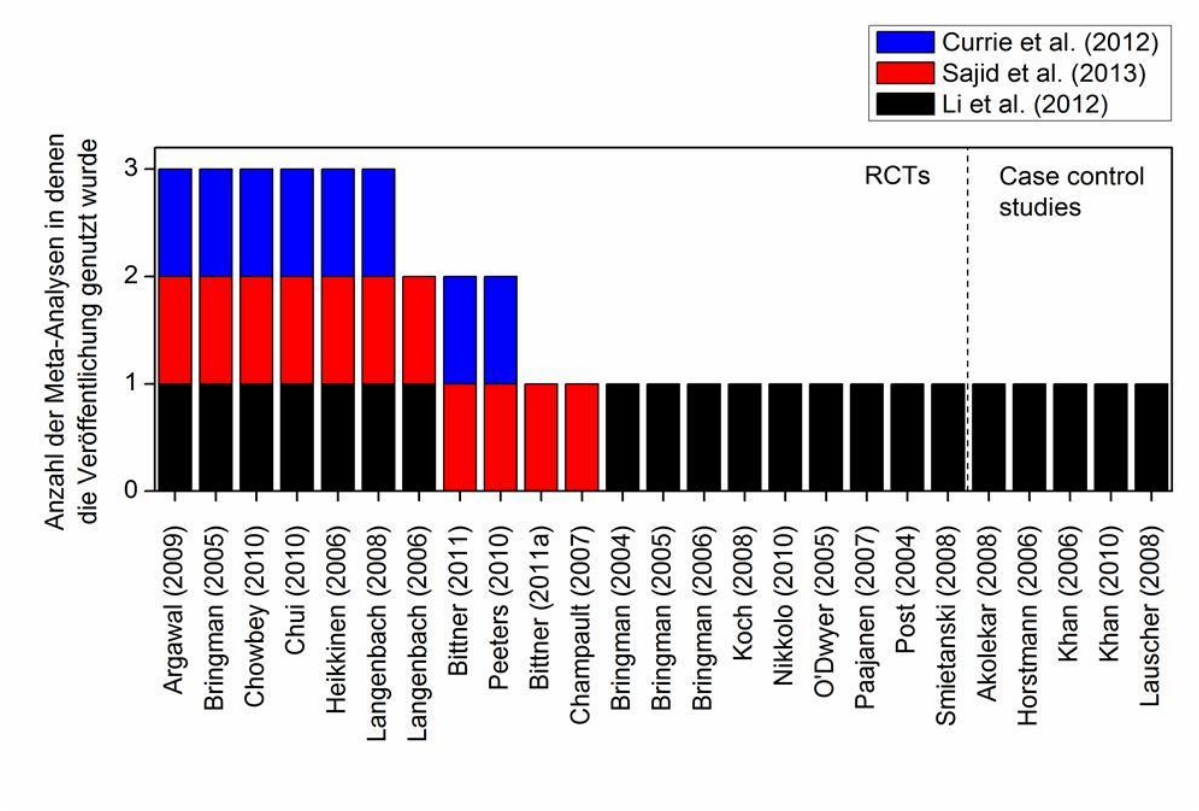
The meta analyses vary with regards to three different endpoints. Inclusion criteria were defined differently (Fig. 1). Quality judgement (Jadad-Score) of the included studies varied between meta analyses, and errors in the data analysis of the respective RCTs (wrong patient numbers entered into the analysis) inevitably lead to different conclusions.

Table:

Conclusion:

Conclusions of meta analyses vary due to inclusion criteria, quality of included studies and erroneous data handling and statistic usage. This may lead to incorrect assessment of existing RCTs, and ultimately to wrong recommendations in guidelines. Currently available meta analyses are not suitable to derive reliable recommendations with regards to mesh selection in inguinal hernia repair.

Picture:



Studies included into the three meta analyses

Innov Surg Sci 2017; 2, (Suppl 1): s1–s168

Mesh in hiatal hernia repair without any clinical relevanz of shrinkage or elongation – a prospective study

(Abstract ID: 700)

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Background:

Usage of mesh in hiatial hernia surgery is discussed controversially because of potential foreign body reaction with subsequent mesh shrinkage and the risk of mesh penetration or postoperative dysphagia. German as well as US guidelines do not give any recommendations regarding this issue, and therefore no agreement exists on the minimal hiatial surface area (HSA) indicating mesh augmentation.

Materials and methods:

Eighteen patients undergoing surgery because of symptomatic hiatial hernia entered this prospective clinical trial. Indication of mesh implantation was given if HAS was > 5 cm2. All patients were implanted with an MRT-visible mesh (Dynamesh mri-visible®) with absorbable fixation. Immediately perioperatively as well as 1 year postoperatively a MRT measurement was conducted. MRT sequences were edited with the photo-editing software ImageJ. Points on the mesh border surrounding the esophagus were marked. The size of the area build by the hole in the mesh surrounding the esophagus was calculated numerically (Finite-elements method).

Results:

For n = 15 patients (12 female, 3 male; mean age: 67.1 years; range: 51 to 86 years) both MRT examinations are analyzed. Mean intraoperatively measured HSA was 10.6 cm2 with a range from 5.0 to 31.6 cm2. Overall, there was no clinically relevant shrinkage between the perioperative MRT measurement (mean mesh hole: 255 mm2; range: 123 to 438 mm2) and the one year postoperative measurement (mean: 261 mm2; range: 132 to 474 mm2). Five patients revealed a clinically not relevant shrinkage (<= 63 mm2). 10 patients showed an increase of the hole (between 2 and 61 mm2). A Backward Stepwise Regression Model including 12 different variables in the first step revealed a model including six variables, which significantly explain the change in the size of the mesh hole between the perioperatively measured mesh and the 1-year follow up (Table 1, model: r2 = 0.849, p < 0.001). For instance, the increase seems to coincide with large HSA (Figure 1, left panel), and with higher BMI (Figure 1, right panel).

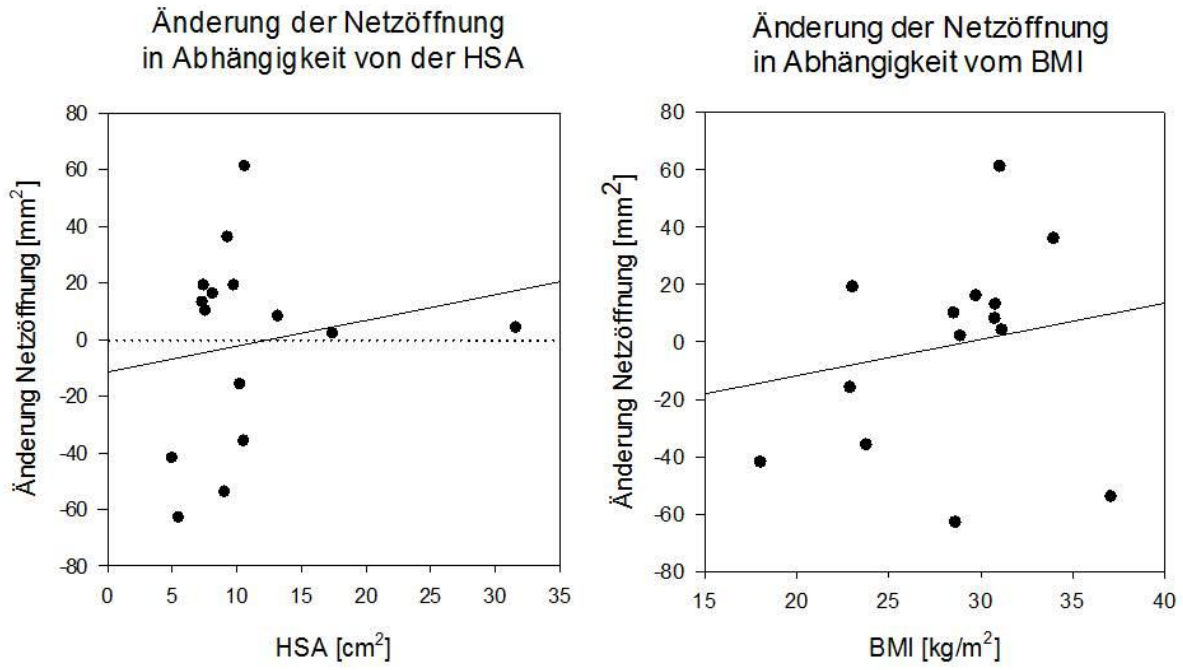
Model parameters of the final Backward Stepwise Regression Model. Model Constant = 13,326.

Conclusion:

Mesh shrinkage and mesh elongation was observed in 73%. Neither was clinically relevant. Shrinkage and elongation are multifactorially by surgery duration, HSA size, prior surgery, ASA, age, and BMI. Register studies should be used to clarify if a HSA value > 5 cm2 is indeed a good threshold for the indication of mesh augmentation.

Innov Surg Sci 2017; 2, (Suppl 1): s1–s168

Picture:



Change in the opening of the hiatial mesh with regards to HSA (left panel), and with regards to BMI (right panel). Both correlations are signficant ($p < 0.05$).)

Innov Surg Sci 2017; 2, (Suppl 1): s1–s168

Volume-outcome relationship in pancreatic surgery in Germany – an observational study of nationwide hospital discharge data

(Abstract ID: 88)

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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. Therefore, we aimed to determine the effect of hospital volume on in-hospital morbidity, mortality, and failure to rescue following major pancreatic resections using hospital discharge data of every inpatient case in Germany.

Materials and 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 for subcategories such as medical indications, concomitant surgical procedures, and interventions required for complications 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, selected coexisting conditions, year of resection and concomitant procedures.

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 occured 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 (e.g., relaparotomy, prolonged mechanical ventilation and more than five blood transfusions) and mortality in patients with major complications (failure to rescue) significantly decreased with increasing hospital volume.

Conclusion:

Our results suggest that compliance with already existing minimum caseload requirements could instantly reduced morbidity and mortality of pancreatic surgery in Germany. As current health policies failed to centralize pancreatic surgery procedures in Germany, new strategies to initiate a sufficient centralization process are urgently needed.

Single center experience with 120 patients treated for alveolar echinococcis

(Abstract ID: 171)

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Background:

Alveolar echinococcosis is a tumor-like infection with metastatic potential and increasing incidence worldwide including central Europe. Although surgical resection is the only curative treatment option so far, no much is known about the influence of the resection status and the influence of laparoscopic surgery on the recurrence rates of this disease.

Materials and methods:

Retrospective data analysis of 120 patients treated at the Department of Visceral Surgery and Medicine of the University Hospital Bern between 1967 and 2016 for hepatic alveolar echinococcosis.

Results:

Our cohort consists of 52.5% females and 47.5% males with a median age of 57 at diagnosis. In the analyzed time frame, 38 patients were treated conservatively and 84 patients received surgical procedures. Seventy-six patients were operated in curative intend, while 7 patients could only receive a palliative surgical procedure. Open surgery was performed in 72 cases, while 12 patients could be resected laparoscopically. Most patients received major hepatic resections (30 hemihepatectomies, 10 extended hemihepatectomies, 36 atypical liver resections). Adjuvant treatment with benzimidazol was performed in 89.2% of the patients, while neoadjuvant treatment was given in 70.5%. Median follow-up after diagnosis was 37 (1-520) months, median post-operative follow-up was 30 (0-427) months. Recurrence occurred in 13.4% of the curatively resected patients, the median time to recurrence was 66.5 (7-517) months. No correlation could be found to the surgical approach. Interestingly, the incidence exponentially increased over the last decades. In the recent decade (2006-2016) we operated 3.7 times more patients (n=52) than in the analyzed decade before.

Conclusion:

The incidence of alveolar echinococcosis exponentially increased in the last decade with 3.7 times more patients requiring surgery compared to the decade before. Short term outcomes after laparoscopic resections of alveolar echinococcosis are safe.

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Single centre experience with 37 cases of ALPPS for right trisectionectomy at University Hospital Tübingen

(Abstract ID: 198)

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Background:

The ALPPS procedure has been introduced to induce a rapid hypertrophy of the future remnant liver volume in cases of liver resection with a high risk of postoperative liver failure (PHLF). We retrospectively analyzed our single center ALPPS-experience in order to better assess the limits and indications of the procedure.

Materials and methods:

Indication for ALPPS procedure was a remnant liver volume to total liver volume (RLV/TLV) <=25% or remnant volume to body weight ratio (RVBWR) <=0,5. Volumetric parameters were evaluated. Postoperative complications according to the Dindo-Clavien classification, patient survival and tumour recurrence were analysed.

Results:

Between November 2010 and April 2016 we performed 37 ALPPS procedures (100% right trisectionectomy) for 22 primary liver tumors (6 perihilar-cholangiocarcinoma (phCCA), 10 intrahepatic-cholangiocarcinoma (iCCA), 4 hepatocellularcarcinoma (HCC) and two Klatskin-mimicking IPN) and 15 metastatic tumors (14 colorectal liver metastasis (CRLM), 1 breast cancer). Median age was 67 years (range = 39-79). The median future liver remnant (FLR) hypertrophy was 82.2% (23,8-166) and the median kinetic growth rate (KGR) was 26,3 ml/day (10,0-71,0) in a median of 8 days (3-24). The median time between the two stages was 13 days (3-24) with a feasibility of 100%. A R0 status was reached in 29 patients and R1 in 8. Morbidity was 78% (grade >= IIIa 48,6% and grade >=IIIb 32%). 16 patients developed PHLF (3 grade A, 7 B and 6 C). The postoperative mortality rate was 16.2% (0% CRLM, 50% phCCA, 20% iCCA, 25% HCC). ASA-Score of 3, preoperative stent in patients with phCCA, Ishak-Fibrosis grade >2, PHLF >= B after Stage 2 were identified as independent risk factors for postoperative mortality ($p<0.05$). After a median follow-up of 23 months (1-61), 22 out of 31 patients (71%) are still alive. The overall disease-free survival at 1 year was 58% (56% CRLM, 67% phCCA, 43% iCCA and 67% HCC). Twelve cases (6 CRLM, 1 phCCA, 4 iCCA and 1 HCC) developed tumour recurrences, and two of them (1 CRLM and 1 iCCA) died after recurrence.

Conclusion:

The ALPPS procedure is safe in younger patients with CRLM and good liver quality, whereas the high tumor recurrence rate call into question the oncological benefit. With a caution selection of the candidates we can achieve the same results also in patients with iCCA, whereas phCCA in older patients remain a contraindication.

Management of insufficiency after gastro-pancreatic anastomosis with endoluminal vacuum therapy – a report of two cases

(Abstract ID: 265)

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Background:

Pylorus-preserving pancreaticoduodenectomy is a therapeutic option for patients with chronic pancreatitis and pancreatic carcinoma. Pancreatic anastomosis leakage after pylorus-preserving pancreaticoduodenectomy is a common problem with rates between 2-50 % and correlates with increased length of hospital stay, need for percutaneous drains, re-operation and delayed gastric emptying and mortality (Reid-Lombardo et al, 2007). Management of pancreatic anastomosis leakage includes conservative treatment (fluid management, parenteral nutrition and antibiotics), percutaneous drainage, re-operation with different ways of anastomosis-revision up to complete pancreatectomy (Zovak et al, 2014). Individual approaches using endoluminal vacuum (Endo-Vac) have been published (Schorsch et al, 2013). We report two cases of endoscopic vacuum treatment of insufficiency after gastro-pancreatic anastomosis.

Materials and methods:

We used a self-made device. We took a gastric tube (flocare®, nutricare), passed it in nasally and out orally again, pulled it through a piece of foam (VAC®, KCI), attached it with non-absorbable sutures (greenfil®, catgut) and then placed it via gastroscopy over the insufficient anastomosis. The device was changed every 3 days. A permanent negative pressure of 125 mmHg was applicated continuously.

Results:

Case 1

In a 54 year old patient with alcohol induced chronic pancreatitis and exhausted endoscopic treatment a pylorus preserving pancreaticoduodenectomy with gastro-pancreatic anastomosis was performed. 6 days after surgery the patient was suffering from acute abdominal pain and bloody secretions from the intraabdominal drainage. After re-laparotomy with bleeding management we diagnosed an insuffiency of the gastro-pancreatic anastomosis, so endoluminal vacuum therapy was applied. After 38 days of treatment we removed the foam. CT-scan showed no signs of leakage. The patient could be discharged 60 days after surgery.

Case 2

51 year old patient with chronically infected system of fistula including pancreas, stomach and small intestines after multiple pre-surgeries. We performed a distal resection of the stomach, distal pancreatectomy and reconstruction through gastro-jejuno-pancreaticostomy. On day 12 after surgery the patient showed significant release of pancreatic fluids via intraabdominal drains. A CT-scan showed an insuffiency of the gastro-jejuno-pancreaticostomy, so the application of endoluminal vacuum therapy followed. After 13 days of treatment the foam could be removed. The patient could be discharged 50 days after surgery with no signs of leakage.

Conclusion:

We showed two cases of insufficiency after gastro-pancreatic anastomosis which have been successfully treated with endoluminal gastral vacuum therapy. This therapy option for an insufficient

pancreatic anastomosis is a possible advantage of the gastro-pancreatic anastomosis technique in comparison to the jejuno-pancreatic anastomosis. In literature an equivalence of gastro-pancreatic anastomosis versus jejuno-pancreatic anastomosis is stated (Crippa et al, 2016). Still the standard of a gastro-pancreatic anastomosis should be considered at least for patients with "weak" pancreatic tissue in which the risk of insuffiency of the pancreatic anastomosis seems to be high. Further investigations and studies need to be done to proof the effect and securitiy of this method.

Picture:

Picture 1 shows the self-made device

RAMPS procedure leads to better long time survival compared to standard pancreatosplenectomy in patients with adenocarcinoma of the left pancreas

(Abstract ID: 275)

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[1]*Uniklinik Freiburg, Freiburg*

Background:

The radical antegrade modular pancreatosplenectomy (RAMPS) procedure is a modification of standard distal pancreatosplenectomy. It´s designed for pancreatic cancer of the body and tail with respect to the extent of lymphatic node dissection and to provide microscopically negative tangential margins. In this study we compared long time survival for RAMPS procedure vs. standard retrograde distal pancreatectomy with splenectomy in patients with adenocarcinoma in the body and tail.

Materials and methods:

Thirty-seven patients received distal pancreatectomy between 2007 and 2015 due to adenocarcinoma in a single center at the Clinic of General and Visceral Surgery, University of Freiburg. Data of operative procedures and the postoperative clinical course was continuously collected in a SPSS database (SPSS, Version 22.0, SPSS Inc.,Chicago, IL, USA). Statistical significance was tested using the t-test, Fischer´s exact test and Chi-square tests. Median survival was determined using Kaplan-Meier product limit method.

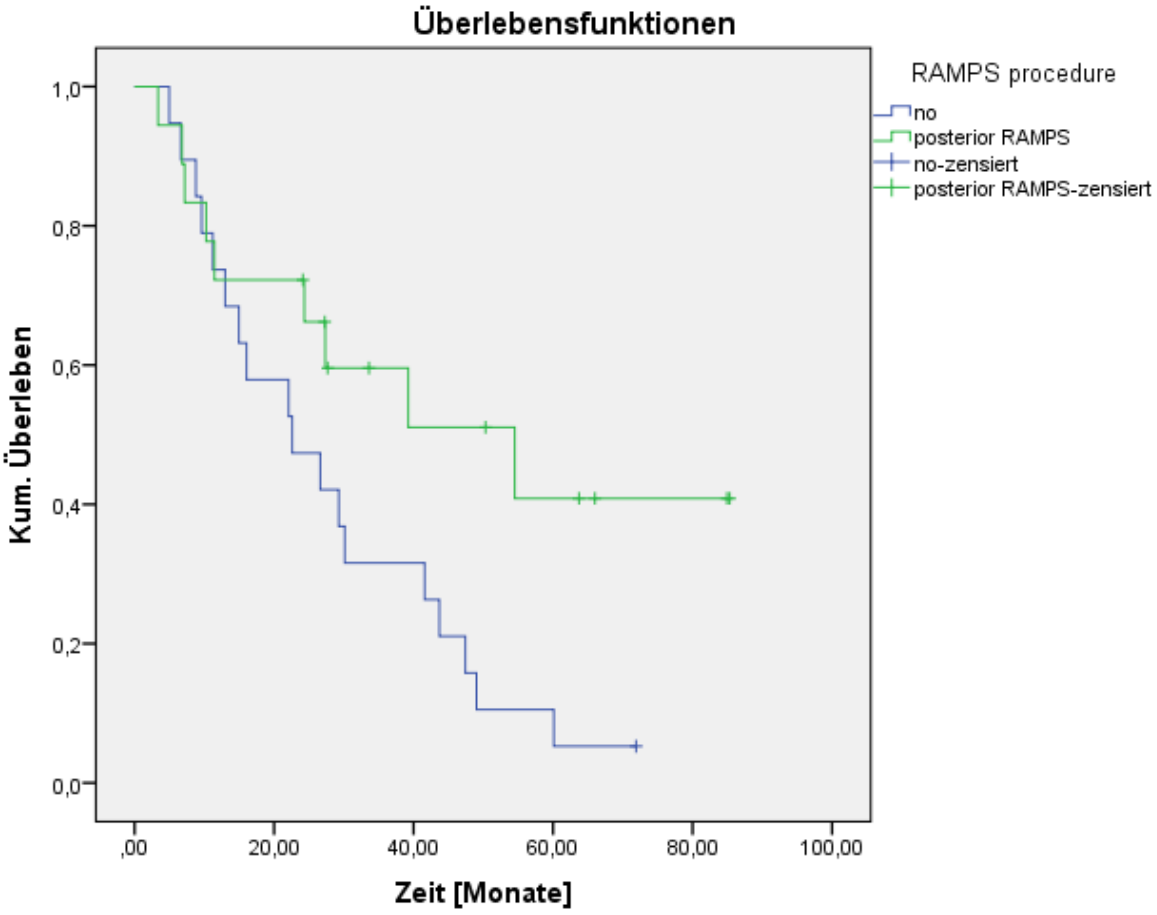
Results:

Nineteen patients received standard distal pancreatosplenectomy and eighteen patients had RAMPS procedure. Median survival in the RAMPS group was significantly higher compared to standard pancreatosplenectomy (22.6 vs. 54.5 months, p=0.035). Patients in RAMPS group tend to be older than the standard group (71.8 vs 60.8 years) without reaching statistical significance. There was no difference in gender or BMI in both groups. The majority of patients had the tumor located in the tail (72.2% RAMPS vs. 68.4% standard) and tumor size was similar in both groups (51.5mm RAMPS vs. 48.5mm standard). Operation time and intraoperative blood loss varied not signicantly with longer procedures (380 vs. 267min) and higher blood loss (1020 vs. 560ml) in RAMPS group. R0-resection was achieved in 83.3% of RAMPS procedure and 84.2% in standard pancreatosplenectomies. Tangential resection margins tend to be bigger in RAMPS group (8.8 vs 3.9mm) without statistical significance. The count of dissected lymph nodes wasn´t different in RAMPS procedure (17.2) compared to standard pancreatosplenectomy (16.2). More patients receiving RAMPS procedure suffered from major complications (44.4%) compared to standard group (26.3%).

Conclusion:

RAMPS procedure leads to better long time survival in patients with adenocarcinoma in the body and tail of pancreas. Interestingly we couldn´t find any difference in the surgical oncologic outcome since there was no difference in R0-resection or count of total dissected lymph nodes. Better survival could be explained with higher radicalness of RAMPS procedure and bigger tangential resection margins. Our data suggest that RAMPS procedure should be considered as the new standard for oncologic resections of the left pancreas.

Picture:



Cumulative survival

Better survival of patients developing pulmonary metastases after resection in pancreatic cancer

(Abstract ID: 297)

F. Popp[1], T. Kalinski[2], M. Popp[1], M. Klippstein[2], M. Suchan[2], H. Ptok[2], Y. Zhao[1], C. Betzler[1], H. A. Schlößer[1], M. Bludau[1], C.. J. Bruns[1]

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Background:

Pancreatic ductal adenocarcinoma (PDAC) has the highest mortality rate among all solid tumors with a median survival of only 2 years under maximum therapy. More than 50 % of all patients develop metastases within one year. Question is, if different types of metastases define subgroups of PDAC with regard to tumor biology. The next question is, if these subgroups can be predicted using biomarkers analyzed at the time of tumor resection. Especially biomarkers assessing the immune infiltrate of the tumor are interesting, because the immune response might influence progression of PDAC.

Materials and methods:

We analyzed 82 patients undergoing pancreatic resection for PDAC from 2008 to 2014. Hereto we assessed data describing the surgical procedure, adjuvant therapy, morbidity, mortality as well as the first tumor recurrence and survival. Moreover immunohistochemistry was performed on tumor samples to evaluate expression of CD8, Foxp3 and IFIT3. For CD8 and Foxp3 evaluation positive cells of 3 high power fields were counted and the average positive cell number was calculated. IFIT3 expression was assessed using a score defined by the staining intensity. These three biomarkers were chosen to assess the immune response towards the tumor and expression levels were related to the type of tumor recurrence.

Results:

After pancreatic resection 51 patients developed metastases during the observation time. Patients that developed local recurrence (n = 11) survived significantly longer compared to those developing liver metastasis. Interestingly the 6 patients that developed pulmonary metastases survived significantly longer compared to patients developing all other types of metastases. They especially survived longer compared to patients with local recurrence. Biomarker analysis shows a trend towards lower IFIT3 and Foxp3 expression in patients with pulmonary metastases but did not reach statistical significance most likely because of small patient numbers.

Conclusion:

Patients developing lung metastases define a favorable subgroup after pancreatic resection for PDAC. There might be a favorable biomarker configuration associated with the development of lung metastases. Biomarkers are therefore a promising tool to predict progression of pancreatic cancer. The immune response to the tumor might govern the progression pattern of pancreatic cancer.

Technical considerations: in situ split for targeting the right posterior sector for staged left trisectionectomy or mesohepatectomy in patients with marginal future liver remnant

(Abstract ID: 320)

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[2]*Universitätsmedizin Rostock, Rostock*

Background:

Associating Liver Partition with Portal Vein Ligation for Staged Hepatectomy (ALPPS) has increased the rate of liver resections in patients with marginal future liver remnant. We here describe a modified ALPPS procedure with splitting-off the right posterior sector for staged left trisectionectomy or mesohepatectomy in patients marginal liver remnant

Materials and methods:

In three patients the right posterior sector (segment 6/7) was transected from the central and left liver segments. Additionally, in two of these patient this in situ split was accompanied by splitting-off the left lateral sector (double in situ split - DALPPS). This induces a rapid hypertrophy of future liver remnant in all patients. An intrahepatic right posterior approach during splitting-off the right posterior sector is introduced as a part of this procedure. This approach facilitates the dissection and ligation of the right anterior branch of the portal vein (segment 5 and 8) while the liver hilum remains untouched during the first step of surgery.

Results:

Three patients (one patient with advanced neuroendocrine tumor and two patients with advanced gall-bladder cancer) were treated with splitting-off the right posterior sector till date. In the 2 patients with advanced gall-bladder cancer a double in situ split with transection of the left lateral sector was performed to preserve a maximum of liver tissue. After a short interval (7-9 days), a rapid hypertrophy of the future liver remnant was observed (hypertrophy of 54.6%, 64% and 72.6%). The staged liver resection (left trisectionectomy in one case and staged mesohepatectomy in two cases with advanced gall-bladder cancer) was performed safely. The staged mesohepatectomy included caudate lobectomy and resection of the extrahepatic bile duct with blioeneteric anastomosis. There was no surgical-technical morbidity. No signs of posthepatectomy liver failure according to the 50-50 criteria were seen. However, one patient died from severe ARDS attributed to the preoperative chemotherapy. Nevertheless, this complication is deemed to be surgery related.

Conclusion:

The concept of in situ splitting and staged hepatectomy allows also targeting of the right posterior sector. This offers new tailored therapeutic options for patients with advanced liver disease. However, careful patient selection is mandatory to prevent morbiditiy and mortality.

Postoperative Pancreatic Fistulas Complicated by Haemorrhage: Diagnosis and Treatment

(Abstract ID: 331)

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Background:

We reviewed our experience with pancreatic fistulas complicated by major bleeding.

Materials and methods:

Between 2001 and September 2015, 307 consecutive patients underwent pancreatoduodenectomy (n=304) or central pancreatectomy (n=3). All patients were reconstructed by pancreatojejunostomy in a single layer technique (2001 - 2007) or by duct-to-mucosa anastomosis (2007-2015).

Results:

Overall mortality was 3.6% (11 of 307). The incidence of pancreatic fistula was 27% according to the definition of the ISGPF. Seven patients (four males, three females, age 66.7years, range 61 - 74) with pancreatic fistulas developed late postpancreatectomy haemorrhage (PPH). Time from surgery to PPH was 17.6 days (range 11 - 32). CT, angiography and endoscopy were applied for diagnosis. While endoscopy and CT were initial diagnostic tools in the early study period, angiography was the primary measure since 2009. In all patients, the arroded stump of the gastroduodenal artery was the localization of PPH. Initial treatment was surgery in three patients and angiographic stenting in four. Additionally, percutaneous drainage was mandatory to evacuate fluid retentions in individual patients. One patient died due to repeated rebleeding and consecutive multiple organ failure. The remaing six patients (two with surgery and four with angiograpic intervention) survived and were hospitalized for 65 days (range 29 - 121).

Conclusion:

During the study period we changed our treatment strategy from initial surgery to angiographic stenting which is our preferred technique to treat this life-threatening complication. In patients with pancreatic fistulas and suspected PPH, angiography is the first diagnostic and therapeutic tool with surgery being reserved for salvage therapy.

No impact of “in-situ split” (ISS) liver resection on proliferation, apoptosis and angiogenesis as compared to “standard liver resection” (SLR) for colorectal liver metastases (CRLM)

(Abstract ID: 380)

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Background:

ISS liver resection, also known as ALPPS (Associating Liver Partition and Portal vein Ligation for Staged hepatectomy), is a novel two-stage strategy to induce rapid growth of the future liver remnant (FLR). In some patients, this strategy enables resection of initially irresectable disease. However, the effects of ISS on tumor growth and progression are not clear so far. The aim of this study was to assess the impact of ISS on tumor proliferation, apoptosis and angiogenesis in CRLM.

Materials and methods:

6 patients with CRLM undergoing ISS procedure were matched with 11 patients who underwent SLR regarding size and number of metastases, time of appearance (syn-/metachronous), preoperative chemotherapy, characteristics of primary tumor (localization, TNM-stage, grading) and patient variables (age, gender). The largest resected metastasis was used for the analyses. Tumor specimens were immunohistochemically examined for tumor cell proliferation (Mib-1), apoptosis (TUNEL, caspase-3), vascularization (CD31) and pericytes (αSMA) at the tumor invasion front.

Results:

All patients in the ISS group underwent extended right hepatectomy (+/- Seg. I, n=3 each). SLR included 6 patients with multiple atypical resections, 1 right and 1 left hemihepatectomy, 1 left hemihepatectomy with atypical resection on the right side and 2 extended right hepatectomies. Vascularization (CD31; p=0.149), proliferation (Mib-1; p=0.244) and αSMA-expression (p=0.205) did not significantly differ between the two groups, although a trend towards less proliferation and αSMA-expression in the ISS group was observed. Regarding apoptosis, caspase-3 staining showed significantly less apoptotic cells upon ISS ($p<0.0001$), but this could not be confirmed by TUNEL staining (p=0.7344).

Conclusion:

ISS liver resection does not affect tumor proliferation, apoptosis or angiogenesis as compared to SLR for CRLM. The difference in caspase-3 was not confirmed by TUNEL staining. Although results should be interpreted carefully due to a small number of patients and potential differences in tumor biology between both groups, this study indicates that ISS liver resection does not stimulate tumor progression.

Outcome of liver transplantations and liver resections in patients with Caroli-Syndrome

(Abstract ID: 441)

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Background:

Caroli-Syndrome is a congenital intrahepatic bile duct dilatation which can lead to fibrotic and cirrhotic liver morphology. Recurrent infectious complications due to cholangitis and intrahepatic carcinoma are secondary problems. The aim of this study was to analyse the outcome of patients with Caroli-Syndrome undergoing anatomical liver resection or transplantation.

Materials and methods:

Between January 2004 and May 2015 in total 1060 anatomical liver resections and 557 liver transplantations were performed in our tertiary centre. Data of patients with Caroli syndrome were retrospectively collected in a data base regarding preoperative and surgical parameters (e.g. age, gender, body mass index, American Society of Anesthesiologists score, Charlson index, comorbidity, lab values, length of operation, extend of operation), postoperative course and complications.

Results:

Two patients (0.4%) underwent liver transplantation and in 14 patients (1.3%) anatomical liver resection was necessary due to Caroli-Syndrome. One liver transplantation was a living split-liver-transplantation, the other one was a postmortal transplantation. Except of a biliary stricture, which was treated successfully with biliary stenting, the postoperative follow-up over five years was uneventful. In comparison to other entities, patients resected due to Caroli-Syndrome were predominantly young females (79%) with low ASA score (mean score 2). Length of operation and hospital stay was shorter and postoperative morbidity was lower compared to other entities. In two patients postoperative bilioma occurred, in one patient surgical revision was necessary. There was no death during the median follow-up of over five years. In four patients intrahepatic carcinoma was histologically confirmed ranging from localized T1 to T3 tumors. In one of these patients postoperative chemotherapy was performed, in another patient liver metastasis were resected about one year after the primary resection.

Conclusion:

Liver transplantations and liver resections due to Caroli-Syndrome are rare. Overall these surgical procedures are associated with a low postoperative morbidity and no mortality. In case of extensive biliary affection and morphological change of the liver, liver transplantation should be performed as early as possible to avoid recurrent septic cholangitis or development of intrahepatic carcinoma.

10 years recurrence rates after liver transplantation for hepatocellular carcinoma

(Abstract ID: 480)

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Background:

Tumor recurrence is the leading cause of death after liver transplantation (LT) for HCC. Numerous studies in the literature deal with the frequency of recurrence, but only few studies give cumulative estimators of the 5 year recurrence. Only two studies consider the competing risk of dying from other causes before the diagnosis of recurrence. In some studies patients who died during the first two months after LT (before recurrence can occur) are included. Reported recurrence rates vary from 7.3% to 48.9%.To identify factors influencing intra- and extra-hepatic recurrence, we reviewed patients treated at our department from 1995 to 2014.

Materials and methods:

Our tumor registry provided data on age, sex, Child stage, AFP, tumor diameter, number of tumors, venous invasion on histological definitve examination (VI), Milan-, BCLC and Duvoux-score, and time and location of recurrence of 147 consecutive adult patients. Patients who died within three months after LTX were excluded. All patients were followed until death, until July 1st 2016, or at least for 10 years. Patients with recurrence were treated in curative intent whenever possible. We differentiated between intra-hepatic (within the liver ± distant metastases) and extrahepatic (distant metastases only) recurrence (IHR and EHR, respectively). For multivariate analyses a COX-model was used

Results:

After a median follow-up time of 48 (3-148) months after LT, 15 patients had IHR, 28 had EHR. The respective cumulative 10 year recurrence rates (10-Y RR) were 11 ± 3%, and 23 ± 4%. 10-Y RR for total recurrence were statistically significantly influenced by Milan-, BCLC- and Duvoux-Score (p= 0.013, 0.045, and <0.001, respectively), number of tumors (p=0.002), AFP-level > 100 ng/ml (p=0.018), and VI (p<0.001). 10-Y RR for EHR followed the same pattern. For IR, we did not see a statistically significant difference in 10-Y RR for Milan, AFP and BCLC-score.

5- and 10 year overall survival rates were 61% and 43% respectively. Median time fom LT to recurrence was 12 months. Median survival after diagnosis of IHR/EHR were 2 and 18 months; median survival after curative/palliative therapy of recurrence were 38 and 6 months

Sex, loco-regional therapy before LT, type of LTX (LT / LDLT) , multiplicity, diameter of lesions (maximum), α-Fetoprotein level at time of diagnosis, portal vein thrombosis , Child stage had no statistically significant influence on 10-Y RR in univariate analysis. Venous invasion, Milan-, BCLC and Duvoux-score were included in a COX model. Only Duvoux-score and venous invasion proved to be of independent impact on 10-Y RR for cumulative 10 year recurrence rates (p=0.013, HR 2.920; p<0.001, HR 3.896; respectively). The same factors influenced cumulative 10 year recurrence rates for extra-hepatic recurrence (p=0.022, HR 3.602; p=0.002, HR 4.128; respectively). For intra-hepatic recurrence only venous invasion independently influenced 10-Y RR (p=0.031, HR 3.744).

Table:

	group	n	% recurrence	10 year recurr.rate	95% conf. interval
Total	All patients	147	33%	34%	
Milan	Milan in	56	18%	19%	11-34%
	Milan out	91	42%	43%	34-54%
Duvoux Score	low risk	67	13%	14%	8-26%
	high risk	80	49%	50%	40-63%

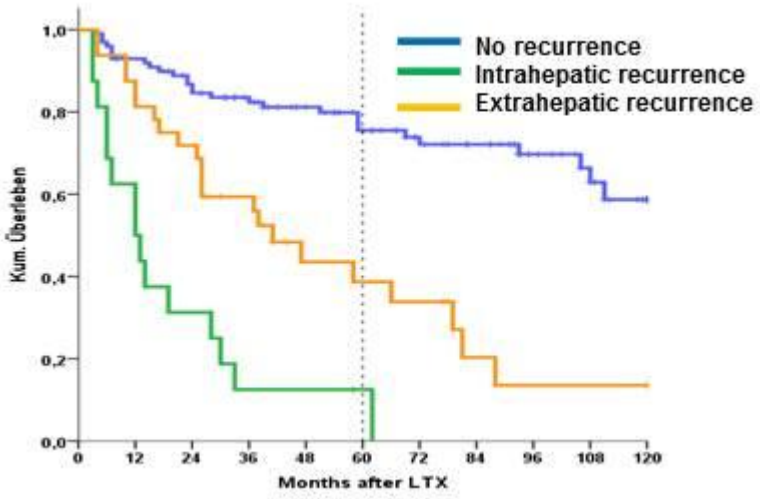
Legende: 10 year cumulative recurrence rates-dying of other causes as competing risk

Conclusion:

Tumor recurrence rates are not only influenced by biological variables, but also by the statistical approach. Insufficient follow-up time, inclusion of patients without a chance to show recurrence and small sample size may lead to underestimation.

Tumor recurrence after LT is a multifactorial phenomenon. The most important factor is the tumor burden in the liver at the time of LT (Milan, UCSF). Scores which add other factors like α-fetoprotein level (Duvoux-score) or vessel invasion (TNM-staging) improve the estimation.

Picture:



10 year observed survival depending on kind of recurrence

Quarter century experience of pancreatic surgery in a high volume center - a SWOT analysis of 2787 consecutive pancreatic resections

(Abstract ID: 484)

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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.

Materials and methods:

Between january 1990 and september 2015 an overall of 2787 consecutive patients have undergone pancreatic resection at our institution. The data of all patients were recorded in a prospective database. A retrospective SWOT analysis of all relevant parameters was performed.

Results:

A total of 2095 pancreatic head resections (75%), 444 distal pancreatectomies (16%), 168 total pancreatectomies (6%) and 80 other resections (3%) were performed within our study period. Indications for pancreatic resection included 1176 ductal adenocarcinomas (42%), 205 papillary carcinomas (7%), 242 distal bile duct carcinomas (9%), 32 duodenal carcinomas (1%), 122 neuroendocrine tumors (4%), chronic pancreatitis in 568 patients (20%) and others such as cystic lesions in 442 patients (16%). An additional vascular resection was performed in 250 patients (16%). 143 patients (5%) underwent additional liver resection. Overall postoperative morbidity occurred in 687 patients (25%) including postoperative pancreatic fistula formation in 168 patients after pancreatic head resection (8%). Perioperative mortality occurred in 85 patients (3%). Overall survival strongly depended on the underlying disease, as well as on lymph node stage ($p = < 0.001$) and surgical radicality ($p = <0.001$).

Conclusion:

Modern pancreatic surgery should be focused on high-volume centers to perform extended procedures in even more complex patients. The results of our study demonstrate that these complex procedures may nowadays be carried out safely in the setting of a high volume center with the potential of even long-term survival benefits in individual patients.

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Infected pancreatic fistula following pancreaticoduodenectomy and distal pancreatectomy – Differences in incidence, microbiology and clinical outcome

(Abstract ID: 499)

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Background:

Postoperative pancreatic fistula (POPF) is a potentially dangerous complication and contributes substantially to morbidity and mortality in pancreatic surgery. This study compares the infection rates of POPF, the microbiological spectra and clinical outcomes after distal pancreatectomy (DP) and pancreaticoduodenectomy (PD).

Materials and methods:

All patients undergoing DP and PD between 2005 and 2013 were analyzed for clinically relevant POPF (grade B and C). Infected POPF was identified by microbiological analysis of fluid from abdominal and interventional drains, and intraoperative swaps during relaparotomy. Demographic, surgical, and microbiological data as well as postoperative complications and outcome were examined.

Results:

Of 2,618 patients, 256 patients with POPF B and C were identified (9,8 %) and 209 of these 256 POPF were infected (81.6 %). The infection rate was significantly higher after PD than after DP (95.1 % vs. 64.3 %, $p<0.001$). The most frequently detected microbes after pancreatic resection included Enterococcus (20.5 %) and Candida species (16.6 %), Escherichia coli (13.7 %), Staphylococcus (10.2 %) and Klebsiella species (7.3 %). Staphylococcus species were significantly more common following DP (22.0 % vs. 4.9 %, $p<0.001$), whereas Candida and Klebsiella species were more frequent after PD (18.7 % vs. 11.8 %, $p=0,082$; 9,2 % vs. 3.1 %, $p=0.03$). Among all microbes, only Enterococcus faecium (EF) was consistently multi-resistant to most standard antibiotics and EF infection was associated with particularly poor outcome after DP (90-days mortality: 30.8 % vs. 8 % for all patients with POPF B and C after DP). After PD, infection with Candida albicans (CA) and the combination of CA and EF had the worst prognosis (90-days mortality: 41 % and 43,8 %, respectively vs. 23.6 % for all patients with POPF B and C after PD).

Conclusion:

Infection of POPF is a life-threatening complication in pancreatic surgery and more common after PD than after DP. Therefore, early use of reserve antibiotics covering multi-resistant EF and antifungal agents against CA should be considered in patients with proof of infected POPF.

Influence of early treatment in case of bile leakage on liver regeneration after liver resection

(Abstract ID: 526)

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[1]*Charité Virchow Klinikum, Berlin*

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[3]*Universitätsklinikum des Saarlandes, Homburg*

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Background:

Despite development of novel surgical techniques postoperative bile leakage represents a frequent complication in 2.6% to 25% after liver resection. An experimental study in a rat model has already shown that liver regeneration is inhibited by postoperative bile leakage. However less is known about the actual clinical impact of bile leakage. The purpose of this study was to evaluate the influence of postoperative bile leakage on the course of liver regeneration after partial liver resection and furthermore to identify the importance of an early treatment.

Materials and methods:

1529 patients underwent partial liver resection and received multiple dynamic liver function assessments in our department. In 111 patients postoperative bile leakage (PBL) occurred. Among these patients 51 were identified who had a continuous pre- and postoperative liver function assessment (standard liver function tests, ICG-PDR, LiMAx). Course of liver function was compared to an equally sized control group with no postoperative sign of bile leakage (control group).

Results:

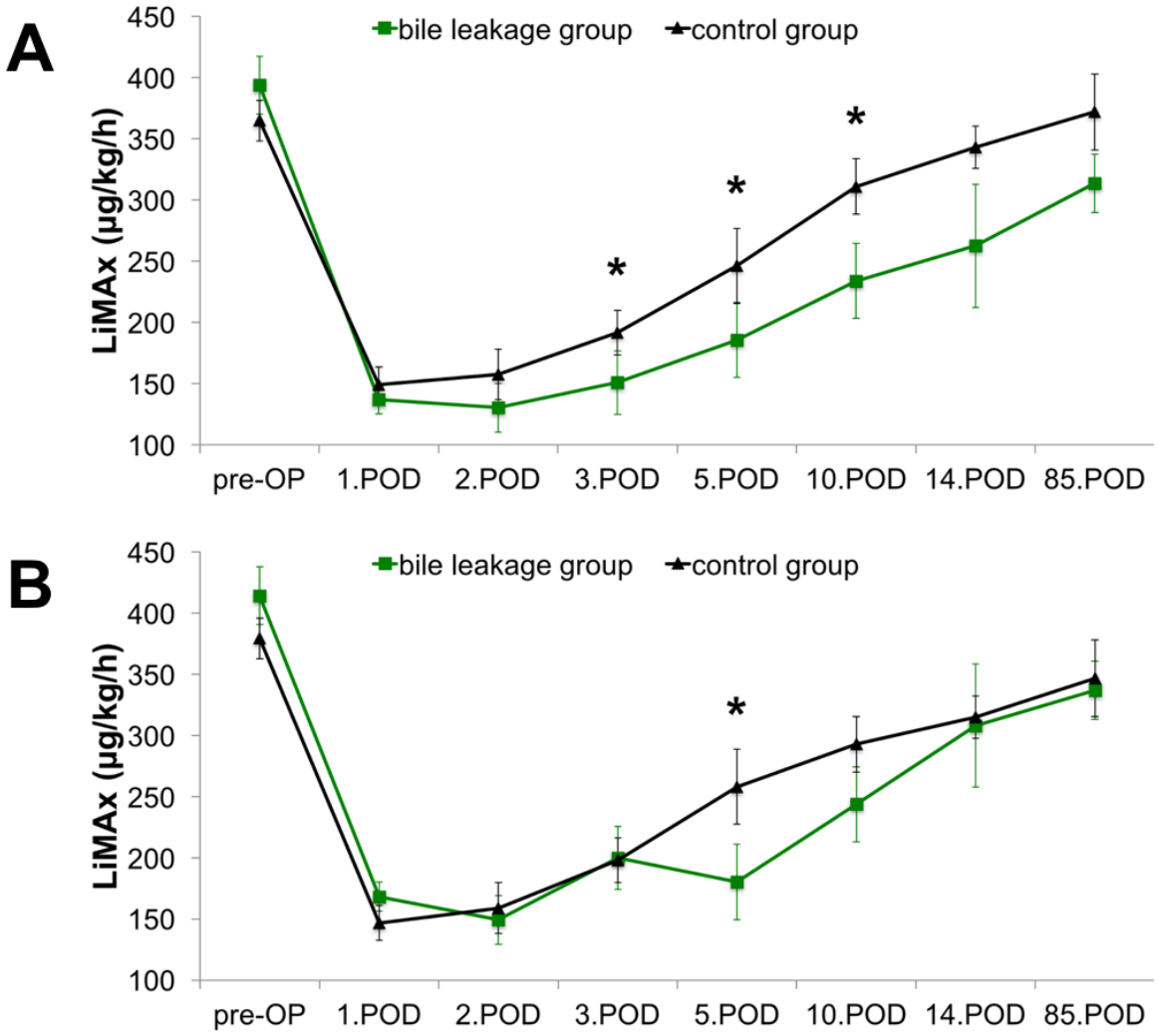
No statistical significant differences with respect to demographic data, primary diagnosis and operative data were accessed between the groups. Bilirubin, ICG-PDR and LiMAx showed delayed postoperative functional recovery after partial liver resection in the PBL-group compared to the control group. LiMAx was the only parameter showing a permanently reduced liver function regeneration continuously from the 3rd to 14th postoperative day.

A subanalysis regarding the influence of the time of diagnosis and final cessation of bile leakage showed a harmonization of functional liver regeneration with the control group if the postoperative bile leakage was diagnosed by the 5th postoperative day. However, if bile leakage was diagnosed later, a significant difference in functional liver regeneration was observed of the control group lasting up to the 85th POD.

Conclusion:

This is the first clinical data indicating that liver regeneration after partial liver resection is impaired by PBL and the importance of an early detection and treatment for a normal postoperative regeneration. This investigation therefore suggests routinely monitoring of postoperative liver function with dynamic liver function tests (e.g. LiMAx) in high risk situations.

Picture:



Course of regeneration after partial liver resection in case of diagnosis of bile leakage (A) after the 5.POD versus (B) until the 5.POD

The role of hepatectomy for liver metastases from pancreatic cancer

(Abstract ID: 537)

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Background:

The role of hepatectomy for patients with liver metastases from ductal adenocarcinoma of the pancreas (PLM) remains controversial. The present study examined the morbidity, mortality and long-term survivals after liver resection for PLM.

Materials and methods:

Clinicopathological data of patients who underwent hepatectomy for PLM between 1993 and 2015 were assessed and predictors of overall survival (OS) were identified.

Results:

During the study period 76 patients underwent resection for pancreatic cancer and concomitant hepatectomy for synchronous PLM. Pancreatoduodenectomy, distal pancreatectomy, and total pancratectomy were performed in 67%, 25% and 8% of the patients respectively. The median PLM size was 1 (1-13) cm and 36% of patients had multiple PLM. The majority of patients (97%) underwent a minor liver resection. After a median follow-up time of 130 months, 1-, 3-, and 5-year OS rates were 44%, 14% and 7%, respectively. Postoperative morbidity and mortality rates were 50% and 5%, respectively. Preoperative and postoperative chemotherapy was administered to 4% and 82% of patients, respectively. In univariate analysis, resection and reconstruction of the superior mesenteric artery (P = 0.016), T4 stage (P = 0.033), lymph node metastases (P = 0.016), poorly differentiated cancer (G3) (P = 0.037), and no postoperative chemotherapy (P= 0.005) were significantly associated with worse OS. In the multivariate analysis, poorly differentiated cancer (G3) (median OS 19 vs. 6 months; hazard ratio [HR] = 1.74; 95% confidence interval [CI] = 1.02-2.96; P = 0.042), and no postoperative chemotherapy (median OS 12 vs. 4 months; HR = 1.78; 95% CI = 1.01-3.14; P = 0.045) independently predicted worse OS.

Conclusion:

Liver resection for PLM is feasible and safe and may be recommended within the framework of an individualized cancer therapy. A multimodal treatment strategy including hepatectomy and systemic therapy for selected patients with less unfavorable tumor biology may provide prolonged survival in patients with metastatic pancreatic cancer.

Surgical treatment of 108 Patients suffering from intrahepatic cholangiocarcinoma (iCC) – a retrospective analysis

(Abstract ID: 556)

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Background:

Intrahepatic cholangiocarcinoma (iCC) is a tumor entity with increasing incidence. Surgery is the only curative option for patients suffering from this disease. We retrospectively analyzed the results of liver resection for iCC from our center.

Materials and methods:

Patients that underwent liver resection due to iCC at the Department of Surgery, University of Regensburg between 2004 and 2015 were included. As prognostic factors the T-, N-, M-, L-,V- and R-status as well as the grading and the number of tumors (solitary vs. multifocal) were analyzed.

Results:

108 patients were identified (51 females, 57 males). The median age was 65 (range 23-88). Surgical procedures included extended right hepatectomy (n= 29; 27%), extended left hepatectomy (n= 20; 18%), anatomic right hepatectomy (n= 15; 14%), anatomic left hepatectomy (n= 17; 16%) and atypical resection (n=27; 25%). Reconstructions of an artery, vein or bile duct were necessary in 4, 37 and 39 cases, respectively. Median hospital stay was 18.5 days from admission to discharge (range 5-91). Severe complications (>= °IIIa) according to the Dindo-Clavien classification occurred in 35 patients (32%) including 7 patients (6,5%) who died during their stay in hospital. Reasons for this were septic multiorgan failure after biliary leckage (4), postoperative bleeding requiring mass transfusion with subsequent bowel ischemia (2) and cardiogenic shock (1). T1, T2, T3 and T4 stadium was found in 36 (33,3%), 37 (34,3%), 26 (24%) and 9 (8,4%) cases, respectively. 37 (34%) Patients had lymph node (LN) metastases and distant metastases were found in 8 patients (7%). R0-resection was achieved in 85 patients (79%), R1-resection in 19 patients (17%) and R2 status in 4 patients (4%). 85 (79%) patients had a solitary tumor and 23 (21%) patients had multifocal disease. The median overall survival (OS) was 23.5 months (range 0-128). Median OS in patients with solitary disease was 27 months vs. 21 months upon multifocal disease. Depending on the resection margin, the mean OS was 35, 34 and 8 months for R0, R1 and R2 resections, respectively. In univariate analysis a significant difference in OS between R2-resection and R0- or R1-resection ($p<0.001$) was found. However, the only significant prognostic factor in multivariate analysis predicting an inferior OS in this population was LN metastasis ($p=0.005$).

Conclusion:

Liver resection is the only curative therapy option for patients with iCC although significant morbidity and mortality was found. In this analysis, lymph node metastasis was identified as the only prognostic factor.

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Significant impact of dynamic liver function on recurrence-free survival after curative liver resection for HCC

(Abstract ID: 559)

E. Blüthner[1], J. Bednarsch[2], M. Kaffarnik[3], P. Binder[3], J. Pratschke[3], M. Stockmann[3]

[1]*Charité Virchow Klinikum, Berlin*

[2]*Universitätsklinikum RWTH Aachen, Aachen*

[3]*Charite Virchow Klinikum, Berlin*

Background:

Hepatocellular carcinoma is the fifth most prevalent cancer worldwide. High tumour recurrence is the major reason for patient's low 5-year survival rate ranging from 26 - 58%. The aim of this study was to investigate the impact of preoperative liver function on long-term outcome after surgical resection of HCC in curative intent as well as to define prognostic risk factors for impaired disease-free and overall survival rate.

Materials and methods:

The outcome of the 100 patients that had underwent curative resection for HCC at our department from 2008 to 2013 was analysed based on an institutional database. Only patients with preoperative dynamic liver function assessment (LiMAx, ICG-PDR) and histological assurance of HCC were included in the analyses. Univariate analysis of prognostic variables was performed using a survival analysis according to Kaplan-Meier. Multivariate analysis was carried out with Cox proportional hazards regression model.

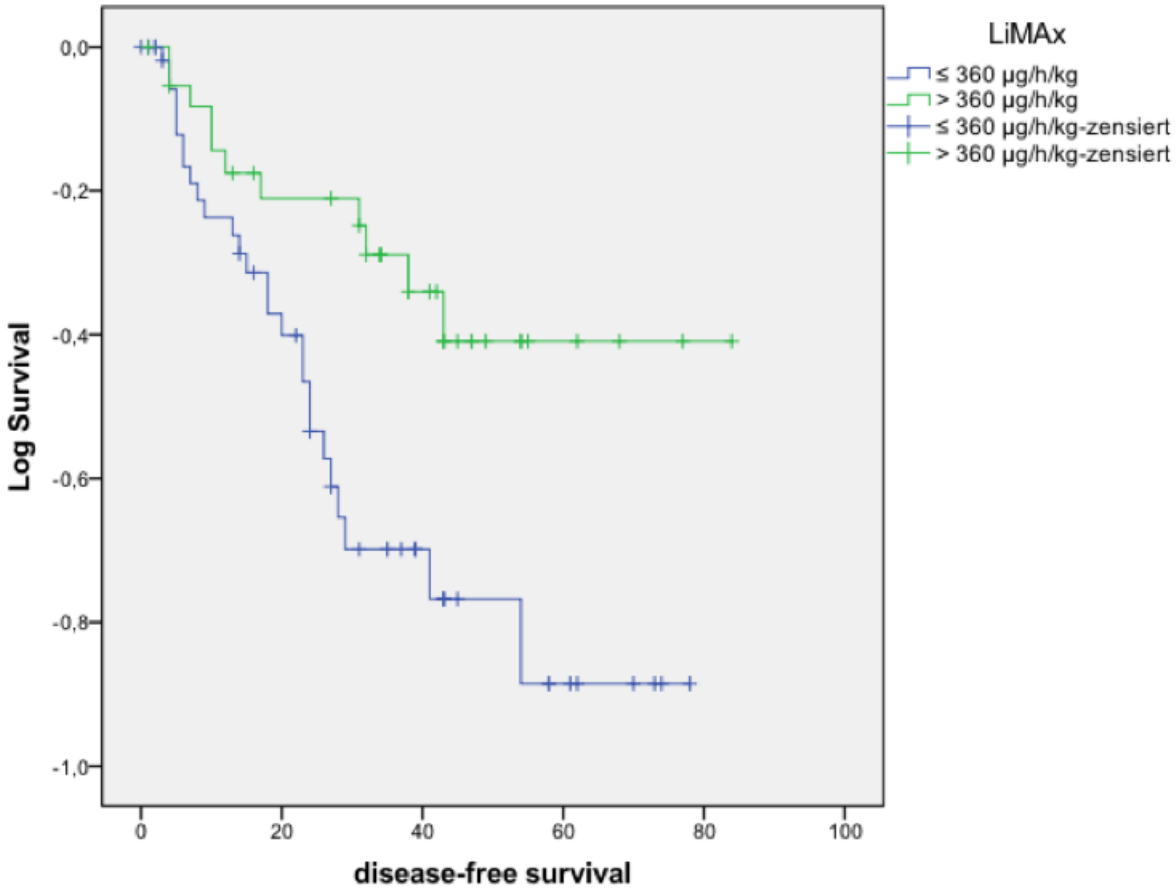
Results:

The cumulative 1-, 3- and 5-year survival rates were 83 %, 52 % and 15 %, respectively. The 1-, 3- and 5-year disease-free survival rates were 74 %, 40 % and 10 %, respectively. Unfavourable factors of recurrence were age, liver function (ICG-PDR and LiMAx), MELD score, tumour grading, number of tumours, vascular invasion, tumour stage, duration of mechanical ventilation, ICU stay and postoperative complications. The multivariate analysis yielded preoperative liver function capacity ($p = 0.023$) and tumour grading ($p = 0.022$) as independent predictors of recurrence-free survival.

Conclusion:

This is the first report showing that preoperative liver function has a significant impact of recurrence-free survival after curative liver resection. The combined information of high tumour grading and low liver function (LiMAx <= 360 µg/h/kg) warrants full attention when patients are assigned to treatment regimes. Particular patients with high risk of recurrence after surgical treatment should be evaluated for liver transplantation if feasible or should undergo a close postoperative oncological follow-up.

Picture:



Recurrence-free survival curves for 100 patients with LiMAx ≤ 360 µg/h/kg versus LiMAx > 360 µg/h/kg with primary HCC after liver resection

Laparoscopic left lateral liver resection is a safe procedure in cirrhotic patients

(Abstract ID: 560)

B. Strücker[1], A. Andreou[1], P. Haber[1], N. Raschzok[1], G. Atanasov[1], I. M. Sauer[1], M. Biebl[1], R. Zorron[1], R. Öllinger[1], M. Bahra[1], A. Pascher[1], J. Pratschke[1], M. Schmelzle[1]

[1]*Charité - Universitätsmedizin Berlin, Berlin*

Background:

Patients suffering from liver cirrhosis have a higher risk for postoperative liver failure and associated complications.

Materials and methods:

We retrospectively analyzed the postoperative course of all consecutive patients undergoing laparoscopic left lateral liver resection between July 2009 and September 2016 at our center and compared patients suffering from Child A liver cirrhosis with non-cirrhotic patients.

Results:

We performed 39 laparoscopic left lateral liver resections between July 2009 and September 2016, of which 8 patients were excluded from the analysis due to extended operations (e.g. combined with partial small bowel resection, left hemicolectomy). Five of the remaining 31 patients suffered from Child A cirrhosis at the time of resection. Indications for cirrhotic patients included HCC (n=5), for non-cirrhotic patients adenoma (n=8), FNH (n=6), CRLM (n=4), hemangioma (n=3), metastasis other than colorectal (n=3), hepatic cysts (n=1) and biliary abscess (n=1). Cirrhotic patients were significantly more often male (p=0.027) and significantly older (median 75 years vs. 48 years; p=0.009) compared to non-cirrhotic patients. Length of operation was not significantly different in both groups (non-cirrhotic: median 193 min. vs. non cirrhotic: median 222 min.; p=0.752). While five non-cirrhotic patients (19.2%) had a postoperative complication (grade II (n=3), grade 3a (n=1), grade IIIb (n=1), no complications were observed in the cirrhotic group. No mortality was observed in neither of the groups. Length of hospital stay did not significantly differ between the two groups (median 6 days vs. median 7 days; p=0.129).

Conclusion:

Laparoscopic left lateral liver resection is feasible and safe in patients suffering from Child A liver cirrhosis. Although patients in this group were significantly older when compared to non-cirrhotic patients, the length of operation, postoperative morbidity and length of hospital stay did not significantly differ. Further studies with larger patient cohorts are needed to verify our observations.

Liver transplantation or liver resection for cirrhotic patients with hepatocellular carcinoma: comparison of long-term survival

(Abstract ID: 565)

A. Andreou[1], F. Krenzien[1], B. Strücker[1], N. Raschzok[1], C. Benzing[1], G. Atanasov[1], M. Bahra[1], R. Öllinger[1], I. M. Sauer[1], A. Pascher[1], M. Schmelzle[1], J. Pratschke[1]

[1]*Charité Universitätsmedizin Berlin, Berlin*

Background:

Both liver transplantation (LT) and liver resection (LR) represent curative treatment options for hepatocellular carcinoma (HCC) in patients with liver cirrhosis. With regard to improvements in oncological liver surgery, we here analyzed outcome relevant changes between historical and more recent patient cohorts scheduled for LT and LR.

Materials and methods:

All patients with HCC and cirrhosis who underwent LT or LR between 1989 and 2011 at the Charité in Berlin, Germany were included in the retrospective analysis. Overall survival was analyzed focusing on changes between different time periods and relevance of tumor burden, as classified by Milan criteria (MC).

Results:

In total, 364 and 141 patients underwent LT and LR for HCC in cirrhosis, respectively. Postoperative morbidity (52% vs. 14%, p<0.0001), but not mortality (6% vs. 3%, p=0.06), was higher after LR than after LT for HCC. In the period 1989 - 2004, overall survival (OS) was significantly higher in patients who underwent LT compared to LR, both within MC (5-year OS: 77% vs. 36%, p<0.0001) and beyond MC (5-year OS: 45% vs. 19%, p=0.016). Interestingly, in the more recent period 2005 - 2011, OS was comparable between LT and LR both within MC (5-year OS: 73% vs. 53%, p=0.122) and beyond MC (5-year OS: 33% vs. 38%, p=0.370).

Conclusion:

We noted improved postoperative and long-term outcomes after partial hepatectomy in recent years, comparable to stable results after LT. Whether those improvements are due to advances in liver surgery, e.g. new surgical techniques such as laparoscopic approaches and improved perioperative management of patients with cirrhosis, appears plausible. In the light of organ shortage, patients with HCC and compensated cirrhosis should be evaluated for liver resection in specialized hepatobiliary centers.

Comparison of standard multiport vs. reduced port left lateral liver resection

(Abstract ID: 566)

B. Strücker[1], A. Andreou[1], P. Haber[1], N. Raschzok[1], G. Atanasov[1], I. M. Sauer[1], R. Zorron[1], M. Biebl[1], R. Öllinger[1], M. Bahra[1], A. Pascher[1], J. Pratschke[1], M. Schmelzle[1]

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Background:

Reduced port laparoscopic liver surgery, applying a single incision (SILS) port, evolves as a new approach for minimal invasive resections of benign and malignant liver tumors. So far, it remains unclear which patients can benefit from this approach the most.

Materials and methods:

We retrospectively analyzed the postoperative course of all consecutive patients between 2009 and 2016 undergoing laparoscopic left lateral sectionectomy at our center.

Results:

In total, 39 minimal-invasive left lateral sectionectomy were performed at our center between July 2009 and September 2016. Thirty-one were performed in standard multiport and 8 in SILS reduced port technique. Five patients of the multiport group and three of the reduced port group were excluded from the analysis due to multivisceral resections (e.g. combined with left hemicolectomy, partial small bowel resection, left adrenalectomy). Indications included adenoma (n=7 vs. n=1), FNH (n=4 vs. n=2), HCC (n=4 vs. n=1), liver metastasis other than colorectal (n=2 vs. n=1), CRLM (n=4 vs. n=0), hemangioma (n=3 vs. n=0), liver abscess (n=1 vs. n=0) and cysts (n=1 vs. n=0). Patients were suffering from Child A liver cirrhosis in 15.4% and 20% of cases, respectively. Five patients in the mulitport group suffered from postoperative complications (grade II: n=3, grade IIIa: n=2), while no complications were observed in the SILS reduced port group, resulting in a morbidity rate of 19.2% and 0%, respectively. No mortality was observed in both groups. Length of hospital stay did not significantly differ in both groups (median 7 vs. 5 days, p=0.367). Length of operation was significantly shorter in the reduced port group (206 min. vs. 149 min., p=0.031).

Conclusion:

Single incision left-lateral sectionectomy is a safe and quick procedure even in cirrhotic patients. Shorter operation times using single-incision laparoscopy might be associated to easy retrieval of the liver specimen via the umbilical single-incision with no need for further incisions. Prospective, randomized trials are needed to further clarify the benefits of reduced port liver resections.

Novel Biological Resection Criteria for Safe and Oncologically Satisfying Resection of Early Hepatocellular Carcinoma

(Abstract ID: 581)

M. Schoenberg[1], H. Anger[1], J. Hao[1], A. Vater[1], J. Bucher[1], M. Thomas[1], M. Angele[1], A. Bazhin[1], J. Werner[1], M. Guba[1]

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Background:

Liver resection (LR) and liver transplantation (LT) are potentially curative treatment options for hepatocellular carcinoma. Available criteria, such as the MILAN-Criteria, largely rely on tumor burden but have a low selectivity in terms of outcome and are not helpful to decide, who should be resected and who should primarily receive a transplantation.

We have developed simple criteria based on inflammatory markers and liver function tests which differentiate HCC patients with good and poor oncological outcome after liver resection.

Materials and methods:

Patients with HCC confined to the liver undergoing liver resection and/or transplantation were included into the analysis. The Biological Resection Criteria (BRC) were constructed from age, Aspartate Aminotransferase, International Normalized Ratio, platelets, CRP and albumin. The patients were grouped in within and outside the BRC. The analysis was conducted with an intention-to-treat (ITT) design.

Results:

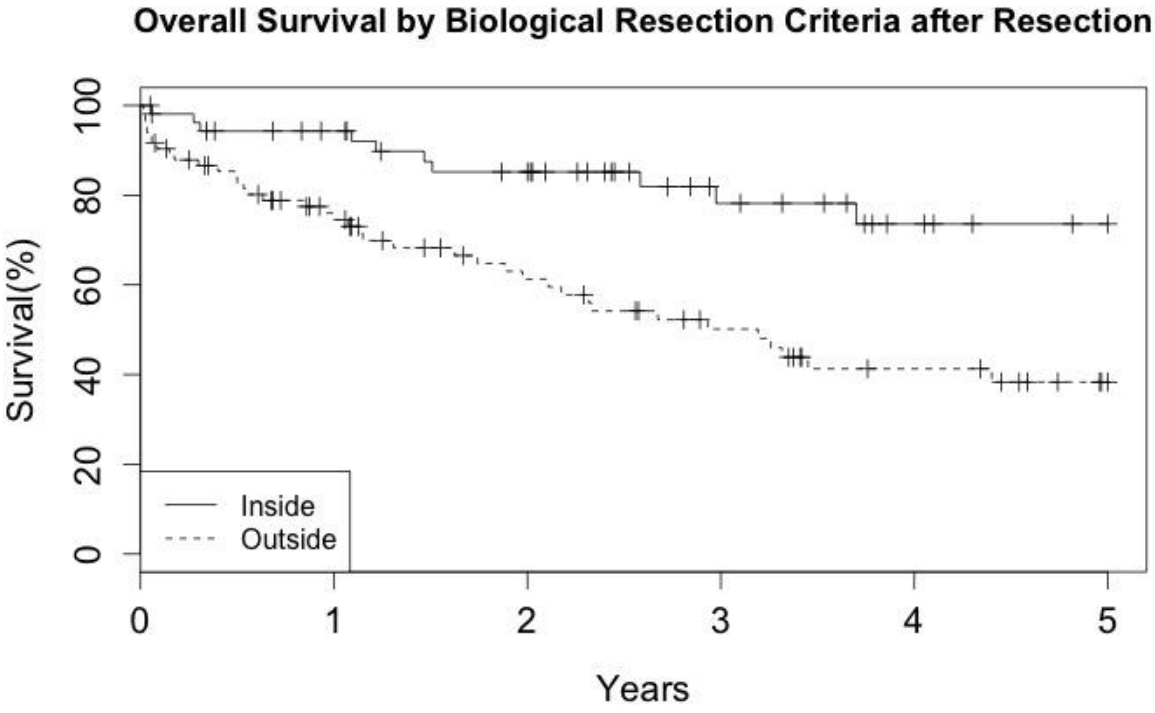
Survival of patients undergoing LR (n=151) within the BRC showed a 5-year overall-survival (OS) of 73.6% as compared to patients outside the BRC 38.6%, ($p<0.001$). In the multivariate analysis the BRC predicitved OS and DFS independently. The BRC had no influence on outcomes after LT (OS $p=0.321$).

Conclusion:

The Biological Resection Criteria differentiates well between patients with good oncological outcome after resection and those with poor oncological outcomes, who should primarily receive a transplant.

Innov Surg Sci 2017; 2, (Suppl 1): s1–s168

Picture:



Overall Survival of patients within and outside Biological Resection Criteria (BRC) after liver resection

Effect of diabetes and obesity on short-term outcome after major liver resection

(Abstract ID: 631)

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Background:

Patient-related risk factors such as diabetes mellitus and obesity are increasing in western countries. At the same time the indications for liver resection in both benign and malignant diseases have been significantly expanded in recent years. Major liver resection is performed more frequently in a patient population of increasing age, comorbidity and rate of neoadjuvant chemotherapy. The aim of this study was to evaluate whether diabetes mellitus, obesity and overweight are risk factors for the short-term post-operative outcome after major liver resection.

Materials and methods:

Four hundred seventeen major liver resections were selected from a prospective database on liver resections performed at the Department of General and Transplantation Surgery, University of Heidelberg, which contained 1,619 liver resections during the study period from September 1, 2008 to December 31, 2014. Exclusion criteria included antecedent liver resection and synchronous major intra-abdominal procedure. Overweight was defined as BMI between 25 and 30 kg/m² and obesity as BMI higher than 30 kg/m². Primary end point was 90-day mortality and logistic regression was used for multivariate analysis. Secondary end points included morbidity, Clavien-Dindo classification, unplanned readmission, bile leakage, and liver failure. Morbidity was defined as occurrence of a post-operative complication during hospital stay or within 90 post-operative days.

Results:

Fifty-nine patients had diabetes mellitus (14.1 %), 48 were obese (11.6 %) and 147 were overweight (35.5 %). Ninety-day mortality was 11.8 % and morbidity was 59.8 %. In multivariate analysis, diabetes was an independent predictor of morbidity, Clavien-Dindo grade IV complications, unplanned readmission and bile leakage. Additionally, it was associated with significantly higher rates of pneumonia, respiratory decompensation, acute renal failure and wound healing disorders in univariate analysis. Obese and overweight patients did not have an impaired post-operative outcome compared to normal weight patients.

Conclusion:

Major liver resection is a safe procedure in obese and overweight patients. Diabetes has direct influence on the peri-operative outcome with an increased risk of morbidity but not mortality. Preoperative identification of high-risk patients will potentially decrease complication rates and help to undertake adequate counseling as part of the shared decision-making process.

Pancreatic stump closure techniques & pancreatic fistula formation after distal pancreatectomy: a meta-analysis

(Abstract ID: 666)

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Background:

Pancreatic fistula (PF) is a frequent complication after distal pancreatectomy (DP), but the best technique of pancreatic stump closure for reducing PF rates after DP is still under controversial debate.

Materials and methods:

Systematic search and review of Pubmed/Medline, ISI Web of Knowledge, The Cochrane Library, and meta-analysis of studies that compared the PF rates (PFR) subsequent to at least two different techniques of pancreatic stump closure during DP.

Results:

A total of 9 randomized controlled trials (RCTs), 11 prospective and 57 retrospective studies were eligible. Stapler closure resulted in a reduced PFR when compared to manual sutures of the pancreatic stump (26% vs. 31%, OR 0.73, p=0.02), whereas the two techniques did not differ in the separate analysis of the two available RCTs. Combination of stapler with sutures was associated with a lower PFR than sutures (OR 0.70, p=0.05), but was not superior to stapler closure alone. Entero- or gastro-pancreatic anastomosis was associated with lower PFR than suturing (14% vs. 28%, OR 0.51, p=0.02). Spleen preservation versus splenectomy, or laparoscopic versus open DP did not differ with regard to PFR. TachoSil, fibrin-like glue, or bioabsorbable stapler reinforcements did not alter PFR after DP. However, falcifom ligament or seromuscular patches lowered PFR when compared to no patch application (19% for patch vs. 24% for no patch, OR 0.51, p=0.02).

Conclusion:

Stapler closure, pancreatic anastomosis, and falciform/seromuscular patches lead to lower PFR than suture closure alone during DP. Further RCTs are needed to test these effects.

A Muslim Patient with Severe Osteomalacia and Pelvis Fracture due to the Lack of Pancreatic Enzyme Substitution after Pancreatic cancer resection, alternative preparations?

(Abstract ID: 669)

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Background:

We report a 46-year-old female Muslim patient, who was diagnosed in February, 2011 with unresectable histologically proved ductal adenocarcinoma of the pancreatic head and subsequently underwent a gastroenterostomy with biliodigestive anastomosis followed by palliative radiochemotherapy.

Materials and methods:

A follow up computerized tomography (CT) showed a complete disappearance of the tumor so that an exploratory laparotomy with eventual pancreatic head resection was indicated by the interdisciplinary tumor board. The patient underwent a Pylorus-Preserving Pancreatoduodenectomy in July,2011 with no intra- or postoperative complications. Histologically a complete response was found. In the yearly follow up, there was no evidence of tumor recurrence and the patient reported no complaints other than having steatorrhea after the intake of fatty food although pancreatic enzyme preparations were recommended.

Results:

In 2015, the patient suffered of a pelvis fracture, generalized muscle aches and joint pain. The diagnostic workup showed a severe osteomalacia, low serum calcium, phosphate and Vitamin D levels with secondary hyperparathyroidism. Furthermore, she reported being incompliant with enzyme substitution from the pig due to religious reasons. In 2016 the patient symptoms resolved after the substitution of Vit. D and the other fat soluble vitamins.

Conclusion:

Malabsorption syndrome as a result of pancreatic exocrine insufficiency necessitate enzyme substitution with pancreatic enzyme preparations after pancreatic tumor resection. The cultural background of the patients should be taken into consideration with prescribing preparation derived from pig pancreas. A biogenetically engineered Reizoenzyme from the fungus Rhizopus oryzae could be an alternative in such cases.

Predictors for survival after ductal adeno carcinoma: R-status or Circumferential Resection Margin

(Abstract ID: 688)

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[3]*Ruhr-Universität Bochum, Bochum*

Background:

The relative 5 year survival for patients with pancreas carcinoma is 8 %. For T1 carcinoma the survival might reach 30 %. However, for stage T2 carcinoma 5 year survival reaches only between 2 - 18 %. Leading factor for prognosis is, together with tumor stage, the nodal status and a free resection margin. Histopathology reports use R-classification inconsistently. Therefore, the R-status is seen controversially. It is unclear, if the additional classification of Circumferential Resection Margin (CRM) is a better predictor than the R-status.

Materials and methods:

Between January 2010 and December 2015 our certified pancreas center treated n = 257 patients with pancreatic cancer. Out of those n = 121 patients received pancreatic resection (pp-Whipple, pancreatectomie, pancreatic left resection, multivisceral resection). For the analysis of overall survival only those patients with ductal adeno carcinoma were included (n = 100; mean age = 68.3 years; male = 59; female = 41). Histology was performed by a standardized protocol. R0 was supplemented by CRM > 1 mm (wide) and CRM <= 1 mm (narrow). Tumor documentation was carried out prospectively in accordance to the established information system with a follow up rate of 98 %. Patient data was analyzed with regards to "Overall Survival". Dependent variables were UICC status, R-status, lymph node ratio (LNR), and CRM. Influence of the aforementioned variables on survival curves (Kaplan-Meier), risk of death (Cox regression with hazard ratio), and likelihood of survival of > 30 months (Odds ratio) was statistically evaluated.

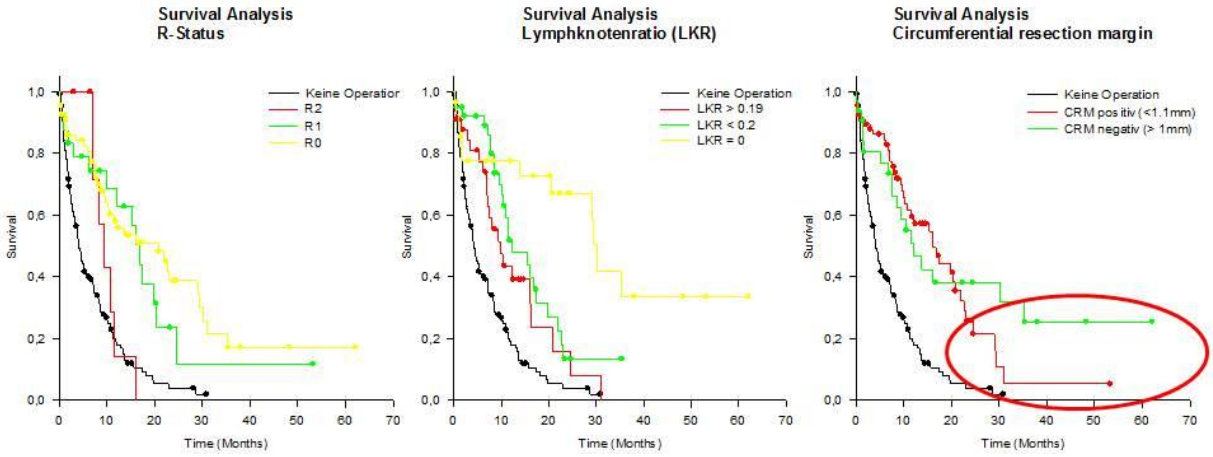
Results:

No statistical differences were found between survival curves if stratified by R-status. In contrast, CRM significantly discriminates for long term survival (Fig 1). Whereas only 3 % of all CRM positive patients survived longer than 30 months after initial diagnosis, likelihood of survival > 30 months was 8 times higher for CRM negative patients (Odds ratio: 7.615, p = 0.012). Results of the Cox regression confirm that overall survival more strongly depends on LNR (Hazard ratio: 0.329, p < 0.001) than the CRM status (Hazard ratio: 1.380, p = 0.049).

Conclusion:

Determination of CRM status as a more detailed classification than the R-status leads -together with the nodal status- to a better prediction than R-status alone. CRM status therefore should be part of an histopathological review after standardized preparation of the resected material, especially since CRM status seems to be an important factor influencing long term survival.

Picture:



Overall survival stratified by R-status (left panel), by LNR (middle panel), and CRM (right panel).

Surgical treatment of adrenal metastasis of hepatocellular carcinoma after liver resection or liver transplantation

(Abstract ID: 717)

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Background:

Adrenal metastasis of hepatocellular carcinoma (HCC) is a rare entity and can be treated by resection or local ablative therapy. Unfortunately, there are not many data about treatment outcome, especially in liver transplant recipients.

Materials and methods:

From 2005 to 2015, 990 liver resections and 303 liver transplantations for HCC were performed at our clinic. We retrospectively analyzed treatment outcome of the patients with adrenal metastasis of HCC who were treated either by resection, afterloading or surveillance only.

Results:

In total, 10 patients with metachronous metastasis were identified. In seven patients, primary HCC therapy was liver transplantation, in three: liver resection and in one: local ablative therapy. Eight patients underwent adrenalectomy (seven open and one via retroperitoneoscopy), one was treated with afterloading and one had surveillance only. 37.5% of the resected patients had recurrence 1 year after adrenalectomy and 75.0% of patients after 2 years. 8 out of nine patients had no surgical complications after adrenalectomy, one experienced a pancreatic fistula, which was treated conservatively. The mean survival time after primary diagnosis of HCC was 116.7±23.9 months. In patients after adrenalectomy the mean survival time after primary diagnosis of HCC was 112.4±25.2 months. The mean time till tumor recurrence was 13.2±3.4 in the total cohort and 15.4±3.8 months in patients after adrenalectomy. The estimated overall survival after adrenalectomy was 77.2±17.4 months.

Conclusion:

Adrenalectomy for adrenal metastasis of HCC is a safe procedure even after liver transplantation and leads to acceptable survival rates. Therefore, it should be performed whenever the primary tumor is well controlled and the patient is in adequate physical condition. As an optimal treatment strategy has not been established yet, therapeutic modalities should be chosen according to the individual clinical characteristics.

Bile duct injuries after minimal invasive and open cholecystectomy. Management, treatment and results in a hepato-biliary center.

(Abstract ID: 817)

P. Fikatas[1], R. Harms[1], M. Biebl[1], R. Öllinger[1], M. Bahra[1], J. Pratschke[1], S. Chopra[1]

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Background:

Despite ongoing evolution of the surgical techniques regarding minimal invasive cholecystectomy, bile duct injuries still occur. Scope of this study was to elucidate the management and outcome of patients with bile tract lesions after cholecystectomy.

Materials and methods:

Between March 2005 and November 2015 n=51 patients were treated in our center due to bile duct injuries during open (n=4; 7,8%) or laparoscopic (n=47; 92,2%) cholecystectomy. Additional lesion of right hepatic artery occurred in n=13 (25,5%) patients. Retrospective statistical analysis of patient data and perioperative parameters was performed.

Results:

In 18 of 47 laparoscopic cholecystectomies an immediate conversion laparotomy was performed after bile duct injury. A direct reconstruction of the bile tract or a hepaticojejunostomy procedure followed in n=5 (9,8%) cases in the external hospital, respectively. After transfer in our center, ERCP prior to surgical treatment was conducted in n=11 (21,6%) patients. In n=5 (9,8%) cases surgical reconstruction of bile tract was performed. N=46 (90,2%) patients received a hepaticojejunostomy. In n=3 (5,9%) cases the right hepatic artery was reconstructed. Mean operation time was 224±86 min. Second look laparotomy was necessary in n=12 (23,5%) cases due to peritonitis or bile leakage. Anastomotic leakage of the hepaticojejunostomy was observed in n=7 (13,7%) cases. N=10 (19,6%) patients developed surgical site infection. Right liver lobe resection was necessary in n=5 (9,8%) patients. N=4 (7,8%) patients died during follow up. Mean hospital stay was 30,6±33,2 days. Adipositas, diabetes mellitus and cardiovascular disease had no impact on outcome (p=NS).

Conclusion:

Bile duct complications after cholecystectomy remain challenging with high morbidity rates. Immediate treatment in specialized hepato-biliary centers is strongly advocated.

Total minimally invasive extended right hepatectomy using the intracorporal liver hanging maneuver

(Abstract ID: 845)

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Background:

Laparoscopic extended hepatectomies remain relatively difficult. The liver hanging maneuver is widely used in open liver resections. The aim of this video is to demonstrate the efficacy of the intracorporal liver hanging maneuver in an extended right hepatectomy using CUSA parenchymal transection.

Materials and methods:

A 56 year old male patient with a history of colorectal cancer and colorectal liver metastasis treated by chemotherapy underwent a liver first approach.

Results:

The operation was performed in the supine position with the legs spread apart. Five trocars (3 x 12mm, 2 x 5mm) were used for the surgical procedure. The liver hanging maneuver was performed after mobilization of the right hepatic lobe. Surgery lasted 360 minutes with a total blood loss less than 300ml. Right hepatic artery and right portal vein were ligated and transected after dissection of the hepatoduodenal ligament. Parenchymal transection was performed using the laparoscopic CUSA. A Pringle maneuver was not required for this procedure. Major hepatic vessels were transected using vascular staplers. The specimen was recovered through a Pfannenstiel incision. The patient was discharged on postoperative day 7.

Conclusion:

The liver hanging maneuver is a simple and safe approach in laparoscopic extended liver resections.

Prognostic Significance of Tie2-expressing monocytes in patients undergoing liver resection for hepatocellular carcinoma

(Abstract ID: 873)

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Background:

Tie2-expressing monocytes (TEMs) promote tumor progression and have an effect on survival in human cancer. However, little is known regarding their influence on tumor progression, angiogenesis and prognosis after liver resection in patients with hepatocellular carcinoma (HCC).

Materials and methods:

We analyzed tumor specimens of HCC (n = 58) for distribution and localization of TEMs, as defined by co-expression of CD14 and ang receptor Tie2. Abundance of TEMs was correlated with clinicopathologic characteristics, angiogenesis, tumor recurrence and patients' survival after liver resection. Statistical analysis was performed using SPSS software.

Results:

Patients with high prevalence of TEMs in tumor invasive front (TIF) showed significantly reduced survival following liver resection ($\rho < 0.05$). Furthermore, high expression of TEMs in TIF was significantely associated with high tumor recurrence ($\rho < 0.05$). TEMs were confirmed as independent prognostic variable in the multivariate survival analysis ($\rho < 0.05$).

Conclusion:

Our study provides evidence that TEMs associate with patient outcome following liver resection for HCC. Patient survival after liver resection was significantly reduced in patients with high expressions of TEMs in HCC tumor specimen. TEMs might serve as a potential biomarker in HCC in the setting of liver resection, whereas further studies are needed to elucidate their functional role.

Stapler versus Ligasure transection in elective hepatic resection: A randomized controlled trial

(Abstract ID: 924)

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[2]*Universitätsklinikum Heidelberg, Heidelberg*

Background:

Various devices have been introduced to reduce blood loss and complications in elective liver surgery. However, there is limited evidence from controlled clinical trials on the efficacy and safety of these devices. This randomized controlled trial compared the safety and efficacy of a bipolar coagulation device with stapler transection in elective, open liver resections.

Materials and methods:

In two centers (University Hospitals Dresden and Heidelberg, Germany) patients undergoing elective, open liver resections between 2011 and 2014 were randomized to liver transection with the LigaSureTM Small Jaw device (Covidien, Mansfield, MA, USA) or the stapler technique using the Autosuture Endo GIATM Universal Stapler with 2.5mm staples (Covidien, Mansfield, MA, USA). The primary endpoint was the total amount of intraoperative blood loss. Secondary endpoints were blood loss during transection, operating time, transection time and complication rates.

Results:

A total of 138 patients were randomized, 69 to the stapler and 69 to the LigasureTM group. Major resections > 3 liver segments were performed in 58.6 % of patients. The baseline characteristics were similar in both groups. Total intraoperative blood loss was significantly higher in the LigasureTM group (850 ml vs. 600 ml; $p = 0.03$), as was blood loss during transection (325 ml vs. 200 ml; $p = 0.03$). Total operation time and parenchymal transection time were higher in the LigasureTM group (199 min vs. 168 min; $p = 0.03$; 23 min vs. 8 min; $p < 0.005$). There were no differences regarding surgical morbidity (Stapler 44 % versus LigasureTM 39 % $p = 0.37$).

Conclusion:

LigasureTM transection is a safe technique but is associated with significantly increased intraoperative blood loss and a prolonged operating time compared to stapler hepatectomy.

Innov Surg Sci 2017; 2, (Suppl 1): s1–s168

Improved perioperative outcome using LiMAx test in liver surgery – initial results from the Fast-track LiveR RCT trial

(Abstract ID: 975)

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Background:

Background: Maximal liver capacity can be validly measured by the LiMAx test and has been successfully integrated in clinical management in liver surgery. Until now, no prospective randomized trials have been available to judge its actual clinical impact.

Materials and methods:

Methods: A randomized controlled trial (RCT) was conducted during January 2013 to September 2015 in six recruiting clinics. Patients prior to open liver resection of at least one segment were included. Patients were randomly assigned to LiMAx group (pre-, and postoperative LiMAx test) or control group (standard-of-care). Stable patients with sufficient residual liver function (LiMAx >150 µg/kg/h) were directly transferred to general ward after surgery.

Results:

Results: 148 patients were randomized. Patients in LiMAx group were more often directly transferred to general ward after surgery (62.1% vs. 1.7%; p<0.001), the risk of severe postoperative complications was significantly lower (³ grade IIIa; 14% vs. 32%; p<0.001) and the length of stay was shorter (10 vs. 13 days; p=0.01). No single patient in LiMAx group was admitted to intensive care after primary transfer to general ward.

Conclusion:

Conclusion: Perioperative management in liver surgery was significantly improved by the LiMAx test. The identification of low risk patients without the need of intensive care enables enhanced recovery.

Implementation of the Da Vinci Xi robotic system to perform bariatric surgery in a maximum care hospital

(Abstract ID: 131)

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[2]*Klinikum Nürnberg Nord, Nürnberg*

Background:

Background: Robotic based minimally invasive surgery has recently gained increasing influence in urologic, abdominal visceral and gynecologic surgical interventions. Larger trials have been performed and published in colorectal, hepatic, gastric and bariatric operations.

Feasibility, precision, advantages and disadvantages as compared to conventional laparoscopic surgery were studied as were time and cost issues.

Objective: The technical handling of the equipment including installation and training and learning of the surgical technique will be described.

Materials and methods:

Material and methods: Motivation, time schedule and duration of implementation from scratch to cut were investigated in a hospital of maximum care.

The Da Vinci Xi robotic system was placed in a shared OR, facilitating central and easy access for all participating surgeons and nursery staff.

In visceral surgery, selected qualified surgeons received a schedule to be trained in performing a cholecystectomy, rectal resection, gastrectomy, sleeve resection and gastric bypass.

In a series of 20 sessions dexterity and capability were trained with the simulator (Mimic Technologies, Inc.) to use surgical instruments and simultaneous control of pedal panels for the camera and change of instruments.

Nine different excersises for grasping, tissue dissection, coagulation and suturing had to be performed on 3 increasing levels (basic, advanced, mastery) with analysis of results and trend reports. Information of time, management of instruments and efficiency were obtained and compared (Simbionics, Ltd, USA).

Another 10 sessions were performed on a phantom with respect to positioning of trocars, sterile coverage and instrument deployment.

Results:

Results: Total training time was 3 months including continuous education. The excercises described could be performed on all levels at the end of this period allowing to apply the technique to urologic, gynecologic and visceral operations including bariatric surgery.

Conclusion:

Conclusion: Robotic surgery in the abdomen using the Da Vinci System requires a high degree of logistic preparation with a complex and pertinent training of the surgeons and assisting staff.

Sleeve vs. duodenal exclusion – which operation shows better glucose control?

(Abstract ID: 139)

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Background:

Initially, gastric bypass (RYGB) and biliopancreatic diversion (BPD) were used as the procedures of choice for metabolic surgery, but recently sleeve gastrectomy (SG) shows amazing effects on T2DM, too. Long-term studies of diabetes control after SG are still lacking.

Materials and methods:

We performed either a loop duodeno-jejunostomy (DJOS) with exclusion of 1/3 of total intestinal length (concerning RYGB), a sleeve gastrectomy (SG) alone or a loop duodeno-jejunostomy with sleeve gastrectomy (DJOS+SG) on 8 weeks old male obese zucker rats. 4, 12 and 24 weeks after surgery we performed an oral glucose tolerance test, a hormon measurement (GLP-1, GIP, Insulin, bile acid) and monitored the increase of weight.

Results:

Body weight developed largely parallel between DJOS+SG and DJOS with less weight in the DJOS+SG group (2-way-ANOVA $p<0.05$). Till 12 weeks after surgery there is no difference between bodyweight between DJOS and SG, after that SG animals can`t gain more weight.

4 weeks after operation glucose control is similar in all groups (2-way-ANOVA $p>0.05$). 12 and 24 weeks postoperatively DJOS and DJOS+SG shows a significant better glucose control than SG alone (2-way-ANOVA $p<0.05$). Concerning to the fading effect of glucose control shows SG animals 3 and 6 months postoperatively a sharp decline of insulin production (t-Test $p<0.05$).

Conclusion:

There is a fading effect after initial equal glucose control with SG alone towards duodenal exclusion. This data could indicate that we need the duodenal exclusion for long-term improvement of T2DM.

Innov Surg Sci 2017; 2, (Suppl 1): s1–s168

Exclusion of Duodenum preserves pancreatic function in diabetic Zucker rats

(Abstract ID: 140)

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[1]*Universitätsklinikum Freiburg, Freiburg*

Background:

Metabolic surgery in known to be the best treatment for T2DM, but the exact mechanism behind the remarkable changes is still unknown.

Materials and methods:

We performed either a loop duodeno-jejunostomy (DJOS) with exclusion of 1/3 of total intestinal length, a loop duodeno-ileostomy (DiOS) or a SHAM operation in 8 weeks old male diabetic obese Zucker rats. 4, 12 and 24 weeks after surgery we performed an oral glucose tolerance test and an insulin measurement and calculated peripheral insulin sensitivity index (HOMA-IR). After euthanization we histologically investigated number and size of pancreatic ß-cells.

Results:

DJOS and DiOS showed a significantly better glucose control than SHAM animals at all time points (2-way-ANOVA $p<0.05$) with a preserved insulin production (t-Test $p< 0.05$), while the insulin production in the SHAM animals declined dramatically (t-Test $p<0.0.5$). There was no difference between the DiOS and DJOS group concerning glucose control and insulin production. The insulin sensitivity was significantly better in both operated groups one month postoperatively (t-Test $p<0.05$). DJOS and DiOS operations led to a remarkable visual preservation of pancreatic beta cells, yet statistically only showing a trend towards SHAM animals.

Conclusion:

Duodenal exclusion ameliorates glucose control based on improved insulin sensitivity and, more importantly, sustained pancreatic function.

Robot-assisted bariatric surgery: Initial experience with the Da Vinci® Surgical System in sleeve gastrectomy and Roux-en-Y gastric bypass

(Abstract ID: 183)

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Background:

The Da Vinci® Surgical System has already been successfully implemented in different surgical domains. Up to now, only very few reports on the robot-assisted approach in bariatric surgery in Germany can be found in the literature. In our clinic the first robot-assisted sleeve gastrectomy was performed in September 2016. Since then, we successfully performed several more robot-assisted procedures in patients with a higher BMI. Along with this, we also implemented the technique by carrying out the even more complex robot-assisted Roux-en-Y gastric bypass.

Materials and methods:

Here we report our initial experience with the Da Vinci surgical system in bariatric surgery. Our report focusses on advantages and disadvantages of the Da Vinci system, compared to the usual and well-established laparoscopic approach. Technical adaptations, that are required by the Da Vinci Surgical System due to obesity are characterized.

Results:

Our report shows the feasibility and safety of bariatric procedures performed with the Da Vinci Surgical System. The Da Vinci System allows more precise manipulations by downscaling the surgeon's movements and also by a true 3-dimensional view. Nevertheless, haptic feedback is still lacking.

Conclusion:

Due to the small sample size we cannot yet compare robot-assisted bariatric procedures to laparoscopic procedures, with regard to postoperative results and risk-assessment. No major complications occurred after robot-assisted bariatric surgery.

Comparison of malnutrition and metabolic comorbidities after sleeve gastrectomy and gastric bypass: A 2-year follow-up

(Abstract ID: 307)

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Background:

Laparoscopic sleeve gastrectomy (SG) and proximal gastric bypass (RYGB) are the most commonly performed bariatric operations. This study compared the impact of sleeve gastrectomy versus gastric-bypass on malnutrition and metabolic comorbidities.

Materials and methods:

Retrospective observational study of 260 obese patients: 148 SG-patients (mean BMI 54 kg/m²) and 112 RYGB-patients (mean BMI 49 kg/m²) treated at the university hospital Kiel between 2011 and 2013. In a 2-year follow-up, clinical parameters of comorbidities and malnutrition markers were assessed (iron, ferritin, calcium, parathyroid hormone, 25-OH-vitamin D, vitamin B12 and folic acid, HbA1c, uric acid and triglycerides).

Results:

Two years after surgery, both procedures show an EWL of 63%, significant reduction of hypertriglyceridemia, hyperuricemia and glycemic-control. Hypertriglyceridemia decreased from 28% to 8% after SG; from 24% to 5% after RYGB. Hyperuricemia decreased from 68% to 22% after SG and from 51% to 9% after RYGB. After RYGB one patient presented a HbA1c > 6,5% and no patient after SG. There were no significant differences in iron- (SG:11%, RYGB:7%), vitamin D(SG: 61%, RYGB: 39%), vitamin B12- (SG:4%,RYGB:16%) and folic acid deficiency (SG:19%, RYGB: 12%). There were no differences in food intake and nutrition patterns in the 2 years folloe up.

Conclusion:

Since SG comprises no surgical bowel intervention for the patient, there was a similar effect on remission of metabolic comorbidities as with RYGB. It also reduces hypertriglyceridemia, hyperuricemia and type-2 diabetes. There was no significant difference in malnutrition and food intake.

Predictors for excess weight loss, resolution of comorbidities, and risk of complications after bariatric surgery

(Abstract ID: 383)

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Background:

Bariatric surgery has proven successful for weight loss and resolution of comorbidities. Yet, there is little evidence on prediction of success of the operation and risk of complications. The aim of the present study was to evaluate the role of age of onset of obesity (AOO), years of obesity (YOO), preoperative body mass index (BMI), Edmonton Obesity Staging System (EOSS) and age as predictors for percent excess weight loss %EWL, resolution of comorbidities and risk of complications.

Materials and methods:

Patients with laparoscopic Roux-en-Y gastric bypass (RYGB) and laparoscopic sleeve gastrectomy (LSG) from a prospectively collected database between January 2006 and November 2014 were analyzed. Multiple regression analyses were used to predict %EWL and weight loss at 3, 6 and 12 months after surgery, as well as pre-operative comorbidities, resolution of comorbidities and risk of complications using the predictors AOO, YOO, age and BMI.

Results:

Data were available for 180 patients with a mean age of 46.8 ± 11.1 years and pre-operative BMI of 49.5 ± 7.5 kg/m². Regression analyses showed that the number of pre-operative comorbidities was higher for older age ($p = 0.023$) and higher BMI ($p = 0.036$), but was not related with AOO ($p > 0.920$) and YOO ($p = 0.366$). Preoperative BMI was negatively associated with %EWL ($p < 0.001$) but positively with total weight loss ($p < 0.001$). Post-operative complications were positively associated with EOSS stage (OR = 1.147; $p = 0.042$) and BMI (OR = 1.010; $p = 0.020$), but not with age (OR = 1.001; $p = 0.890$).

Conclusion:

Higher BMI was associated to lower %EWL but higher total weight loss. YOO and AOO were not associated to comorbidities, EOSS, %EWL and complications after bariatric surgery. Higher EOSS stage and BMI were predictive for complications. In the present study, BMI and EOSS score were the most important factors to consider for bariatric surgery.

Assessment of anastomotic perfusion in robotic Roux-en-Y gastric bypass by indocyanine green fluorescence

(Abstract ID: 670)

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Background:

The development of real-time near-infrared fluorescent microperfusion using indocyanine green (ICG) has shown its interest in perfusion angiography in digestive surgery. We report in this study our experience with ICG in robotic Roux-en-Y gastric bypass (RYGB).

Materials and methods:

157 consecutive patients who underwent robotic RYGB with ICG injection (ICG) from April 2014 to December 2015 were analyzed. ICG injection was performed immediately after the end of gastrojejunal and jejunojejunal anastomoses. Quantity of ICG, duration of procedure as well as anastomotic fluorescence intensity were recorded. We compared results to 478 patients who underwent robotic RYGB from July 2006 to January 2016 without ICG injection (CTL).

Results:

Patient characteristics (age, gender, BMI, ASA classification) as well as comorbidites (diabetes, hypertension, sleep apnea) were similar in both groups. Mean operative times were 213.9 (SD±50.7) and 245.1 (SD±92.9) minutes in ICG and CTL group, respectively ($p<0.001$). Mean time for ICG procedure was 95.4 (SD±55.1) seconds with a mean time to maximum of signal of 46.5 (SD±35.6) seconds. Subjective evaluation of quality of perfusion of gastrojejunal anastomosis was estimated excellent in 64.3%, good in 28% and low in 7.6% of all procedures. In two procedures the jejunal stump of the gastrojejunal anastomosis was resected because of low ICG perfusion. 19 (12%) minor complications were observed in the ICG group compared to 37 (7.7%) in the CTL group ($p=0.1$). Major complications occured in 11 (7%) and 14 patients (2.9%) within ICG and CTL group, respectively ($p=0.02$). On the contrary no anastomotic leak occured in the ICG group compared to one leak in the postoperative course of the CTL group (0.2%) ($p=0.6$).

Conclusion:

Near-infrared fluorescent microperfusion using indocyanine green (ICG) can be performed safely in RYGB. Imaging of perfusion provides a real time evaluation of anastomoses and might prevent anastomotic leakage, a severe complication of RYGB.

Laparoscopic sleeve gastrectomy does not necessarily result in a postoperative nutrient deficiency

(Abstract ID: 760)

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Background:

The laparoscopic sleeve gastrectomy (SG) is an effective stand-alone procedure in the surgical treatment of overweight with low rate of major complications, simplicity of technical procedure and short hospitalization.

Materials and methods:

157 patients were subject to a SG. The development of weight, BMI, percentage of excess weight loss (%EWL) as well as the HbA1c, vitamin D, B1 and B12 were obtained postoperatively after 6 weeks, 3, 6, 12, 24 and 36 months.

Results:

The study showed a significant %EWL in the first 12 months (maximum: 52.47%) with a weight regain after 24 (%EWL 46.86%) and 36 months (%EWL 38.8%). HbA1c showed a decrease from 6.07% to 5.47% after 12 months and an increase up to 5.57% thereafter. The preoperative deficit of vitamin D (15.44ng/l) was eliminated after SG and increased up to 27.85ng/l. Vitamin B12 showed no significant variance at any time. Vitamin B1 as well as Vitamin B12 was based in the reference range during the whole study.

Conclusion:

SG reaches a weight loss in the first postoperative year with a trend of weight gain thereafter. It does not necessarily result in a postoperative nutrient deficiency and improve the HbA1c correlative to the weight loss.

Microvascular complications in patient with type 2 diabetes mellitus – metabolic surgery versus best medical treatment

(Abstract ID: 818)

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Background:

The global prevalence of type 2 diabetes mellitus (T2DM) is rising continuously and microvascular complications including nephropathy, retinopathy and neuropathy are common. Metabolic surgery achieves high rates of improvement or even remission of T2DM and is clearly superior to medical therapy, but it remains unclear whether the beneficial effects extend on associated microvascular complications. Moreover, data from the Swedish Obese Subjects (SOS) study indicates that the incidence of microvascular complications may only be reduced when bariatric surgery is performed within the first four years of diabetes duration. The aim of our systematic review and meta-analysis was to investigate the effects of metabolic surgery versus best medical treatment on microvascular complications in obese patients suffering from T2DM.

Materials and methods:

A systematic literature search was carried out in March 2016, using MEDLINE, EMBASE, Web of Science and Cochrane Central Register of Controlled Trials (CENTRAL). Studies comparing the effect of surgical treatment with medical therapy on diabetic nephropathy, retinopathy and/or neuropathy were included. All studies needed a non-surgically treated control group and a follow-up of at least one year. Case reports, case series, systematic reviews and publications with only an abstract available were excluded. The quality of the included studies was assessed using the Black and Downs Score.

Results:

Out of 1662 potentially eligible articles yielded, nine studies between 1987 and 2015 met the inclusion criteria. Two randomized controlled trials (RCT), three retrospective and one prospective controlled clinical trial (CCT) as well as three case-control studies were included in the meta-analysis. The mean Black and Downs Score was 17.1 ± 3.0. The incidence of overall microvascular complications was significantly lower after metabolic surgery compared to medical treatment (12.39% ± 11.23% vs. 28.17% ± 22.53%, p=0.007).

Five studies reported separately on the incidence of nephropathy, with a clear benefit of surgical therapy compared to medical treatment (6.59% ± 6.19% vs. 20.45% ± 21.3%, p=0.008). Four studies also investigating the effect on preexisting nephropathy at baseline showed a remission of nephropathy in 79.89% ± 24.55% after surgery compared to only 6.25% ± 12.5% following medical treatment (p=0.0001). This translates into a number needed to treat of 2 patients (95% CI 1.3-2.1). Furthermore, patients with a mean diabetes duration of more than four years showed a significant effect with a clear superiority of metabolic surgery as well (73.19% ± 25.19% vs. 8.33% ± 14.43%, p=0.001).

Five studies providing information on the incidence of retinopathy also showed a significant benefit of surgery compared to medical treatment (1.78% ± 2.53% vs. 4.49% ± 4.97%, p=0.0004).

Analyzing three studies with information on the incidence of neuropathy, no significant difference between surgical and medical treatment was found.

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Conclusion:

Metabolic surgery reduces the development of microvascular complications in patients with T2DM compared to best medical treatment. Strong evidence from RCTs and CCTs indicates that preexisting diabetic nephropathy is strongly improved by metabolic surgery. Strikingly, the number of patients needed to treat with metabolic surgery was 2 to improve one preexisting diabetic nephropathy. These results cannot be achieved by medical treatment alone. Prospective long-term, high-quality RCTs are needed to confirm these promising results.

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Laparoscopic revision of internal hernia after gastric bypass

(Abstract ID: 858)

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Background:

Internal hernias are a quite common complication in patients after gastric bypass. The symptoms vary from mild postprandial pain up to massive acute abdominal pain. Because of this wide spread field of symptoms it is hard for the clinician to recognize a internal hernia. Retrospectively up to 97% of internal hernias could be diagnosed through CT. But only 67% are diagnosed preoperatively. The whirl sign seems to be a good predictor for internl hernias in CT scans.

When diagnosed, internal hernias can often be solved laparoscopicaly. The video presents two cases of female patients who underwent a laparoscopic Roux en Y gastric bypass procedure 12 month respectively 22 months prior to the revision surgery due to internal hernia.

Gastric Bypass improves Steatohepatitis and Diabetes mellitus Type 2 as well as increases FGF-19 and FGF-21 in metabolically sick patients with Diabetes mellitus Type 2 and low-BMI

(Abstract ID: 890)

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Background:

Type 2 diabetes mellitus (T2DM) and non-alcoholic fatty liver disease (NAFLD) are increasingly understood as related diseases. T2DM and NAFLD appear to propagate each other and insulin resistance may be the link between these two diseases. Bariatric surgery reduces steatosis, steatohepatitis and even fibrosis in obese patients. The Fibroblast Growth Factors (FGF)-19 and 21 are increasingly understood as pivotal players in metabolic disorders such as T2DM and NAFLD/NASH. FGF-19/-21 have been shown to improve NASH and T2DM experimentally. The roles of these hormones in metabolically sick patients and improved health after bariatric surgery are poorly understood. The purpose of this study was to investigate the effects of gastric bypass surgery (RYGB) on liver histology and liver function tests (LFT) as well as T2DM and FGF-19/-21 and NASH in metabolically sick patients with low body mass index (BMI <35kg/m2).

Materials and methods:

Twenty patients (body mass index (BMI) between 26-35kg/m2) and poorly controlled, insulin-dependent T2DM were enrolled. All patients were treated with a standardized RYGB. Serum samples were collected preoperatively as well as during the three-year follow-up period. Changes in liver function tests, glycemic control and insulin resistance using the HOMA-model were determined preoperatively and after 36 months. Intraoperative and follow-up liver biopsies 36 months after RYGB were assessed using the NAFLD activity score (NAS). FGF-19 and 21 levels were measured during the follow-up period by Enzyme-Linked Immunosorbent Assay (ELISA). Healthy, non-obese subjects as well as severely obese patients served as comparison. Data are presented as mean±SEM.

Results:

BMI dropped from 32.80.5kg/m2 to 24.5±0.7kg/m2 (p=0.0005) after 36 months. Alanine-aminotransferase (ALT) and γ-glutamyl transferase (GGT) both significantly improved over the 36-month follow-up period (ALT: 36.8±3.2U/l to 21.1±1.6U/l, p=0.006; GGT: 55.2±9.7U/l to 22.1±5.2U/l, p=0.008) while Aspartate-transaminase (AST) remained unchanged. All patients had at least a borderline NASH (NAS of 4±0.21) preoperatively. Three years after RYGB, the NAS improved significantly to 1±0.22 (p=0.005). Insulin resistance also significantly improved (HOMA-IR: 19.2±2.8 to 4.9±0.8, p=0.004). FGF-19 increased from 636.2±118.9pg/ml to 1082±177.1 (p=0.02). Similarly, FGF-21 increased from 251.7±51.3pg/ml to 735.8±307.7pg/ml (p=0.03) 36 months after RYGB. Furthermore, the mRNA expression of the receptors for FGF-19 in the liver, FGFR1 and FGFR4 both increased significantly postoperatively. Lastly, there were significant changes in the bile acid metabolism, fatty acid oxidation, and insulin signaling indicative of improved hepatic metabolism.

Conclusion:

RYGB improves NAFLD, T2DM, and insulin resistance in metabolically sick patients with low BMI (<35kg/m2). FGF-19 and 21 increase after RYGB. The liver metabolism showed significant changes in bile acid, fatty acid, and glucose metabolism indicative of an overall improve metabolism. The role of FGF-19 and 21 in improved metabolic health after RYGB appears complex and requires further research.

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EndoSleeve-Endoscopic Sleeve Gastroplasty – a New Procedure for Endoluminla Bariatric Surgery in High-Risk and Superobese Patients

(Abstract ID: 898)

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Background:

Introduction: Bariatric surgery for morbid obesity can induce important excess weight loss (EWL) during years after surgery, and co-morbidities often improve or resolve. As many patients with surgical contraindications for formal bariatric surgery have no alternative besides conservative management, new endoscopic procedures can be currently applied to these cases. This study describes the preliminary german clinical experience with Endoscopic Sleeve Gastroplasty- Endosleeve.

Materials and methods:

Methods: Primary endoscopic sleeve gastroplasty was performed for a series of 9 patients using the full-thickness suturing device Apollo Overstich. All selected patients were ASA III classified, due to cardiopulmonary high-risk, or liver/renal transplant candidates. Technical steps included general anesthesia, insertion of an Overtube, full-thickness suturing of the corpus and fundus with interrupted nonabsorbable sutures, sizing the gastric tube. The patients were followed and documented regarding complications, weight loss and co-morbidities.

Results:

Results: All patients were submitted to the procedure without intraoperative complications. Mean operative time was 87 min. Mean preoperative BMI was 54kg/m2. Follow-up showed satisfactory weight loss (mean 40% EWL) with no weight regain after 6 months. Co-morbidities were ameliorated with reduction of medications in all patients.

Conclusion:

Conclusions: Endoscopic primary sleeve gastroplasty using Apollo Overstich is a new non-invasive procedure for morbid obesity, satisfactory early results and no complications for this set of high-risk patients. Further studies are needed to evaluate indications of this technique as an alternative bariatric therapy.

Internal Gastric Plication using IGS-Intragastric Single Port – reduces up to 81% of Gastric Volume in Experimental Model

(Abstract ID: 927)

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Background:

Objective: Bariatric surgery is currently the most effective method to ameliorate co-morbidities as consequence of morbidly obese patients with BMI over 35 kg/m2. We report a new technique for internal gastric plication (IGP) using an intragastric single port device (IGS) in an experimental swine model.

Materials and methods:

Methods: We performed twenty experiments using fresh pig cadaver stomachs in a laparoscopic simulator. The procedure was performed as follow with ten pigs: Measure the volume. Insufflation of the stomach with CO2. Extroversion of the stomach through the simulator and installation of the Gelpoint Applied Mini Single Port through a gastrotomy close to the pylorus. Performance of five handsewing 4-point sutures with Prolene 2-0, from the fundus to the antrum. After the performance the residual volume is measured. Sleeve gastrectomy was also performed in ten pigs and pre and post-procedure measured.

Results:

Results: The IGS Internal Gastric Plication technique was performed successfully in ten swine experiments. The mean procedure time was 27 min (+- 4min). IGS Internal Gastric Plication produced a reduction of gastric volume of a mean of 51%, and sleeve gastrectomy, of a mean of 90% in this swine model.

Conclusion:

Conclusion: The IGS Internal Gastric Plication technique was simple to perform and achieved excellent reduction of gastric volume in an in vitro experimental model. Differently from laparoscopic gastric plication, there is no vascular ligation using the new method, potentially reducing complications as gastric necrosis and leaks. Survival studies have to be addressed to evaluate the feasibility and safety of the technique.

Frequency and management of distal Adenocarcinoma of the Esophagus in patients planned for bariatric surgery

(Abstract ID: 942)

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Background:

Obesity has become one of the major Health Problems in the World. Today, Bariatric surgery is the treatment of choice for morbid obese persons and the only treatment and reproducible long-term weight loss and with a high-rate of resolution of obesity-related Comorbidities like Diabetes and Hypertension. The current guidelines recommend, that bariatric patients undergo esophagogastroduodenal endoscopy before surgery, as upper gastrointestinal pathologies are common in these patients. For Example, Obesity is associated with an increased risk in development of gastroesophageal reflux disease (GERD). Several studies reported the association of obesity with esophagitis as well as esophageal adenocarcinoma. The Aim of this study was to analyse the incidence of gastrointestinal pathologies in bariatric patients observed during routine preoperative endoscopy.

Materials and methods:

We conducted a retrospective analysis of endoscopic findings in patients under evaluation for laparoscopic Roux-Y Gastric Bypass (RYGB) or Sleeve Gastrectomy (SG). Indications for primary procedures were according to the German Guidelines of Bariatric Surgery.

Results:

Data was available for 801 patients. The mean Body-Mass-Index (BMI) was 50.1kg/m2. Most of the patients were female and the mean age was 43.8. Abnormal endoscopic findings were common and were found in 60.3%. The most common findings were Gastritis (31%) and Gastroesophageal Reflux (24%). Patients who reported reflux symptoms had a slightly higher rate of pathological EGDs (p .019) compared to asymptomatic patients. Barrett's esophagus was present in 2.1% in our cohort. This is a slightly higher prevalence than the estimated prevalence of Barrett's esophagus between 1.2 - 1.6 % of the general population. Malignancies were observed in 0.5% of all patients. We observed one patient with a neuroendocrine tumor of the duodenum, which could be treated by endoscopic resection and was then followed by Sleeve Gastrectomy, and one patient with a Gastrointestinal Stroma Tumor (GIST) of the greater curvature, which was resected in the form of laparoscopic Sleeve Gastrectomy. We identified furthermore two patients (0.2%) with distal adenocarcinoma of the esophagus in our cohort. Both patients were initially planned for Sleeve Gastrectomy. Medical history differed in both patients, one patient reported a long history of GERD, one patients never had symptoms of reflux.. Patients were staged as T1a (m2) N0 M0 in one, and T1a (m3) N0 M0 in the other. Both patients underwent endoscopic mucosal resection (EMR). After endoscopic resection and endoscopic control, both patients were scheduled for Roux-Y Gastric Bypass. We preferred Gastric Bypass to Sleeve Gastrectomy, due to the future possibility to perform esophagectomy with gastric tube reconstruction in case of cancer recurrence.

Conclusion:

Relevant findings in routine preoperative endoscopy are rare but have significant influence on surgical decision-making in bariatric patients. Incidental findings of malignancies were present in only 0.5%, but had significant influence of perioperative management. Not performing preoperative endoscopy would

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have had led to devastating results in these patients. Endoscopy has to be assessed as a mandatory diagnostic tool in obese patients planned for bariatric surgery.

Initiating a Robotic program for abdominal surgery: experience from a pioneering center in Germany

(Abstract ID: 209)

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Background:

In visceral surgery the use of robots is growing steadily in Germany and worldwide and the fields of application widen up. But until now there is a lack of standardized strategies and suggestions during the initiating period of robotic programs. We report about our experiences during the initialization and implementation of robotic-assisted abdominal surgery focusing on feasibility, safety, oncological results and financial aspects.

Materials and methods:

Data from all robotic-assisted abdominal surgical interventions performed at our institution between August 2012 to June 2016 were prospectively collected and retrospectively analyzed. The analysis included patient demographics, intra- and postoperative parameters, oncological results, learning curve and cost analysis.

Results:

A total of 71 operations (71 patients: 58% female, mean age 58 [range 25-82], mean BMI 26,2 [range 17,5-39,4]) were performed, mainly in the field of colorectal surgery (colorectal resections (n=31), ventral mesh rectopexy (n=17)) and hepatobiliary surgery (n=18). The mean operative time was 320 minutes. The conversion rate was 7%. All oncological patients were resected R0. The postoperative hospitalization was 8,8 days, the morbidity 25% with major complications (Clavien-Dindo > II) in 7%, the mortality 0%. Patients with a BMI greater than 33,5 and patients aged over 66 years showed a significantly increased morbidity. A BMI over 33,5 was also associated with a significantly increased conversion rate. With increasing number of operations operative time (p=0,002), morbidity (p=0,394) and hospitalization time (p=0,471) decreased. The average costs of a robot-assisted surgery were 15221 euros. There were no difference concerning costs between colorectal resections, ventral mesh rectopexy and hepatobiliary surgery (p=0,774). 59% of the costs were incurred in the operating room. Of these 63% of the OR costs are maintenance and material costs.

Conclusion:

Robotic surgery represents a safe and gentle approach with an excellent oncological result, even in the initialization period. The most important aspects to be observed for this purpose are a proper patient selection, respect for the inevitable learning curve and especially a standardization of processes and specialization and adequate training of the entire team (surgeon, surgical nurses and anesthesiologist).

Minimally invasive enucleation of esophageal leiomyoma: a Report of three cases

(Abstract ID: 255)

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Background:

Leiomyoma is a rare type of benign esophageal tumor. Surgical treatment is indicated if there is a significant symptom such as dysphagia or a history of bleeding or if the biological behavior of the tumor is not certain. Since the first description of a thoracoscopic approach in 1992, the minimally invasive enucleation has been reported in laparoscopic as well as in thoracoscopic way, depending on the location of the tumor. The feasibility of the operation was proven, but it is still unclear which patient group can be treated with the minimally invasive approach.

Materials and methods:

We report on a series of three cases of symptomatic esophageal leiomyoma between 2013 and 2016, which we treated by a minimally invasive enucleation. In two of the cases, tumors were located in the middle third of the esophagus, so that we performed thoracoscopic enucleation. In the other case, the tumor was located in the esophagogastric junction. Given the history of this patient with an abdominothoracal aorta-replacement through thoracotomy, we decided for the laparoscopic procedure.

Results:

The size of the resected tumors varied from 35mm to 170mm in diameter. In none of the cases, major complications or mortality occurred. In one case a postoperative pneumothorax happened because of the dislocation of the thorax drainage. Depending on the size of the esophageal lesion we started the oral nutrition between 3rd and 6th day after surgery, which was completed between 7th and 11th days. The average postoperative hospitalization was 10.3 days

Table:

Nr.	Gender	Age	Operation	Size of tumor	Hospitalisation	Oral nutrition completed	Major complication	Minor complication
1	M	52 years	Thoracoscopic	80x30x20mm	14 days	11th day	none	pneumothorax
2	M	55 years	Thoracoscopic	35x30x15mm	8 days	7th day	none	none
3	M	44 years	Laparoscopic	170x90x20mm	15 days	10th day	none	none

Conclusion:

Based on these experiences we are convinced that the minimally invasive enucleation is a suitable safe treatment option of the symptomatic esophageal leiomyoma, even for patients with large tumors of more than 150mm diameter to avoid major resection.

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Picture:

Pat. 3

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Hybrid – NOTES sigmoidectomy in morbid obese patients

(Abstract ID: 298)

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Background:

Minimally Invasive Surgery (MIS) and NOTES (Natural Orifice Transluminal Surgery) as a further development of MIS, may reduce the risk of postoperative complications. Therefore obese patients should predominantly be operated via laparoscopic techniques, especially if extensive skin incisions during open surgical procedures cannot be avoided. Mainly as there seems to exist a linear relationship between body mass index and infection rates. Nevertheless obesity has been classified as relative contraindication to laparoscopy due to dramatically increased technical demands and is hardly performed among obese. We present a new technique that enables natural orifice surgery, using the example of sigmoidectomy in these patients and advocate an increased combination of MIS and NOTES in obese patients.

Materials and methods:

Five highly selected patients were enrolled into an observational trial. Three patients were selected for sigmoidectomy after unsuccessful conservative diverticulitis treatment and two patients, suffering from adenocarcinoma of the sigmoid were selected for an anterior rectal resection and central lymphadenectomy (BMI range 28.7 - 51.9). All interventions were performed via minimal invasive surgery and NOTES technique after written consent was obtained. The procedure was in accordance with the local ethical committee. The patients were accommodated in an extremely head-down-right lateral position a colonoscopy was performed intraoperatively in order to manipulate the colon and the mesentery intraluminally.

Results:

In all five cases the procedure was completed successfully. The combination of an extremely head-down-right lateral position and an intraoperative colonoscopy resulted in an excellent exposition of the left colon. Bowel and abdominal organs shifted out of sight caused by the gravitational force. The technique proved feasible for both genders. All patients were discharged with a functional outcome according to standard laparoscopic interventions. After median of 4.8 years (range 4-6 years) we conducted a telephone interview with all five patients. They all are doing well up to date.

Conclusion:

To minimize postoperative complication rates scarless surgery should be preferred in cases of morbid obesity or an elevated BMI. To reduce the complexity factor of surgical interventions of left colonic structures in obese patients, a combination of the presented minimal invasive surgery and NOTES-technique with a right lateral positioning of the patient should be taken into consideration.

Role of VATS in the treatment of penetrating thoracic trauma – Proposal of an algorithm

(Abstract ID: 445)

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Background:

The video assisted thoracoscopy (VATS) has now been established in the different indications. It is increasinly usedg in the elective thoracic surgery. It´s role in the treatment of the penetrating thoracic trauma is in contrast not precisely defined. Against the background of the increased danger of terrorism in Europe and a concomitant growth of penetrating thoracic trauma it is important to standardize the treatment and to define the significance of tVATS. Due to the comparatively low numbers of penetrating thoracic trauma in Germany, the knowledge and the optimal and standardized therapy for the attending surgeon is indispensible.

Materials and methods:

We present a proposal of an algorithm for the treatment of penetrating thoracic trauma with a defined role of VATS. In addition, all patients were database-supported identified and analysed, who were treated with a thoracic trauma at our level 1 trauma center. The aim was to investigate the practicablity of the presentated algorithm according to a Proof-of-concept study. Moreover, the therapeutic concept of the quantitative predominant blunt trauma will be compared with the much less frequent penetrating thoracic trauma. It was subsequently performed a literature research to identify possible contraindications for VATS at penetrating thoracic trauma and to verify the own algorithm.

Results:

In the period between 2012 and 2015, 296 thoracic traumas were treated. Only 11 patients (4%) suffered a penetrating thoracic trauma. All penetrating thoracic trauma could be treated on the basis of the algorithm. All patients were treated minimally-invasive. The most common cause for thoracoscopy was the hemothorax, followed by lung parenchyma injury. In contrary to the blunt trauma, which were mostly treated conservatively or with a chest tube, the penetrating thoracic trauma were always treated with an invasive therapy. The median hospital stay amount 11 days (6-20 days). The median ISS was 17 and the intra- and postoperative morbidity was 27%. There was no intra- or posterative mortality.

Conclusion:

The VATS can be applied as a safety procedure during the trauma management of penetrating thoracic trauma in hemodynamic stabel conditions. Therefore VATS earned a definitive place in an algorithm of treatment. Studies with great number of cases are necessary to verify these results and to review the practicablity of the presentated algorithm.

Transanal total mesorectal excision (TaTME) for inflammatory bowel disease

(Abstract ID: 563)

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Background:

The transanal total mesorectal excision (TaTME) is a promising technique steadily gaining interest and respect. While it is mostly known for its' application in primary rectal cancer, it offers great potential for other diseases as well. So far only single cases and small series of TaTME for other indications then primary rectal cancer have been published, mainly dealing with ulcerative colitis. This study focused on the TaTME as a treatment option for inflammatory bowel disease.

Materials and methods:

To date there have been 66 TaTME conducted in this clinic, 10 of those for other indications then primary rectal cancer. Four of them were performed in patients with an active inflammatory bowel disease (IBD). Patient related data was collected prospectively after informed consent and recorded in an international TaTME registry (LOREC, www.tatme.com)

Results:

Two patients suffered from a severe ulcerative colitis and also had an ulcerative colitis associated colon carcinoma. Two other patients undergoing TaTME suffered from Crohn's disease. One of them underwent colectomy for refractory pancolitis and perianal fistulation. The other patient had undergone multiple operations and was left with a terminating ileostomy and a fistulating, rectal remnant. All specimens were extracted transanally. The two patients with ulcerative colitis both received an ileal pouch-anal anastomosis, one stapled and one hand-sewn. Since there was no rectal cancer present, M.E.R.C.U.R.Y. II° was deliberately accepted in two patients. There was no mortality and only minor morbidity in the course of reconvalescence. None of the patients has exhibited a postoperative new-onset of a pelvic floor dysfunction.

Conclusion:

TaTME appears to be a further option for patients afflicted with an IBD of the rectum with little to no morbidity and good functional outcome in the described patient series. A deliberate indication and choice of the operative procedure could make this option accessible for more patients requiring rectal resection, not only for primary rectal cancer.

Da Vinci Roboter assistierte Spaltung des Ligamentum arcuatum medianum (Dunbar Syndrom)

(Abstract ID: 582)

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Background:

Median arcuate ligament syndrome (Dunbar syndrome) is a rare disease with a fibrous compression of the upper visceral arteries by the diaphragm associated with symptoms related to temporary mesenteric ischemia. Surgical treatment consists of dissection of the arcuate ligament, with both open and laparoscopic approaches described. The DaVinci robotic system allows for delicate dissection around the vascular structures, and we present our experience using this system.

Materials and methods:

All included patients presented with food-intake dependent upper GI symptoms correlating with a proximal ligamentous stenosis of the celiac artery or superior mesenteric artery. Other diseases had been excluded through an extensive interdisciplinary work-up. Minimal invasive surgery using the Da Vinci Robotic System was performed in supine position using a 6 port approach with bipolar forceps and scissors for dissection. Dividing the left and right crus of the diaphragm, the ventral circumference of the aorta above the celiac trunc was liberated and dissected down to the origin of the superior mesenteric artery, completely liberating the celiac trunc and - if necessary - the upper circumference of the superior mesenteric artery. Postoperatively, patients were followed by dynamic ultrasound exams and clinical examination.

Results:

Five patients (4 female / 1 male; 1 patient with recurrent stenosis after previous open surgery), age 32 years (range: 24-58 years), abdominal symptoms for 6 years (range: 1-10 years) years. Median operation time was 190 minutes (range: 165-295 minutes), and the operation was technically successful in all cases. No post-operative complications as pancreatitis or wound infections occurred. Mean length of stay was 5 days (range: 3-6 days). Postoperatively, symptoms significantly improved in all patients. In four cases, flow in the visceral arteries had normalized. In one patient a lasting fibrous stenosis at the aortic origin was detected. Because of reduced symptoms patient refused additional stenting.

Conclusion:

Surgical repair of median arcuate ligament syndrome is a challenging dissection. The Da Vinci surgical system offers a three-dimensional, magnified view and allows excellent visual control of the surrounding tissue for preparation around the aorta, allowing for an extensive preparation around the celiac trunc and the superior mesenteric artery.

Comparison of the results of traditional laparoscopic sigmoid resection with transvaginal hybrid NOTES for diverticular disease

(Abstract ID: 879)

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Background:

Natural orifice transluminal endoscopic surgery (NOTES) has been used regularly since 2004 as a minimally invasive surgical procedure to reduce the number of abdominal trocars, surgical trauma, postoperative pain, intraoperative complications, and length of hospital stay.

Transvaginal access is the most often used approach for a sigmoid resection when using hybrid NOTES for diverticular disease. Despite its growing application, very limited research has been conducted on the comparison of the results of the traditional laparoscopic sigmoid resection (LSR) to transvaginal hybrid NOTES (NSR) for diverticular disease.

Materials and methods:

Since June 2012, the first 14 NSR patients have been documented in our clinic and could be compared to 13 LSR patients based on comparable characteristics for BMI, ASA, Hansen/Stock classification, and age. The outcomes of the two groups have been compared for patient and procedure-related parameters and results.

Results:

Median length of procedure did not differ significantly for NSR compared to LSR (192 minutes [139-270] vs. 182 minutes [133-257]; p=0.168). For LSR, application of more than four abdominal trocars was necessary in three cases compared to none for NOTES (p=0.041). While there were no intraoperative complications for the NSR patients, there were 3 intraoperative complications in the LSR group (23.1%), with a minimally significant difference (p=0.041). The postoperative median hospital stay length was shorter for NSR patients compared to LSR, but without any significance (8 days [7-28] vs. 10 days [7-34]; p=0.062). The average pain level of the NOTES patients substantially dropped below 1 on the VAS scale after day 5 (end of epidural catheter) versus staying above 2 for the LSR group (day 6: 0.6 vs 2.0; p=0.082; day 7: 0.3 vs. 1.9; p=0.023; day 8: 0.7 vs. 1.7; p=0.179).

Conclusion:

Our analysis indicates slight positive effects for number of abdominal trocars, complications, postoperative pain, and length of hospital stay for NSR, but no significant effect for length of procedure compared to LSR.

IGS-Intragastric Single Port Surgery for Large Benign Gastric Tumors: Clinical Series

(Abstract ID: 905)

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Background:

Introduction: Benign gastric tumors can be challenging for either endoscopic or surgical treatment. A local gastric resection is usually indicated in tumors with a diameter beyond 3cm if full-thickness resection is needed or endoscopic R0 removal is impossible. The increasing application of laparoscopic techniques with stapled wedge resection is potentially leading to unnecessary loss of unaffected gastric tissue. As an alternative we present a video of a new technique of intragastric single port surgery (IGS) for the resection of solitary large benign tumors of the stomach.

Materials and methods:

Methods: 14 patients with benign tumors localized at submucosa level with a diameter range between 3-6cm encompassing GISTs, Dieulafoy angiodysplasia and other indications were included. A simultaneous intraoperative gastroscopy was performed in each patient in order to define the resection margins. As a next step the stomach wall is percutaneous exteriorized and a single port was introduced in the epigastric space under direct vision. Afterwards part of the ventral gastric wall was eviscerated and fixed at the abdominal wall. The resection was performed with 60mm linear staplers und endoscopic guidance and the tumor was retrieved through the single port access. Hand-sutured oversewing was outinely performed through single port. Finally the gastric incision was closed percutaneously.

Results:

Results: The operative time lasted between 42 and 58 minutes for the intragastric surgery. No intraoperative complications were observed. One patient developed a wound infection. All resection margins were tumor free. Postoperative control at POD 15 revealed no complications.

Conclusion:

Conclusion: The concept of percutaneous intragastric single port gastric surgery (IGS) facilitates the minimal invasive resection of large benign gastric tumors with reduced loss of unaffected gastric tissue.

The “Hug” Technique- Roux-en-Y Gastric Bypass with preservation of 180° posterior fundoplication in patients with previous Nissen Fundoplication: a simple solution for a complex problem

(Abstract ID: 914)

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Background:

Objectives: Laparoscopic conversion of Nissen Fundoplication to Roux-en-Y Gastric Bypass is a complex procedure related to increased operative times, morbidity and length of hospital stay (LOS). In this study, a new simplified technique avoiding the total dismanteling of the previous Nissen repair to construct the gastric pouch, the so called "Hug" Technique, is presented for conversion of Nissen Fundoplication to RYGB.

Materials and methods:

Methods: The present examination is a prospective single-center clinical series reporting on feasibility and safety of the "Hug" technique for laparoscopic Roux-en-Y gastric bypass (RYGB). The major innovation of this approach is the fact that the posterior part of the fundoplication wrap is left in place without further dissection or manipulation. The anterior part is stapled and remains attached to the excluded stomach. Prospective data on intraoperative and postoperative morbidity, reflux symptomatology and bariatric outcomes were collected.

Results:

Results: A total of 44 consecutive patients with a mean Body Mass Index (BMI) of 43.7 kg/m² (SD = 4.0, range = 35.6 - 52.0) underwent the "Hug" procedure between 2004 and 2015. Mean operative time was 72min (58-105min). Morbidity was low (4.5%), with no mortality. Reflux symptomatic dropped significantly without PPI medication, and mild asymptomatic endoscopic reflux was found in 12 % of the patients.

Conclusion:

Conclusion: In contrast to current techniques for bariatric surgery for patients having previously a Nissen fundoplication, the "Hug" procedure for RYGB is safe and simple to perform. The technique avoids the deconstruction of the previous repair and still maintaining an anti-reflux anatomy. Nevertheless, there is a need for further studies to evaluate the long-term outcomes of the procedure.

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New Technique for Hyperinsulinemic Hypoglycemia Post Gastric Bypass: One Anastomosis Jejunal Interposition with Gastric Remnant Resection (Branco-Zorron Switch)-Pilot Clinical Series

(Abstract ID: 920)

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Background:

Introduction: Postprandial chronic hypoglycaemia following gastric bypass for obesity is considered a late manifestation of the dumping syndrome. The anatomic and physiologic changes of the operation may lead to uncommon but difficult to treat complication as hyperinsulinemic hypoglycemia with neuroglycopenia. For patients non-responders for conservative treatment, extreme therapy with distal pancreatectomy or revision to normal anatomy were reported. We propose a new procedure to effectively treat this complication after bariatric surgery and applied in a pilot clinical series.

Materials and methods:

Methods: Laparoscopic revision with One-Anastomosis jejunal interposition and gastric remnant and alimentary limb jejunal resection (Zorron-Branco Procedure) was performed in 9 symptomatic and irresponsive to medical treatment patients with chronic symptomatic hypoglycemia from 2 to 11 years after RYGB. Technical steps included: 1. Fully adhesiolysis and recognition of anatomy; 2. Remnant gastrectomy with stapling ca 3cm from pylorus. 3. Section of the jejunal limb 20cm from GE. 4. Handsewn anastomosis between jejunal interposition and remnant antrum. 5. Resection of the remnant alimentary limb. 6. Leak testing with methylene blue.

Results:

Results: All patients were submitted to the procedure without intraoperative complications. BMI evolved from a mean of 42.0 to 26.5kg/m2 after a mean of 20 months follow-up. Mean operative time for revisions was 188 min. Postoperative stay was 6 days. Follow-up showed normalization of insulin levels from a mean of 8.2 to 3.2microUI/ml and Hba1c.

Conclusion:

Conclusions: Revisions after bariatric surgery shall preserve anatomical and physiologic normalization. The surgical therapy for symptomatic hypoglycemia was successful in all cases using the technique, possibly because of restoring the function of the duodenum allowing reduction of GIP and GLP-1 and hyperinsulinemia, and reducing ghrelin production due to fundic resection. Jejunal interposition is a safa therapy for hyperinsulinemic hypoglycemia post gastric bypass in selected patients.

Laparoscopic transgastric circumferential stapler-assisted versus endoscopic esophageal mucosectomy in a porcine model

(Abstract ID: 14)

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Background:

Background: Extensive endoscopic mucosal resection (EMR) for Barrett's esophagus (BE) may lead to stenosis. Laparoscopic, transgastric, stapler-assisted mucosectomy (SAM) retrieving circumferential specimens is proposed, compared to EMR, and the efficacy of added fundoplication is assessed in a porcine model.

Materials and methods:

Methods: SAM was evaluated in three phases. (1) The feasibility of SAM and the quality, extent, and size of specimens was assessed in eight animals. (2) The mucosal healing and development of eventual stenosis was evaluated in a 6-weeks survival experiment comparing SAM (n=6) and EMR (n=6). (3) Reflux was monitored at baseline, after SAM and fundoplication (n=6).

Results:

Results: SAM was successfully accomplished in all animals. A complete circular mucosectomy specimen was obtained with an area size of 492 (426-573) mm2 and 941 (813-1209) mm2 using a 21-mm and 25-mm stapler, respectively. The ratio of the lumen before necropsy and post-intervention was 0.96 [0.9-1.04] and 0.27 [0.18-0.39] ($p<0.0001$). For reflux measurement time until detection of reflux by impendance decreased after SAM compared to baseline (80 (62-97) versus 33 (29-38) seconds, $p<0.001$). After adding a fundoplication the gastroesophageal junction was patent in 19/36 measurements, in the remaining measurements time to reflux (76 (68-84) seconds) equaled baseline values again ($p=0.84$).

Conclusion:

Conclusions: SAM provides a novel technique for en-bloc mucosectomy in BE. In contrast to EMR mucosal healing in SAM was not associated with stenosis up to six weeks after intervention. Laparoscopic fundoplication after SAM ensures an effective reflux barrier. The combination of laparoscopic fundoplication and SAM may effectively control BE in long-term.

Value of pepsin in saliva and oropharyngeal pH-monitoring to assess the outcome of antireflux surgery in patients with primary extraesophageal symptoms

(Abstract ID: 55)

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Background:

The aim of this study was to evaluate the significance of pepsin in saliva and pharyngeal pH-monitoring as tests to assess surgical outcome of patients with gastrooesophageal reflux disease (GERD) and primary extraesophageal symptoms.

Materials and methods:

Twenty consecutive patients with documented chronic GERD and primary extraesophageal symptoms despite treatment with a proton pump inhibitor received laparoscopic anti- reflux surgery (LARS). 24-hour esophageal impedance pH- monitoring (MII-pH) and high-resolution esophageal manometry (HRM) data were documented preoperatively and 3 months after surgery. In addition, pre- and postoperatively an ENT examination was performed, including assessment of Belafskys Reflux Finding Score (RFS). Quality of life was evaluated by means of the Gastrointestinal Quality of Life Index (GIQLI). Evaluation of extra-esophageal symptoms was carried out, using the standardized Belafsky Reflux Symptom Index (RSI) questionnaire. Three times during the 24-h-MII-pH monitoring, pepsin - determination in saliva (Peptest, RDBiomed™) was accomplished. Simultaneous to the 24-h-MII-pH monitoring and collection of saliva samples, detection of oropharyngeal reflux events was performed using the Restech Dx-pH Measurement System™ (Dx-pH). The data before and after procedure were compared. Treatment failure was defined with postoperative pathologic RFS or RSI score and improvement of GIQLI of less than 10 points, despite having a normal distal acid exposure.

Results:

Before LARS all patients had a pathological ENT examination, RSI score and MII-pH data. After surgery all patients showed a normal distal acid exposure. Five patients were defined as treatment failure. In these patients, pepsin concentration in saliva increased from a mean of 169,4 ng/ml to 200,3 ng/ml. In patients defined as treatment success, mean value of pepsin decreased from 186 ng/ml to 106,4 ng/ml ($p<0.000$). Oropharyngeal pH- monitoring data showed no significant change in both groups.

Conclusion:

Significant reduction of pepsin in saliva could be a marker for treatment success, while oropharyngeal pH- monitoring seems not to be an adequate test. However, larger studies are required to reach firm conclusions.

Neoadjuvant treatment improves survival in locally advanced signet ring cell containing carcinomas of the upper gastrointestinal tract

(Abstract ID: 84)

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Background:

Recent retrospective multicentric data of the French FREGAT working group favor primary resection without neoadjuvant chemotherapy for signet ring cell containing (SRC) gastric cancer. Aim of this analysis of a prospectively maintained database is the comparison of primarily resected with neoadjuvantly treated locally advanced SRC esophagogastric adenocarcinomas.

Materials and methods:

Between 2002 - March 2016 310 patients fulfilled inclusion criteria of cT3/4/Nany/Many stage at diagnosis; signet ring cells contained in either pretherapeutic or postoperative histopathological work up; and underwent surgical exploration or resection in curative or palliative intention. 192 (61,9%) of these had received neoadjuvant radiochemotherapy (NEO group) or chemotherapy, 118 (38,1%) were primarily resected (RES group). X^2-test was used for comparison of frequencies. Survival curves were estimated according to the Kaplan-Meier method. The log rank test was used for comparison of survival curves. Multivariate analysis was done stepwise by forward and backward Cox regression analysis.

Results:

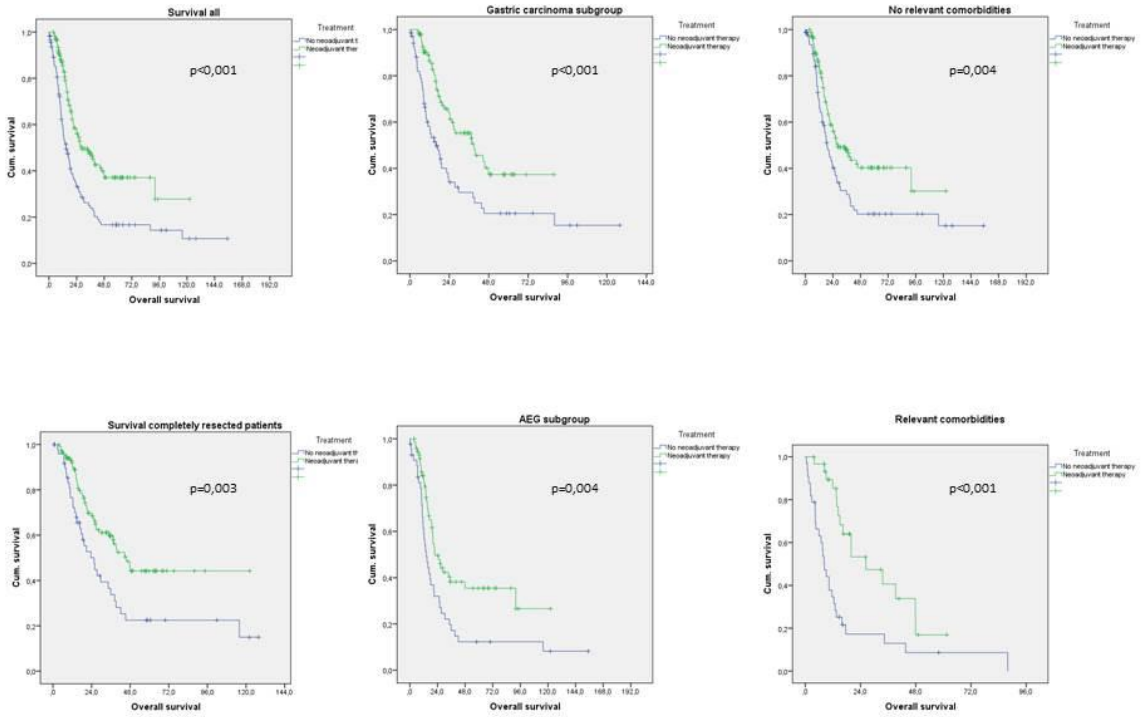
128 (41,3%) presented with adenocarcinoma of the esophagogastric junction (AEG), 182 (58,7%) with gastric cancer. The two groups differed in regard to relevant comorbidities (28,8% in RES versus 18,9% in NEO), advanced local stage cT4 (RES: 14,4%; NEO: 21,4%) and cN+ stage (RES: 65,0%; NEO: 80,7%). Neoadjuvant therapy was significantly associated with less postoperative medical complications (p=0,009), improved (y)pT-category (p=0,035), improved (y)pN-category (p<0,001), improved lymph node ratio (p<0,001) and higher rate of R0 resections (68,8% in NEO versus 45,8% in RES; p>0,001), but not with overall postoperative nor surgical complications.

Overall survival was significantly improved after neoadjuvant chemotherapy compared to primary resection (median survival in RES: 14,8 months versus NEO: 28,5; p<0,001), significantly better survival in neoadjuvantly treated patients was furthermore detected in subgroups of completely resected patients, and patients with and without relevant comorbidities. (See figure).

Conclusion:

We could not confirm the data of the FREGAT working group. Neoadjuvant therapy in our cohort of SRC esophagogastric adenocarcinomas was associated with significantly improved survival in spite of worse preoperative staging category and should therefore be recommended in guidelines for this patient subgroup. Relevant limitations of our study include its retrospective and non-randomized design as well as possible interobserver variation of SRC classification in histological exams.

Picture:


Survival all
p<0,001
Gastric carcinoma subgroup
p<0,001
No relevant comorbidities
p=0,004
Survival completely resected patients
p=0,003
AEG subgroup
p=0,004
Relevant comorbidities
p<0,001
Cum. survival
Overall survival
Treatment

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Gastric GIST superirinfected by actinomycosis: case report and review of the literature

(Abstract ID: 179)

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Background:

Both gastro-intestinal stromal tumors (GIST) and intra-abdominal actinomycosis are uncommon pathologies that can present with nonspecific signs and symptoms such as weight loss, abdominal pain, and/or subocclusion. Both diseases can be insiduous and evolve over a long period. They also share clinical and radiological features with other solid tumors such as adenocarcinoma. Personal medical history, including family and travel history, risk factors (tobacco use and alcohol consumption), age, and past surgical interventions, can be helpful in the diagnosis. For example, we know that intra-abdominal actinomycosis can develop when the mucosal wall is broken such as in cases of perforated appendicitis, diverticulitis, surgical interventions of the GI tract, and/or endoscopic procedures. Because diffential diagnosis between these two pathologies is difficult, and aspects of treatment such as followup are very different, histological identification is crucial before any treatment can be initiated.

Materials and methods:

A 56-year old male presented with acute abdominal pain. He also complained of weight loss and asthenia. Clinical evaluation was nonspecific. Laboratory parameters showed only a mild elevation in C-reactive protein, and tumour markers were in the normal range. A computed tomography (CT) scan showed a paragastric mass without secondary lesions. Gastroscopy was performed and a necrotic cavity communicating with the stomach was observed. No biopsies were performed because of the necrosis, but the cytology came back postive for actinomycosis. Penicillin was administered according to the standard treatment of actinomycosis. Two weeks later no improvement was observed. Therefore, a new gastroscopy with biopsies was performed, which came back positive for gastric GIST. A total gastrectomy was performed.

Results:

A 12x8.5x8cm cystic mass was found, and microscopic and immunohistochemical investigations came back positive for a gastric-GIST with signs of malignant potential.

Conclusion:

In a case such as this one, the diagnosis was uncertain prior to receiving the histological results because of nonspecific findings. The first set of results indicated an actinomycosis infection. Due to the large lesion, a simple course of antibiotics would not have been enough. Before performing surgical resection, neoplasia had to be excluded because the choice of surgical approach and the extension of resection are different for different types of lesions. When confronting an unusual intrabdominal mass, early diagnosis with histological identification is essential in order to avoid incomplete or unnecessary aggressive treatment. Radiologic/endoscopic or surgical biopsies are usually necessary because different approaches and treatments will be used in cases of infection versus neoplastic lesions.

Adenocarcinoma of the esophagogastric junction Siewert Type II: gastrectomy versus esophagectomy

(Abstract ID: 246)

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Background:

There is an increasing incidence of adenocarcinoma of the esophagogastric junction within recent years. Surgery remains a corner stone of treatment and depends on tumor location. German National Guidelines recommend extended gastrectomy for Siewert Type II tumors. However, in some cases the extent of tumor mandates esophagectomy. The aim of this study was to compare outcome after gastrectomy and esophagectomy within 25 years at two German University Hospitals.

Materials and methods:

We included 205 patients that underwent surgery for adenocarcinoma of the esophagogastric junction Siewert Type II between 1990 and 2014 at our centres. Perioperative and follow-up data were collected prospectively and analysed retrospectively for two time intervals (1990-2005 versus 2006-2014) to allow comparison over time.

Results:

81 patients underwent surgery between 1990-2005, 124 patients between 2006-2014. Overall, 68 % of patients underwent an extended gastrectomy and 32 % a thoraco-abdominal esophagectomy. Over time, we noticed an increase in esophagectomies with only 15% of patients receiving this therapy between 1990-2005, compared to 44% in the later period (p<0,001). Further, use of neoadjuvant treatment increased significantly from 47 to 74 % (p<0,001). Analyses of postoperative complication rate showed a reduction of severe complications (Grade 4/5 - 1990-2005: 25,0 % versus 2006-2014: 9,3 %)) over the time period after esophagectomy, while complications after gastrectomy remained stable (1990-2005: 20,3% versus 2006-2014: 17,1 %). 5-year survival was significantly better between 2006-2014 compared to the earlier period (51% versus 27%; p<0,001). Multivariate analysis confirmed pUICC-stage (RR: 2.49, 95% CI: 1.66 - 3.75), resection margins (RR: 1.92, 95% CI: 1.15 - 3.20) and treatment period (RR: 1.67, 95% CI:1.13 - 2.46) as independent prognostic factors of long-term survival.

Conclusion:

We found an increased use esophagectomies for the treatment of adenocarcinoma of the esophagogastric junction Siewert Type II in our two University Hospitals within recent years. Despite the "higher extent of surgery" in this approach, long-term survival improved significantly over time. Reasons might include the increasing use of neoadjuvant treatment or the decreased mortality after esophagectomy over time.

Robotic assisted resection of esophageal cancer - early results of the first 50 patients

(Abstract ID: 247)

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Background:

Esophageal cancer resections have a high morbidity and substantial mortality. Most frequently pulmonary problems occur postoperatively - mainly in patients who have had neoadjuvant radiochemotherapy. A complete laparoscopic / thoracoscopic approach is possible with continous bilateral ventilation. However, these operations are very rarely performed, since a number of problems f.e. anastomose technique are not sufficiently resolved in conventional minimal invasive approach. The help of a robotic assistance (f.e. the Da Vinci system) might be helpful to establish these procedures in a safe and standardized manner.

Materials and methods:

During the last three years we performed 50 robotic assisted complete minimal invasive esophagectomies in carcinoma patients. 39 patients had a abdomino-thoracic resections with intrathoracic hand-sewn anastomosis, 11 had a thorac-abdominal resection with hand-sewn cervical anastomosis. 38 patients received neoadjuvant radiochemotherpay (CROSS protocol), 3 patients received perioperative chemtherapy (FLOT 4 protocol) and 8 patients had a primary operation.

The data of all patients were collected prospectively in our Robotic data bank.

Results:

Mean total OR time was 438 (302 - 620) min. and mean console time was 358 (255 - 548) min.. We converted 5 times in 4 patients (1 time laparoscopy - laparotomy; 2 times thoracoscopy - thoracotomy, 1 time both). Mortality was 3 / 50: One clostridium perfringens infection on day 2, one ARDS on day 38 and one anastomotic leak treated via esosponge resulting in an aortic septic bleeding on day 36. Morbidity was 62 %: Clavien Dindo I-IIIa 38 %, Clavien Dindo IIIb-IVb 18 % and Clavien Dindo V 6%. Anastomotic leakage occured in 4 / 11 cervical anastomoses (all treated conservatively) and in 4 / 39 thoracic anastomoses (all treated with esosponge, 3 ad integrum, one death; see above). Only three patients had pulmonary complications, 2 pneumonia and one ARDS (see above). Mean stay on ICU was 2.1 (1-38) days. Mean hospital postoperative stay was 16.2 (9-61) days.

Conclusion:

The perioperative results of our first 50 robotic assisted esophageal resections are reasonable in terms of overall morbidity and mortality. The number of pulmonary complications was only 6 % and consequently the mean length of ICU and hospital stay was short. The cervical anastomoses leakage rate was high without damaging the patients seriously. the conversion rate dropped from 4 / 25 to 1 / 25 within the three years. Robotic assisted minimal invasive esophageal resection is the standard approach in patients with esophageal cancer in our institution.

CRS and HIPEC for patients with peritoneal metastases of gastric cancer

(Abstract ID: 364)

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Background:

Patients with peritoneal metastases of gastric cancer have poor prognosis with a median survival time of 7 months. Cytoreductive surgery (CRS) in combination with hyperthermic intraperitoneal chemotherapy (HIPEC) showed major improvement in survival in a selected group of patients. The aim of this study was to investigate the impact of CRS and HIPEC on morbidity and survival.

Materials and methods:

This retrospective analysis of prospectively collected data includes all patients with peritoneal metastases of gastric cancer treated with CRS followed by HIPEC (60min, mean temperature 41°C) at our center between 01/2008 and 03/2015 (n=41).

Results:

The mean age was 55.1 (SD 10.2) years with a mean BMI of 25.5 (SD 5.1). 40 (97%) patients received preoperative systemic chemotherapy. Overall morbidity was 29% and one patient died within the hospital stay (mortality: 2%). 7 patients (17%) developed surgical complications as anastomotic leakage (n=2), burst abdomen (n=2), wound healing disorder (n=5), fistula of the pancreas (n=2) intraabdominal abscess (n=2) and postoperative hemorrhage (n=1). The mean operation time was 371 (SD 138) minutes with a mean blood loss of 679 (SD 488) ml. Mean follow up was 12 months, median survival of the patients was 11 months. Our study confirmed PCI <13 (13 vs. 7 months; p=0.03) and CCR0 (16 vs. 7 months; p=0.04) as relevant predictive factors of higher patient survival.

Conclusion:

CRS and HIPEC showed positive results in selected patients with peritoneal metastases of gastric cancer. The rate of severe complications and in hospital mortality was acceptable. The impact of HIPEC in addition to cytoreductive surgery will be evaluated by the ongoing GASTRIPEC study.

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Optimal length of proximal resection margin in adenocarcinoma of the esophagogastric junction: A systematic review of the literature

(Abstract ID: 374)

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Background:

The optimal length of proximal resection margin in esophagogastric junction cancer has not been established yet. We performed a systematic review to determine optimal margin length.

Materials and methods:

Medline and Embase databases were searched for «adenocarcinoma esophagogastric junction», «adenocarcinoma gastroesophageal junction» or «cardia cancer» and «proximal margin». Only cohort studies that treated proximal margin length in adenocarcinoma of the esophagogastric junction were included.

Results:

A total of 10 cohort studies from 1995 until 2016 with in total 2124 patients corresponded to inclusion criteria. Studies included 230 patients with Siewert type I, 957 patients with Siewert type II, 661 patients with Siewert type III and 276 patients with non-classified adenocarcinoma of the esophagogastric junction. A total of 1343 patients had transhiatal extended gastrectomy, 251 patients had proximal gastrectomy and 530 patients had esophagectomy. R0 and R1 resection rates ranged from 63-100% and 0-36%, respectively. Median proximal resection margin was 2.3cm and varied between 0-16cm. 5 out of 10 studies with 996 patients treated optimal margin length. Recommended margin length varied between 2 and 6cm with a median of 3.7cm. Three studies correlated proximal margin length with survival outcome. While two studies observed decreased survival for resection <= optimal margin length (2, 3.8cm) the third, the most recent and largest study (n=693), did not observe any influence of proximal margin length on survival.

Conclusion:

Studies reported a median proximal margin of 2.3cm with 3.7cm as median optimal margin length. In prognostic studies the influence of proximal margin length on survival remains unclear.

Thoracoabdominal versus transhiatal surgical approaches for adenocarcinoma of the esophagogastric junction – A systematic review and meta-analysis

(Abstract ID: 495)

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Background:

The incidence of adenocarcinoma of the esophagogastric junction (AEG) has been rising rapidly. Different approaches have been proposed for surgical treatment including transhiatally extended gastrectomy (TEG), and thoracoabdominal esophagectomy (TAE) with thoracic lymphadenectomy and intrathoracic anastomosis. Because the optimal approach is still unclear, this systematic review was conducted with the objective to compare oncological as well as peri- and postoperative outcomes of TAE and TEG for therapy of AEG, focused on AEG II

Materials and methods:

MEDLINE, EMBASE, and the Cochrane Library (CENTRAL) were searched until April 2016. Studies comparing TAE and TEG for surgical treatment of AEG type tumors have been included. Patient's baseline, peri- and postoperative data have been extracted and meta-analyses have been conducted for the outcomes: number of dissected lymph nodes, R0-resection rate, anastomotic leak rate, postoperative morbidity, and 30-days mortality.

Results:

Of 5778 articles identified, six studies have been included for further analysis. In total, 823 patients underwent TAE, and 906 patients TEG. No differences between the approaches could be found in regard to number of dissected lymph nodes (p=0.30), R0-resection rates (p=0.87), anastomotic leak rates (p=0.80), and 30-days mortality (p=0.19). However, a lower rate of postoperative morbidity was found after TEG (p=0.02).

No survival analysis could be done due to diversity of the reported data in the different studies as well as missing data. But among the included studies there was no study reporting significant differences in overall survival or disease-free survival.

We were not able to perform a subgroup analysis for AEG II as only one retrospective study provided special data for AEG II without showing a difference in the number of dissected lymph nodes (p=0.52), postoperative morbidity (p=0.31), anastomotic leakage (p=0.66), or 30-day mortality (p=0.40).

Conclusion:

The optimal approach to surgical therapy of AEG II still remains unclear. This study identified a significantly lower rate of postoperative morbidity after TEG at comparable surgical outcomes, no study could show a survival difference but meta analysis of postoperative survival was not possible due to missing and inhomogeneous data. There are major limitations concerning the quality of included studies. Current data strongly mandates a properly designed randomized controlled trial to identify the optimal surgical approach for AEG type II tumors.

Perioperative chemotherapy in esophagogastric adenocarcinoma: Who benefits most? – An analysis of more than 800 patients based on clinical staging

(Abstract ID: 509)

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Background:

Perioperative chemotherapy [CTx] is standard treatment for locally advanced esophagogastric adenocarcinoma [EGA] in Europe. Since inclusion criteria of the published trials were heterogeneous, it remains unclear which patient subgroups benefit most from perioperative chemotherapy.

Materials and methods:

We analyzed data of 837 consecutive patients with EGA (183 AEG I, 205 AEG II, 59 AEG III, 390 gastric cancer [GC]) without distant metastases, who underwent primary surgery [PS] (n=453) or neoadjuvant CTx [nCTx] followed by surgery (n=384) in curative intent (R0-resection: 731) at our institution 01/2001-08/2016 from a prospective database. Prognostic impact of perioperative CTx was analyzed according to clinical T- and N-staging (TNM-classification 7th edition, UICC 2010). Survival was estimated according to Kaplan-Meier (log rank) in R0-resected patients.

Results:

Patients in the PS and nCTx group markedly differed in cT- and cN-categories: PS: cT1 72 (16.9 %), cT2 165 (38.7%), cT3 172 (40.4%), cT4 17 (4.0%); cN0 296 (69.5%), cN+ 130 (30.5%); nCTx: cT1 3 (0.8%), cT2 27 (7.3%), cT3 287 (77.2%), cT4 55 (14.8%); cN0 60 (16.0%), cN+ 315 (84.0%) ($p<0.001$ respectively).

When including all patients no survival benefit after nCTx (n=337) compared to PS (n=394) (median overall survival [mOS] 78.2 vs. 93.8 months, p=0.989) was observed.

Subgroup analyses showed that neoadjuvant CTx did not improve survival in case of clinically staged T1-, T2-, T4-, and N0-tumors (p=0.739, p=0.916, p=0.406, p=0.279). Patients staged cT3 (mOS not reached vs. 35.9 months, $p<0.001$) and cN+ (mOS 78.2 vs. 30.5 months, p=0.025) had significant benefit from nCTx. Analyzing subgroups according to the preoperative factors age, gender, comorbidities, tumor localization, grading, and Laurén classification showed no further beneficial subgroup for nCTx.

Conclusion:

In case of esophagogastric adenocarcinoma staged cT3 and cN+ prognosis is improved by neoadjuvant CTx. These patients should be included in multimodal treatment plans. Patients with locally limited or very advanced disease and those without nodal spread do not seem to benefit from nCTx.

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Pylorotomy and pyloroplasty in thoracoabdominal esophagectomy – are these procedures really useful in preventing delayed gastric emptying?

(Abstract ID: 584)

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Background:

Pylorotomy or pyloroplasty in thoracoabdominal esophagectomy is performed on a routine basis in many high volume centers with the purpose of preventing delayed gastric emptying due to truncal vagotomy. However, recent series have questioned the benefit of these procedures. Today, a controversy exists with regard to the need of pyloric drainage procedures following esophageal substitution with gastric conduit. The present study aimed to determine the value and role of pylorotomy and pyloroplasty in esophagectomy.

Materials and methods:

A retrospective review of prospectively collected data was performed on all consecutive patients who underwent thoracoabdominal resection of the esophagus at a single tertiary referral center between January 2009 and December 2013. Clinicopathologic features including age, sex, body mass index, tumor location and stage, and nutrition management were assessed. The clinical course and outcome were evaluated with focus on postoperative nutrition and gastric emptying difficulties. Among others, the median stay of the nasogastric tube, the rate of gastric outlet obstruction symptoms, and the median postoperative day of return to normal full diet was assessed.

Results:

The study group comprised 105 patients who underwent esophageal resection at the Katharinenhospital Stuttgart, Germany. The median age of all patients was 64 years. The majority was male (81%) and most patients suffered from adenocarcinoma of the esophagus (72%). The mean body mass index of all patients was 26. All patients underwent thoracoabdominal esophageal resection using the Lewis-Tanner approach. The mean hospital stay was 23 days including a mean of six days on the intensive care unit. The 30-day hospital death rate was 3.8%.

According to the department standard, in none of the patients, pylorotomy, pyloroplasty, or other pyloric drainage procedures were performed. In the majority of patients (83%), the nasogastric tube was removed at postoperative day one or two. Overall, 15/105 patients showed signs of delayed gastric emptying with the need of reinsertation of a nasogastric tube (14%). In the median, return to a regular diet was feasible at postoperative day six.

Conclusion:

In literature, the rate of delayed gastric emptying after thoracoabdominal esophagectomy is reported to be around 15%, even by use of pyloric drainage procedures. This rate is comparable to that in the present series in which no pylorotomy or pyloroplasty have been used. Thus, we believe that pyloric drainage procedures may be unwarranted in thoracoabdominal esophagectomy. In contrast, these procedures can be associated with complications leading to morbidity or even mortality. In those patients with persistent postoperative gastric outlet obstruction, delayed endoscopic dilation might be considered to manage clinical symptoms

Changes in incidence, treatment and outcome of adenocarcinomas of the gastroesophageal junction over a 24 year period

(Abstract ID: 590)

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Background:

Adenocarcinomas of the gastroesophageal junction (AEG tumors) presented a major increase in incidence over the last decades in the Western world. The aim of this study was to audit incidence, treatment and outcome of these tumors in a single surgical center over a 24 year period.

Materials and methods:

From 1990-2014, 281 patients underwent surgical resection for AEG tumors in a single university center. Patients were allocated into three groups: 1990-1995 (n=27), 1996-2005 (n=112) and 2006-2014 (n=142) based on caseload per year and routine use of neoadjuvant treatment. Data were analysed retrospectively regarding demographics, preoperative staging, surgical technique, neoadjuvant/adjuvant treatment, postoperative staging, mortality and long-term outcome.

Results:

Mean number of resections per year was 5 in 1990-1995 (total n=27), 11 in 1996-2005 (n=112) respectively 16 in 2006-2014 (n=142). Comparison between 1990-1995 and 1996-2005 showed that only preoperative tumor stage and curative intent was higher in the later period ($p<0.09$). However, comparison between all three groups showed that patients between 2006-2014 presented significantly more often AEG type 1 tumors ($p=0.05$), and treatment included rather esophagectomy than gastrectomy in a curative intent ($p<0.001$). Preoperative tumor/nodal stage was higher ($p<0.003$). Neoadjuvant treatment was used in 71.8 versus 16.1% respectively 3.7% ($p<0.001$). Interestingly, postoperative tumor stage shifted in 2006-2014 towards lower TNM stages ($p<0.045$), and number of positive lymph nodes / lymph node ratio was lower ($p<0.04$). 30-day / in-hospital mortality decreased from 18.5 to 5.4 to 2.1% respectively 18.5 to 8.9 to 3.5% ($p<0.013$) over time. Long-term survival was significantly better in the last period with an estimated median survival of 39 versus 17 versus 14 months ($p=0.017$).

Conclusion:

We observed a shift towards AEG type 1 tumors with higher preoperative tumor stages over time, mandating rather esophagectomy than gastrectomy. However, decreased perioperative mortality and routine use of neoadjuvant treatment from 2006 on might explain the better long-term outcome and lower postoperative tumor stages in this group.

Accuracy of staging laparoscopy in detecting peritoneal seeding in cancer of the esophagogastric junction

(Abstract ID: 679)

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Background:

Staging laparoscopy (SL) is commonly used in the management of gastrointestinal cancer. Patients with occult peritoneal metastases, not diagnosed preoperatively, have a poor prognosis. Due to current staging guidelines in esophageal and esophagogastric junction (AEG) carcinoma SL is optional in locally advanced T3-T4 AEG tumors. In the present retrospective study, we evaluate the accuracy of SL in patients with AEG tumors.

Materials and methods:

A total of 139 patients received SL based on histological proven esophageal, AEG tumor or gastric cancer. The analysis was performed from January 2008 to October 2016. Patients with a diagnostic laparoscopy due to locally demand were indicated. AEG tumor was diagnosed in 80 patients (58%), gastric carcinoma in 50 cases (36%) and 9 patients (6%) suffered from esophageal cancer. Among the 80 patients with AGE tumor 42 had type I (53%), 28 type II (35%) and 10 type III (13%).

Results:

SL revealed macroscopic peritoneal metastasis in 35 of 139 patients (25%), parted in 14/80 patients (18%) with AEG tumor and 21/50 patients (42%) with gastric carcinoma. There was no evidence of peritoneal seeding in patients with esophageal cancer. The percentage of peritoneal metastasis is higher the more distal the location of the tumor. Corresponding to this finding, the distribution of peritoneal seeding was: 10% in AEG I, 25% in AEG II and 30% in AEG III. There was a significant frequency in gastric carcinoma and peritoneal dissemination compared to all AEG types in summary and peritoneal seeding ($p= 0.004$), but especially in cases of AEG I ($p= 0.001$). AGE II showed less percent of peritoneal metastasis then AEG III or gastric cancer, however this did not reach statistical significance.

Conclusion:

Our data implicate an increasing tendency to reveal peritoneal metastasis of patients with AEG type II and AEG type III tumors. Therefore, we suggest that staging laparoscopy might be performed routinely in cases of locally advanced AEG tumors. Our analysis is limited due to a limited number of patients and biased group of patients undergoing staging laparoscopy.

Gastric Preconditioning in Advance of Esophageal Resection – Systematic Review and Meta-analysis

(Abstract ID: 797)

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Background:

Anastomotic leakage is one of the most severe complications following esophageal resection. Among other strategies, gastric ischemic preconditioning has been proposed to improve anastomotic integrity. The aim of this systematic review is to investigate whether gastric preconditioning has influence on peri- or postoperative outcome of patients undergoing esophageal resection.

Materials and methods:

A systematic literature search was performed to identify randomised and non-randomised controlled trials and studies comparing gastric preconditioning with non-preconditioned patients for any indication of esophageal resection. Random effects meta-analyses were calculated and presented as risk differences (RD) with their corresponding 95% confidence intervals (CI).

Results:

Gastric preconditioning did not reduce anastomotic leakages (OR 0.76; 95%-CI: 0.51 to 1.13; p=0.18), anastomotic strictures (OR 1.10; 95%-CI: 0.58 to 2.10; p=0.76;), major complications (OR 1.14; 95%-CI: 0.60 to 2.14; p=0.69), or in-hospital mortality (OR 0.62; 95%-CI: 0.28 to 1.40; p=0.25). However, preconditioning reduced the rate of severe leaks requiring re-operation (OR 0.20; 95%-CI: 0.08 to 0.53; p=0.001). Increasing the period between preconditioning and esophageal resection over 2 weeks did not reduce anastomotic leakage compared to shorter waiting times (OR 0.65; 95%-CI: 0.38 to 1.13; p=0.13).

Conclusion:

With current evidence, gastric preconditioning does not seem to reduce overall rates of anastomotic leakage after esophageal resection, but seems to reduce severity of leakages. Good quality randomized controlled trials are necessary to further evaluate the effects of gastric preconditioning.

Electric stimulation of the lower esophageal sphincter – EndoStim™: A summary after one year

(Abstract ID: 838)

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Background:

Electric stimulation oft the lower esophageal sphincter (LES) in the therapy of gastroesophageal reflux disease (GERD) is a new surgical option for patients with a diaphragmatic hernia less than 3 cm. Until fall 2016 the results of three different study groups documented the success of this promising procedure. Though, independent results and a comparison to common anti-reflux surgery procedures like fundoplication have not been published yet.

Materials and methods:

Until 10/2016 seven patients underwent laparoscopic implantation of EndoStim II. Preoperative results of endoscopy, high resolution manometry (HRIM) and 24 h pH monitoring, as well as GERD-Health Related Qualitiy of Life score (GERD-HRQL) were compared to a follow up after 6 and 12 months. This data was matched 1:2 with patients after Nissen`s fundoplication from our database.

Results:

The experience 6 and 12 months after implantation of EndoStim II is presented in this study. The majority of patients in both groups is satisfied and reports an increased quality of life. In contrast to Nissen`s fundoplication, HRIM shows that Endostim does not affect the residual pressure of the LES. Although median DeMeester score after 6 months is decreased from 133,4 to 38, only one patient reached the threshold under 14,72.

Conclusion:

The first independent results confirm a high grade of satisfaction in patients after implantation of EndoStim, comparable to Nissen`s fundoplication. To receive an ideal DeMeester score patients need surveillance with individual adjustments of the device due to the results of follow up pH monitoring.

Long term follow-up and quality of life of benign esophageal perforation

(Abstract ID: 875)

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Background:

Esophageal perforation is associated with high morbidity and mortality. In addition to surgical treatment, endoscopic endoluminal stent placement and endoscopic vacuum therapy (EVT) are established methods for managing esophageal leaks. The aim of this study was to evaluate the outcome and quality of life in the long-term follow-up of patients treated for benign esophageal perforation.

Materials and methods:

From January 2003 to December 2015, 58 patients with benign esophageal perforation were treated at the Department of General, Visceral and Cancer Surgery of the University of Cologne. Patients were identified from a prospectively maintained database. In the study population, data collection included patient's characteristics and demographics. Type and cause of perforation, as well as site of perforation and type of conducted therapy were recorded. Furthermore, patient's outcome in the short-term follow-up, including length of hospital and ICU stay, postoperative morbidity and in-hospital mortality were recorded. In the long-term follow-up quality of life was assessed using the Gastrointestinal Quality of Life Index (GIQLI), the Health-Related Quality of Life Index (HRQL) for patients with gastroesophageal reflux disease (GERD), as well as the health-related general (QLQ-C30) and oesophageal-specific (OES-18) quality of life of the EORTC. Numeric scores were calculated for each conceptual area and compared within the different treatment groups. The study was approved by the Ethics Committee of the Medical Faculty of the University Hospital of Cologne.

Results:

Median age at time of diagnosis was 64 (range: 37-85). The study group consisted of 29 women (50.0 per cent). Thirty patients had an iatrogenic perforation of the esophagus (51.7 per cent), 19 patients (32.8 per cent) had a spontaneous perforation. In the remaining 5 patients esophageal perforation was caused by trauma (8.6 per cent). In 4 patients (6.9 per cent) the cause of perforation remained unclear. Overall 20 patients (34.5 per cent) underwent surgical therapy with either reconstructive surgery or cervical deviation. Conservative treatment, consisting of total parenteral nutrition, highly-dosed PPI-therapy and if necessary, mediastinal drainage was attempted in 11 patients (19.0 per cent). The remaining 27 patients (46.6 per cent) received endoscopic treatment with endoscopic endoluminal stent placement (18 patients) and endoscopic vacuum therapy (2 patients). A combination of stent and vacuum therapy was performed in 7 patients. Median time of hospital stay in the study cohort was up to 32 days (range:6-243). 90-day mortality was 14.5 per cent. 25 patients died in the long-term follow-up. Overall 20 patients were available for questioning in the long-term follow-up. Median follow-up was up to 49 months (range 7-137months). At time of questioning 50 per cent of patients had heartburn, 7 patients (35 per cent) developed dysphagia. Life quality for all patients was up to 121 (range: 73-136) with the Gastrointestinal Quality of Life Index (GIQLI) and thus comparable with healthy individuals. Median Health-Related Quality of Life Index (HRQL) for patients with gastroesophageal reflux disease was 4 (range: 0-12). Overall 3 patients were asymptomatic.

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Conclusion:

Benign esophageal perforation can successfully be treated with surgery, endoscopic endoluminal stent placement and endoscopic vacuum therapy (EVT). Quality of Life is little affected in long-term follow-up. However, especially heartburn and dysphagia are common and serious symptoms in follow-up.

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Traumatic Esophageal Perforation After Meat-Bolus Ingestion: A Case of Successful Management Based On The Pittsburgh Perforation Severity Score

(Abstract ID: 974)

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Background:

Esophageal perforation is a severe clinical condition, which is still associated with high mortality and morbidity. Ingested foreign bodies are responsible for 9 - 35% of all esophageal perforations. Recently, based on multi-centric retrospective data, we proposed a decisional tree for the management of esophageal perforations based on the Pittsburgh Perforation Severity Score (PSS). We now report a case of a traumatic esophageal perforation which was successfully treated applying this decisional tree.

Materials and methods:

A 36 years old male autistic patient was admitted to a peripheral hospital with acute thoracic pain after meat bolus ingestion. He underwent an esophadogastroduodenoscopy (EGD), which showed a complete obstruction of the esophagus. Immediately after partial removal of the foreign body, the patient suffered a sudden fall of the oxygen blood saturation with concomitant supraclavicular and parasternal emphysema. He was intubated and he was referred to our surgical centre. At admission in our Intensive Care Station (ICS) the patient presented in a stable condition. A bilateral chest-tube was placed. There was no sign of pleural effusion. The PSS was calculated with 5 points. According to the PSS decisional tree the patient underwent a second esophagogastroduodenoscopy. After removing of the foreign body 2 perforations were detected and immediately treated with a 10 cm covered esophageal metallic stent. On the next day the stent was repositioned, a CT-scan showed no signs of leakage. An antibiotic therapy was administered for 6 days. On day 3 the patient was extubated. After 7 days oral food intake was permitted. On day 9 the patient was transferred to the normal ward and was discharged from the hospital on day 15.

Conclusion:

Traumatic esophageal perforation is a life-threatening condition which needs a rapid interdisciplinary approach to be effectively managed. In this case, the decision tree based on the PSS showed a good clinical applicability as decision making tool for managing esophageal perforations.

Percutaneous ureteral stent vs. double J stent: Analysis of infectious and urologic complications after kidney transplantation

(Abstract ID: 215)

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Background:

In patients undergoing kidney transplantation ureteral stents are an established technique to reduce ureteral complications such as leakage and stenosis. However, the best technique of ureteral stenting remains unclear. The aim of the current study was to compare outcome of percutaneous ureteral stent (PS) vs. internal double J stent (JJ) in patients who underwent kidney transplantation.

Materials and methods:

We retrospectively analyzed all patients undergoing kidney transplantation between 2005 and 2014. After excluding patients younger than 18 years old, no stenting and patients who underwent multi-organ transplantation, a total of 308 patients were included in the study. Two consecutive cohorts of patients were compared. In the cohort transplanted until 2010, stenting was routinely performed using PS (216 patients) and in the second cohort transplanted after 2011, stenting was routinely performed using JJ (92 patients). For ureteric anastomosis the Lich-Grégoir technique was used in all patients.

Results:

There was no statistical difference in post-operative urinary tract infections (p=0.239) between the two cohorts. Patients with PS presented a significantly higher incidence of major ureteric complications (11.6 vs. 3.2%, p=0.018), vesicoureteral reflux (14.4 vs. 2.2%, p<0.001), and urologic re-interventions (14.4 vs. 5.4%, p=0.032), when compared to JJ.

Conclusion:

In kidney transplantation, stenting of the ureterovesical anastomosis using JJ stent is associated with reduced complications comparted to PS.

Procalcitonin as prognostic and diagnostic marker in the setting after liver transplantation

(Abstract ID: 258)

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Background:

To assess the diagnostic accuracy of procalcitonin as early marker for complications and as prognostic factor for outcome after liver transplantation (LT).

Materials and methods:

Liver transplant patients between January 2007 and April 2011 were prospectively included in the study. PCT serum concentration was recorded before, 6 hours after reperfusion and then daily. Postoperative clinical course was prospectively analyzed from admission to discharge. Main proceeding data such as operating procedure, type of reperfusion, operating and ischemic times, HU status and MELD score at time of transplantation were also recorded.

Results:

The median follow-up time (range) was 46 months (1-105 months). In 65 patients the peak-PCT occurred within 72 hours after LT. However there was no relevance between the level of the 1st peak-PCT and the further postoperative course and the occurrence of complications. Patients, in which a 2nd PCT peak (significant 2nd elevation of procalcitonin > 5ng/ml) was occurred, had a significantly higher risk for a complicated course with occurrence of infectious and non-infectious complications (including acute graft rejection), for a complicated sepsis course and for mortality ($p<0.0001$). Warm ischemic time over 58 minutes, operating time over 389 minutes and HU status were significant independent factors for a complicated postoperative course ($p<0.001$, $p<0.001$ and $p=0.03$ respectively).

Conclusion:

Based on the findings of this prospective study we believe that PCT course and the occurrence of a 2nd peak seem to possess important diagnostic -for the early detection of serious infectious complications- and prognostic power in the posttransplant setting after LT.

Influence of positiv duodenal swabs on the outcome and progress after pancreas transplantation – actual germ spectrum

(Abstract ID: 274)

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Background:

Pancreas transplantation (PT) shows a higher rate of complications compared with other organ transplantations. Graft thrombosis and intraabdominal infections are the most common causes for relaparatomy. We analyzed intraoperative swabs taken during transplantation. By now we give an overwiev of the actual microbial results.

Materials and methods:

Between 01/2010 and 12/2015 we transplanted 145 pancreas grafts at the Knappschaftskrankenhaus Bochum with 132 simultaneous pancreas-kidney transplantations, 5 isolated pancreas transplantations and 8 pancreas after kidney transplantation. 16 of this were retransplantations. Routine swabs where taken from the organ perfusion solutions, the donor and recipients duodenum, the bladder and from the recipients abdomen.

Results:

In total 132 duodenal swabs (DS) were evaluated, 93 separated between donor and recipient, 39 combined. In 96 cases (72,73 %) positive microbial results were found. 56 of the donor and 43 of the recipient DS were positive. 72,92% of the DS were positive for Candida (different subtypes), with C. albicans and C. glabrata being most frequently. Likewise Enterococcus, Serratia, Streptococcus, Klebsiella, Stenotrophomonas, Lacotbacillus and other germs were detected. 26,52% of the other swabs were positive, primarily with Streptococcus or Staphylococcus. There was no difference in microbial results in the group of retransplantation compared to first PT.

73% of the pancreas were fully functional after transplantation. 13 had been explanted shortly after PT. In 35,17% cases a relaparatomy was performed. Every third patient showed pancreatitis, wound healing disorders, sepsis or combinations of it.

Conclusion:

Woeste et. al already defined positiv DS to be a risk factor for intraabdominal infection. This needs to be verified by further analyzation of our data, in particular to give a recommendation concerning the actual prae-/perioperative antibiotic therapy given during transplantation.

Cognitive function, Quality of Life and patient's compliance after liver transplantation following calcineurin inhibitor treatment

(Abstract ID: 302)

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Background:

Neurological disorders due to calcineurin inhibitor (CNI) treatment pose a well-known problem after liver transplantation (LTx). In this study the impact of CNIs on cognitive functioning during maintenance therapy was analyzed. A possible improvement of cognitive functioning, compliance and Health Related Quality of Life (HRQoL) after conversion to a once daily tacrolimus formulation was prospectively assessed.

Materials and methods:

In a cross-section analysis cognitive functioning of living donors (LD), waiting list-patients (WL) and LTx-patients was tested using a 4-times trail making test (4-TTMT). In a further investigator initiated trial (IIT) a possible improvement of cognitive functioning, HRQoL and compliance after conversion to the once-daily Tacrolimus formulation was prospectively assessed over one year. HRQoL was assessed using an EORTC-QLQ C30 questionnaire, patient's compliance was assessed with the BAASIS questionnaire. Correlated data were sex, age, time after surgery, liver disease, MELD-score, CNI-type and CNI trough levels.

Results:

211 patients were included in this cross-section analysis. 22 patients agreed to participate in the IIT. LTx-patients completed the 4-TTMT slower than LD-patients and faster than WL-patients. Patients with twice daily CSA-formulation needed longer to finish the 4-TTMT than patients with once-daily Tacrolimus formulation. After drug conversion from a twice daily CNI- to a once-daily Tacrolimus formulation, CSA-treated patients needed longer to improve their cognitive functioning. HRQoL and compliance didn't improve after drug conversion.

Conclusion:

Patients with once-daily Tacrolimus formulation had a better psychomotor speed than CSA-treated patients. The conversion to once-daily Tacrolimus formulation significantly improved cognitive functioning, but had no impact on HRQoL or compliance.

Innov Surg Sci 2017; 2, (Suppl 1): s1–s168

Resurrection of a Transplant Center

(Abstract ID: 355)

M. Hertl[1], E. Hollinger[1], O. Olaitan[1], E. Chan[1], A. Susai[1]

[1]*Rush University Medical Center, Chicago*

Background:

Rush University has a storied history, being the oldest University in the Midwest. The liver transplant program had grown to become the largest in the Midwest, but poor outcomes secondary to increasingly non-restricted patient selection and lost insurance contracts subsequently led to a steady decline. Since 2008 measures were taken to stem that slide, and since 2013, dramatic improvement has been achieved. We looked at the factors leading to that success.

Materials and methods:

The timeline of events documenting the decline of the program and the hospital's initiatives (outside review, personnel changes, expansion of programs) to improve the program were reviewed and the value of these initiatives as it translated to improved outcomes assessed.

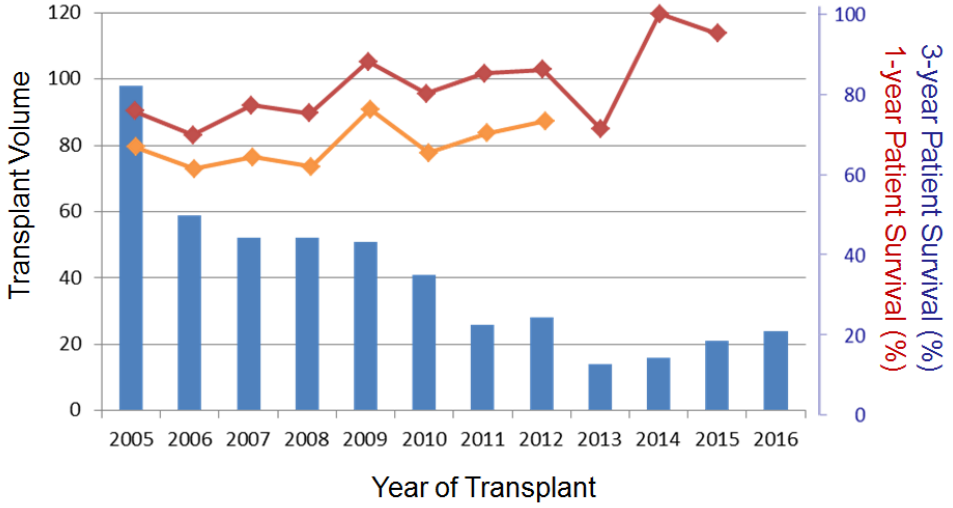
Results:

In 2005 and 2006 up to 40% of liver transplant procedures were retransplantations. The outcomes were marginal and in 2008 graft survival reached a level significantly worse than expected. This prompted a Center for Medicare and Medicaid Services (CMS) review and our proposal for improvements was accepted (no transplants in patients with HIV - HCV co-infection, no recipients with multiple previous transplants, limit cold and warm ischemic times, no DCD donors). As a side effect of the more restrictive use of grafts, the MELD score of recipients increased, but graft survival also improved (SRTR 2012). In 2013, several deaths shortly after transplantation triggered a voluntary outside additional review. Six categories were reviewed: Leadership, Infrastructure, Pre-Transplant, Transplant, Post-Transplant, Quality Assurance and Performance Improvement (QAPI). Since systematic implementation of the recommendations, outcomes drastically improved with only one liver recipient death in 3.5 years, and a significantly higher than expected transplant rate in kidney transplantation.

Conclusion:

The Rush Transplant program only recovered after drastic changes were implemented including: new clinical and administrative leadership, strengthened supportive services (pharmacy, infectious disease, psychiatry, social work), and improvements in QAPI structure. This experience can serve as a blueprint for other transplant programs.

Picture:


Transplant Volume
120
100
80
60
40
20
0
100
80
60
40
20
0
3-year Patient Survival (%)
1-year Patient Survival (%)
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Year of Transplant

A Dynamic Selection Process for Liver Transplant Candidates with BCLC stage B Hepatocellular Carcinoma may better reflect Tumor biology as compared to Size and Numbers of Lesions – The Munich Criteria

(Abstract ID: 575)

M. Schoenberg[1], H. Anger[1], J. Bucher[1], G. Denk[1], J. Andrassy[1], M. Stangl[1], M. Angele[1], J. Werner[1], M. Guba[1]

[1]*Klinikum der Universität München, München*

Background:

For HCC transplantation and resection remain the only curative treatments with acceptable long-term survival. Generally, transplantation reaches better disease-free- and overall-survival by removing the precancerotic condition. At the moment the MILAN-Criteria are the most common way of stratifying for transplantation. However, also patients with more advanced disease could benefit from liver transplantation. In this retrospective analysis patients were stratified by dynamic markers for tumor biology and assessed and compared.

Materials and methods:

A retrospective analysis of all HCC patients receiving liver transplantation from 2007 to 2015 was performed. Risk-stratification was done with the BCLC treatment algorithm. BCLC-A Patients were transplanted with German standard exception criteria. Patients with BCLC B disease were assessed for (1) response to therapy (2) test-of-time and (3) AFP prior to transplantation.

Results:

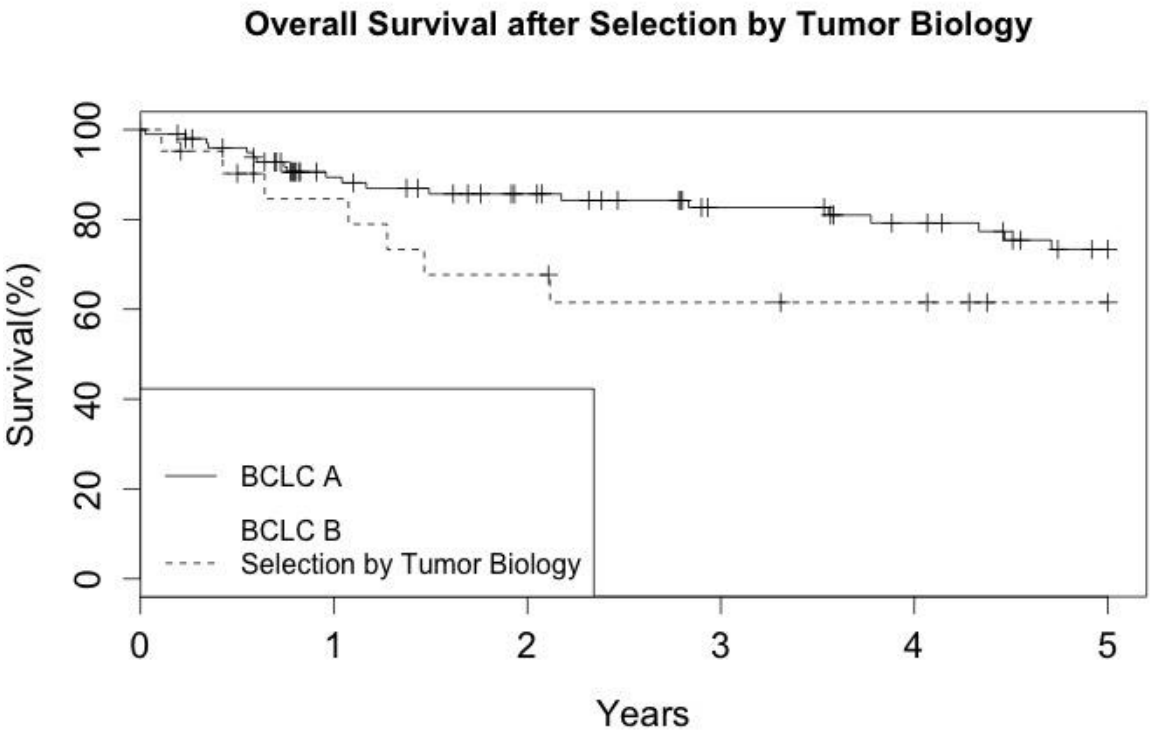
A total of 277 patients were analyzed. Adequate tumor control by the bridging-to-transplant treatment was achieved in more than 70% of transplant patients. 5 year-survival after transplantation patients reached 73.2% in BCLC A and 63.6% in BCLC B patients (p=0.23). The tumor-specific 5-year survival (DFS) was 70.1% in patients with BCLC A and 63.6% with BCLC B (p=0.162). Neither BCLC stage, nor other preoperative parameters influenced the overall and disease free survival after transplantation.

Conclusion:

With an integrative dynamic staging including tumor biology and constant reevaluation adequate results even in more advanced HCC disease can be achieved. We strongly advocate for the implementation of markers of tumor biology into allocation rules and to leave allocation-systems that solely rely on the estimation of tumor burden.

Innov Surg Sci 2017; 2, (Suppl 1): s1–s168

Picture:



Kaplan-Meier estimate of overall survival in BCLC A and B Patients

Intraoperative arterial transit time flow measurement is predictive for primary graft function in kidney transplantation

(Abstract ID: 795)

M. Ströhlein[1], J. Volland[1], D. R. Bulian[1], J. Lange[1], U. Lange[1], W. Arns[1], M. M. Heiss[1]

[1]*Klinikum Köln-Merheim, Universität Witten-Herdecke, Köln*

Background:

Primary graft function after kidney transplantation is influenced by various pre-transplantation factors like ischemia time, organ quality, donor morbidity and graft retrievement. Up to date, there is no quantitative predictive parameter for primary graft function availabe directly after kidney reperfusion.

Aim of study was to investigate the role of intraoperative arterial transit time flow measurement directly after reperfusion to predict primary graft function.

Materials and methods:

Primary graft function after kidney transplantation is influenced by various pre-transplantation factors like ischemia time, organ quality, donor morbidity and graft retrievement. Up to date, there is no quantitative predictive parameter for primary graft function availabe directly after kidney reperfusion.

Aim of study was to investigate the role of intraoperative arterial transit time flow measurement directly after reperfusion to predict primary graft function.

Results:

TTFM was measured in 282 patients. Mean IABF was 236,9 ml/min (SD 146). Mean GFR was 43,5 ml/min/1,73m2 (SD 15). 210 / 282 patients showed primary urine production (74,5%). IABF correlated with GFR ($p<0.006$) and creatinine ($p=0.034$) at discharge. Further significant correlations were found for ischemia time and recipient age. Interestingly, there was no correlation between IABF and primary urine production. TTFM was found to be independently correlated with primary graft function ($p<0.023$).

Conclusion:

TTFM was found to be an independent prognostic parameter for primary graft function in kidney transplantation directly after reperfusion. Therefore, TTFM measurement could be of great value to evaluate organ function and quality directly during kidney transplantation.

Outcome of patients transplanted for hepatocellular carcinoma. To TACE or not to TACE?

(Abstract ID: 828)

S. Schmitz[1], K. Kleimeyer[1], M. Schneider[1], F. Ulmer[1], G. Lurje[1], A. Andert[1], M. Schulze-Hagen[1], P. Bruners[1], D. Kroy[1], U. P. Neumann[1], W. Schoening[1]

[1]*Universitätsklinikum Aachen, Aachen*

Background:

Liver transplantation remains the main curative treatment option for HCC in cirrhosis. The Milan criteria are used to assign priority extra points (exceptional MELD, exMELD) for HCC patients on the waiting list. Aim of this study was to investigate the impact of loco-regional (neo-adjuvant) treatment (LRT) and the Milan criteria on the outcome after LT. Furthermore we evaluated the accuracy of radiological imaging by correlating it to histopathological examination of explanted livers in LRT and non-LRT patients.

Materials and methods:

Between 10/2010 and 05/2015 234 LTs were performed at our center. 51 patients (21.8%) were transplanted for radiologically diagnosed HCC and included in this retrospective study. Of those, 42 (82.4%) met the Milan criteria and were thus listed with an exMELD. 42 patients (82.4%) received LRT (mainly TACE, ablation in rare cases). Mean waiting time was analysed according to LRT and non-LRT by T-Test. Kaplan-Meier curves with log-rank testing were used for survival analyses. Linear regression analyses were used to compare pathological findings in the explanted liver and radiological imaging pre-transplant.

Results:

Mean follow-up was 2.56 years. One- and five-year survival within Milan was 97% and 86% vs. 62% and 47% beyond Milan resulting in a significantly longer overall survival (OS) within Milan (p=0.008). LRT had no impact on OS (p=0.193). Corresponding one- and five-year survival rates were 89%, 74% for LRT and there were no cases of death in the non-LRT group in the observed period. Mean waiting time for LT was 161 days in the LRT group vs. 55 days if no LRT was performed (p=0.001). Linear regression analysis revealed a significant correlation between the latest radiological imaging and the pathologically measured diameter of the largest lesion (r=0.866) as well as the total size of lesions (r=0.759).

Conclusion:

Patients within Milan achieved excellent one and five-year OS. The Milan criteria were thus reconfirmed to be a strong predictor of five-year OS after LT. Accuracy of radiological imaging was precise in LRT and non-LRT patients. LRT had no significant impact on OS. This might be caused by a considerably short median waiting time (< 6 months) at our center.

Retrospective evaluation of psychosocial aspects in living-donor transplant recipients as potential predictors for medical outcome

(Abstract ID: 904)

G. Dieplinger[1], V. Vitinius[1], N. Mokhaberi[1], S. Peltzer[1], V. Ditt[2], R. Wahba[1], H. A. Schlößer[1], C. Kurschat[1], U. Lange[2], U. Bauerfeind[2], W. Arns[2], D. Stippel[1]

[1]*Uniklinik Köln, Köln*

[2]*Krankenhaus Köln Merheim, Köln-Merheim*

Background:

The pre-transplant psychosocial evaluation of living-donor transplant recipients is increasingly being standardized. To identify patients at risk and indicate psychosocial intervention, different tools such as semi-standardized interviews, for example TERS (Transplant Evaluation Rating Scale), or the SIPAT (Stanford Integrated Psychosocial Assessment for Transplantation) are used or newly developed, respectively. This analysis aims to identify influencing factors on the post-transplant outcome based on the retrospective evaluation of the TERS- and SIPAT-scores.

Materials and methods:

A group of 146 living-donor transplant recipients was analyzed. The TERS- and SIPAT-scores were retrospectively evaluated by personal blinded to the medical outcome. The higher the scores in both assessment tools, the higher the patient's risk for a negative outcome. All patients in the studygroup were eligible for transplant after pre-transplant psychosocial evaluation and therefore none of the patients scored as high-risk candidate. Thus patients were grouped in two groups according to their score values, in either excellent (TERS=26,5; SIPAT<=6) or low-risk candidates (TERS>26,5; SIPAT>6). Analyzed medical parameters were change of eGFR (in percentage) and acute rejection (AR) episodes within the first year post-transplant. In addition a subgroup of sixty-five patients was tested for de novo donor specific HLA antibodies (DSAs) at 1 year post-transplant, utilizing the Luminex solid-phase assay.

Results:

There was no significant difference between excellent (n=97) and low-risk candidates (n=49) according to TERS in terms of organ function (eGFR decline >25%: 16/97 vs. 12/49; p=0.270) and AR episodes (20/97 vs. 14/49; p=0.405). A similar number of patients was identified as excellent by SIPAT (n=102). Also the groups by SIPAT showed no difference in eGFR decline (18/102 vs. 10/44; p=0.497) and AR episodes (24/97 vs. 10/49; p=0.405). Patients developing de novo DSAs [18 (28%)] within the first year post-transplant did not show higher TERS (DSA positive: 9/22 vs 9/43; p=0.142) or SIPAT scores (DSA positive: 6/16 vs 12/49; p=0.346) pre-transplant.

Conclusion:

TERS and SIPAT did not predict medical outcome at 1 year post-transplant. Also the occurrence of de novo DSAs, which could be a marker of non-adherence, was not associated with score values at 1 year post-transplant. This may be due to our study-group of either excellent or low risk recipients, the short length of post-transplant follow-up and the retrospective study design. Nevertheless, we believe that the standardization of pre-transplant psychosocial evaluation, using assessment tools like TERS or SIPAT, is of great clinical importance. Therefore we plan a prospective study with long-term follow-up including all candidates evaluated for transplant.

Similar outcome for (E)RLL and full graft liver transplantation – an analysis from the Eurotransplant Liver follow-up Registry

(Abstract ID: 917)

J. Andrassy[1], S. Wolf[1], M. L. Lauseker[1], J. Werner[1], M. Guba[1]

[1]*LMU, München, München*

Background:

Split liver transplantation is an established technique to effectively increase the donor pool. Previously published data indicate a similar outcome of split and full graft liver transplantation (fgLTx). However, most of these data were on procedures where the two splits of the liver were transplanted in one center keeping cold ischemia times (CIT) as low as possible. In the ET area it is common practice that the (E)RLL is shipped from the splitting center to a second center. This results in prolonged CITs. We hypothesized that the combination of the splitting procedure and prolonged CITs affects the outcome of the (E)RLL compared to the full graft liver transplants.

Materials and methods:

Data on all LTx performed between 2007 and 2013 were retrieved from the ET Liver follow-up Registry (n=5351). Data on n=5013 (269 (E)RLL, 4744 full graft) Ltx could be included. A thorough statistical workup ensued.

Results:

Cold ischemia times were significantly prolonged for split LTx ($p<0.001$). The survival was not different between (E)RLL and full graft LTx. In the univariate analysis split liver transplants had a significantly higher risk for retransplantation ($p=0.021$). For fgLTx the risk for death gradually and significantly increased with LabMeld-scores of >20. For (E)RLL LTx this effect was seen already with LabMELD scores of >14.

Conclusion:

The outcome after (E)RLL and full graft liver transplantation is comparable with respect to survival. The risk of retransplantation seems higher after (E)RLL Ltx. The cold ischemia time has a significant impact on the overall outcome and may serve as a possible explanation for the higher retransplant rate.

Upregulation of PD-1 in facial vascularized allotransplants: a potential therapeutic target

(Abstract ID: 985)

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[1]*Brigham and Women's Hospital, Boston*

[2]*Brigham and Women's Hospital, Boston*

Background:

Successful immunmodulation towards tolerogenic states is paramount for successful vascularized composite allotransplantation (VCA). The immunosuppressive interaction between programmed cell death receptor (PD-1) and its ligand (PD-L1) are studied in the realm of tumor biology and are already therapeutically used. Here we evaluated PD-1 expression in facial VCAs in the setting of acute cellular rejection to assess potential involvement of this co-stimulatory pathway.

Materials and methods:

We evaluated rejection and non-rejection episodes in face transplant recipients (12 biopsies of 3 patients with face transplantation) using multiplex immunohistochemical staining for PD-1 as well as for a panel of biomarkers for T cells (CD3). When compared to skin lymphocyte populations unassociated with clinical and histologic evidence of rejection, PD-1 expression was significantly increased in lymphocytes mediating rejection episodes.

Results:

PD-1 is an important target in cancer immunology, but may also play a pivotal role in modulating immunosuppressive pathways in an allotransplant rejection environment. This may open an additional immunosuppressive pathway for treatment in VCA, given the reports that PD1 has been linked to inhibition of cytotoxic CD8+ cells and stabilization of T regs.

Innov Surg Sci 2017; 2, (Suppl 1): s1–s168

The oldest old with colorectal carcinoma: Treatment, complications and prognosis

(Abstract ID: 19)

V. Kohl[1], K. Weber[1], V. Schellerer[1], J. Göhl[1], R. Grützmann[1], S. Merkel[1]

[1]*Universitätsklinikum Erlangen, Erlangen*

Background:

The demographic trend will lead to an increase of elderly persons in Germany in the future. Therefore, studies addressing patients >= 85 years become more and more important.

Materials and methods:

The prospective collected data of 141 patients with colorectal carcinoma >= 85 years treated between 1995 and 2014 was analysed retrospectively. Patients were treated according to the current guidelines whenever adequate. Treatment, complications and prognosis were compared with a group of patients >= 85 years treated previously between 1978 and 1994 (n=57) and with another group of patients 75-84 years old treated between 1995 and 2014 (n=726).

Results:

The cohort consisted of 64 men and 77 women. 88 patients had a colon carcinoma, 53 patients a rectal carcinoma. 127 patients had a tumour resection, 112 were classified as R0.

Compared with the previous cohort (1978-1994) the number of patients increased, less patients had synchronous distant metastases (28% vs 14%, p=0.015) and more patients had a tumour resection (74% vs 90%, p=0.003); the 5-year locoregional recurrence rate after curative resection decreased from 11.5% to 1.4% (p=0.027).

The comparison to the younger age group (75-84 years) revealed more women (42.3% vs 55%, p=0.007), more emergencies (9.8% vs 22%, p<0.001) and less frequently neoadjuvant treatment (11% vs 3%, p=0.003). Morbidity and mortality were higher in the oldest old (see Table).

After curative resection and exclusion of postoperative deaths overall survival (2-year rate 66.4%, 5-year rate 32.9%) was found to be worse whereas cancer-related survival (2-year rate 93.1%, 5-year rate 86.7%) was similar (see Figure).

Table:

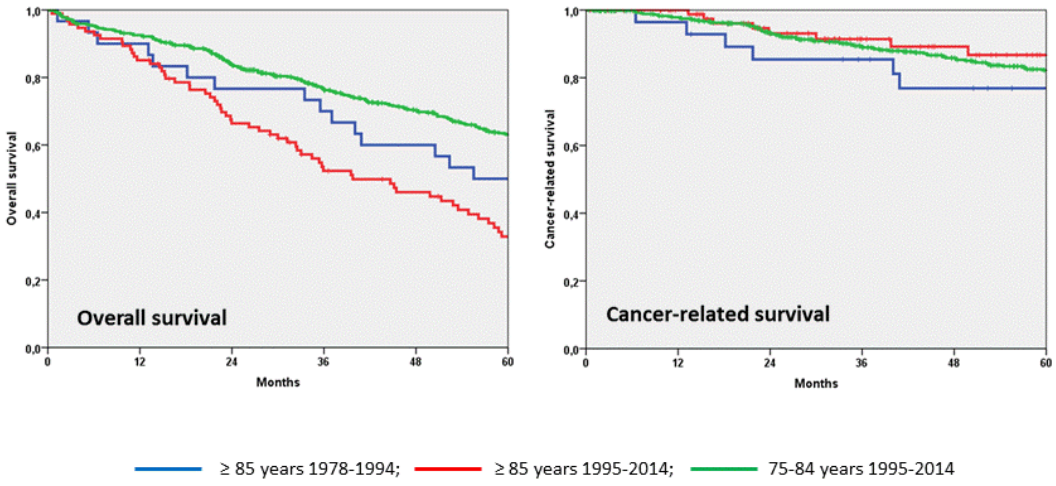
		>=85 years1978-1994	p	>=85 years1995-2014	p	75-84 years1995-2014
Morbidity	Colon	5/21 (24%)	0.152	35/86 (41%)	0.096	133/423 (31.4%)
	Rectum	12/21 (57%)	0.242	17/41 (41%)	0.179	81/262 (31.0%)
Surgical treatment of complications	Colon	0/21 (0%)	0.200	9/86 (10%)	0.324	31/423 (7.3%)
	Rectum	5/21 (24%)	0.014	1/41 (2%)	1.000	8/262 (3.1%)
Mortality	Colon	3/21 (14%)	1.000	12/86 (14%)	0.044	31/423 (7.3%)
	Rectum	4/21 (19%)	0.722	6/41 (15%)		6/262 (2.3%)

Morbidity and mortality

Conclusion:

The number of oldest old patients with colorectal carcinoma increased. If necessary, the treatment according to the current guidelines has to be adapted to the situation of the individual patient. Patients >= 85 years have more postoperative complications. After recovering from the surgery cancer-related survival is not worse.

Picture:



Overall and cancer-related survival

Innov Surg Sci 2017; 2, (Suppl 1): s1–s168

The Prognostic Impact of Surgical Complications after Combined Modality Treatment of Rectal Cancer: Long-Term Results of the CAO/ARO/AIO-94 Trial

(Abstract ID: 133)

T. Sprenger[1]

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Background:

The influence of major surgical complications on survival in patients with locally advanced rectal cancer undergoing combined modality treatment is still debatable. The aim of this study was to evaluate the impact of surgical complications on oncological outcome in 823 patients with locally advanced rectal cancer treated within the phase III CAO/ARO/AIO-94 trial.

Materials and methods:

Anastomotic leakages as well as wound healing disorders were prospectively evaluated and correlated with overall survival (OS) and the cumulative incidence of distant metastasis and local recurrence after a long-term follow-up of more than 10 years.

Results:

Anastomotic leakage after restorative rectal resection is significantly correlated with an impaired 10-year OS (51.0% vs. 65.2%, p=0.02). Patients with abdominal or sacral wound healing disorders had a significantly reduced OS compared to those with sufficient wound healing (45.2% vs. 62.7%, p=0.009). Patients developing any surgical complication (anastomotic leakage or/and wound healing disorder) had an impaired OS (50.6% vs 65.3%, p=0.0002) as well as higher rates of distant metastases (65.3% vs. 72.7%, p=0.03) and local recurrences (6.0% vs. 12.9%, p=0.0007). In a multivariate cox regression model the only independent factors for restricted OS were lymph node metastases (p<0.0001) and the occurrence of surgical complications (p=0.008).

Conclusion:

Surgical complications are significantly associated with an adverse oncological outcome and reduced long-term OS in patients undergoing combined modality treatment for locally advanced rectal cancer.

Innov Surg Sci 2017; 2, (Suppl 1): s1–s168

Hypoalbuminemia is an independent risk factor for major morbidity after elective oncological colorectal resection

(Abstract ID: 134)

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[1]*Universitätsmedizin Mannheim, Mannheim*

Background:

Hypoalbuminemia is known to be associated with adverse outcomes after gastrointestinal surgery for malignancy and inflammatory bowel disease. However, evidence on its role as a risk factor for morbidity and mortality after surgery for rectal cancer is still scarce. This study examines the association between hypoalbuminemia and postoperative outcomes after rectal cancer surgery.

Materials and methods:

Prospectively recorded data of all patients who underwent surgery for rectal cancer between September 2005 and December 2014 at the University Medical Center Mannheim, Germany, were reviewed with regard to postoperative outcomes. Hypoalbuminemic (<35g/L) patients were compared to patients with normal serum albumin levels. The Clavien-Dindo classification was used in order to objectively grade the severity of postoperative complications.

Results:

Data of 370 patients were analysed. On univariate analysis, pre- and postoperative hypoalbuminemia ($p = 0.0373$ and $p < 0.0001$) as well as a higher decrease of the albumin level (difference between pre- and postoperative albumin, $p = 0.0028$), diabetes ($p = 0.0017$), obesity ($p = 0.042$), more advanced tumor stages (UICC III and IV, $p = 0.0023$), and an open approach ($p = 0.0054$) were significantly associated with severe complications (Clavien-Dindo grade III-V). Multivariate analysis using logistic regression methods confirmed preoperative hypoalbuminemia, a high decrease of the albumin level, diabetes, and advanced tumor stages as independent risk factors for grade III-V complications.

Conclusion:

Hypoalbuminemia is an independent risk factor for major morbidity after elective oncological colorectal resection. Therefore, serum albumin which is an inexpensive and easy available marker can be used to assess a patient's risk profile before rectal cancer surgery.

Survival analysis in rectal carcinoma after neoadjuvant chemoradiation: various methods – different results

(Abstract ID: 156)

S. Merkel[1], K. Weber[1], J. Göhl[1], W. Hohenberger[1], R. Grützmann[1], P. Hermanek[1]

[1]*Universitätsklinikum Erlangen, Erlangen*

Background:

Survival is an important indicator of outcome quality in rectal carcinoma. Different methods of survival analysis lead to different results. Here we compare four different methods.

Materials and methods:

The data of 447 patients with rectal carcinoma treated between1995 and 2010 was analysed. All patients had neoadjuvant chemoradiation followed by curative surgery. Patients who died postoperatively (n=5) were excluded, as were patients with incomplete follow-up (n=3). In 439 patients, we compared the relative survival (RS), cancer-related survival (CRS), overall survival (OS) and disease-free survival (DFS) stratified by stage. The 3-year rate of disease-free survival, which is frequently used as a surrogate for 5-year overall survival, was compared to the 5-year overall survival rate.

Results:

In the total cohort, the 5-year survival rates reached from 90% (RS) over 84%(CRS) and 83% (OS) to 72% (DFS). In stage y0 (n=62), the 5-year rate of RS was 107% compared to 100% in CRS, 98% in OS and 97% in DFS. In stage yI (n=120), the 5-year rate of RS was 104% compared to 97% in CRS, 95% in OS and 88% in DFS. In stage yII (n=110), the 5-year rate of RS was 84% compared to 78% in CRS, 76% in OS and 69% in DFS. In stage yIII (n=120), the 5-year rate of RS was 84% compared to 80% in CRS, 77% in OS and 60% in DFS. In stage yIV (n=27), the 5-year rate of RS was 43% compared to 41% in CRS, 41% in OS and 11% in DFS. The 3-year DFS was always lower (worse) than the 5-year OS. It differed by 4 percentage points in the total cohort, by 1 percentage point in stage y0, by 5 percentage points in stage yI and by 1 percentage point in yII. In advanced stages, the difference increased to 11 percentage points in yIII and 19 percentage points in stage yIV.

Table:

	1-year	2-year	3-year	4-year	5-year
Relative survival	100.2% (99.1-101.3)	98.3% (96.2-100.3)	94.1% (91.0-97.1)	91.4% (87.9-95.0)	90.0% (86.2-93.9)
Cancer-related survival	98.9% (97.9-99.9)	95.9% (94.1-97.7)	90.8% (88.1-93.5)	87.3% (84.2-90.4)	84.3% (81.0-87.6)
Overall survival	98.6% (97.4-99.8)	95.2% (93.2-97.2)	89.5% (86.6-92.4)	85.4% (82.1-88.7)	82.5% (79.0-86.0)
Disease-free survival	93.4% (91.0-95.8)	83.1% (79.6-86.6)	76.5% (72.6-80.4)	74.3% (70.2-78.4)	72.2% (68.1-76.3)

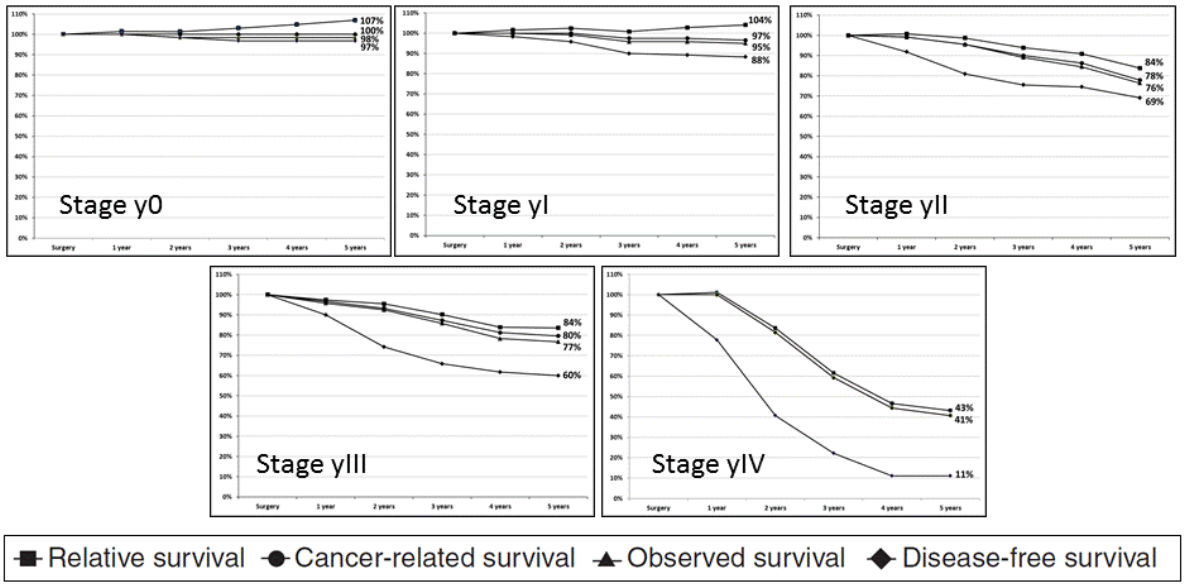
Survival analyses with 95% CI for all patients (n=439)

Conclusion:

The 5-year rates of the various types of survival analysis differed by 10 to 32 percentage points, depending on the stage of the disease. The 3-year rate of disease-free survival was always lower than the rate of 5-year overall survival, indicating more events of recurrence or deaths within 3 years than

deaths alone within 5 years and appears to be a useful surrogate indicator in rectal carcinoma treatment studies. Comparisons of survival are only meaningful if the same methods are applied.

Picture:



Survival analyses stratified by stage

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Patient satisfaction and short-term functional results for laparoscopic and robotic ventral rectopexy using biological mesh

(Abstract ID: 213)

M. Brunner[1], H. Roth[1], K. Günther[1], R. Grützmann[1], K. Matzel[1]

[1]*Universitätsklinikum Erlangen, Erlangen*

Background:

Next to its originally use for treatment of full-thickness external rectal prolapse laparoscopic ventral mesh rectopexy (VMR) is now an established procedure for the treatment of various morphological changes in the posterior pelvic compartment like rectocele, intussuception, enterocele, sigmoidocele and for decending pelvic floor syndrome. The aims of VMR are to correct anatomy and improve symptoms like obstructed defecation and fecal incontinence (FI). We present the functional outcome and patient satisfaction after VMR.

Materials and methods:

Between August 2012 and August 2016 a total of 112 patients (106 (94,6%) female) underwent a VMR (laparoscopically: 93 (83,0%), robotic: 19 (17,0%)) using biological mesh (Permacol, Covidien: 94 (83,9%), Biodesign, Cook: 18 (16,1%)). The most common morphological pathologies (often in combination) were: 73 descending perineum (65,2%), 64 rectocele (57,1%), 23 enterocele (23,5%), 13 full-thickness external rectal prolapse (11,6%) and 9 intussusception (8,0%). The preoperative clinically dominant symptom was obstructed defecation in 47,4% (53 patients), FI in 23,4% (26 patients), mixed presentation with no dominant symptom in 25,0% (28 patients) and problems of prolapsing rectum in 4,5% (5 patients). The symptom evaluation was performed preoperatively, 6 months and 12 months postoperatively using Cleveland Clinic Constipation Score (CCCS), ODS score by Longo and Cleveland Clinic Incontinence Score (CCIS). Patient satisfaction was evaluated with a visual analog scale (VAS 1-10).

Results:

112 consecutive patients were studied. Of those, 88 patients had a follow-up of at least 6 months and 75 patients of at least 12 months (August 2016). Overall scores demonstrated a significant improvement at 12 months follow up: CCCS 12,6 vs. 7,6 ($p<0,001$), LOCF CCCS 7,2 ($n=73$), ODS score: 13,2 vs. 7,9 ($p<0,001$), LOCF ODS score 7,8 ($n=73$), CCIS 11,0 vs. 6,3 ($p<0,001$), LOCF CCIS 6,3 ($n=73$). Stratified by pretherapeutic predominant symptom, the symptoms also showed significant improvement: FI: CCIS 14,0 vs. 7,7 ($p=0,009$), CCCS 10,4 vs. 7,1 ($p=0,262$), ODS score: 11.3 vs. 6,9 ($p=0,132$); defecation disorder: CCCS 15,6 vs. 8,8 ($p<0,001$), ODS score: 15,6 vs. 8,2 ($p<0,001$), CCIS 8,8 vs. 6,3 ($p=0,094$); mixed disorder: CCCS 9,6 vs. 5,7 ($p=0,072$), ODS score: 11,0 vs. 7,9 ($p=0,108$), CCIS 13,1 vs. 5,5 ($p<0,001$). The satisfaction of the patient population was high: 8,4 (1: bad, 10: optimal). In all patients with FI there was a symptom improvement. 17,4% of patients with defecation disorder had no symptom improvement (in CCCS and ODS score). In the group with mixed disorder there was no improvement in 7,7% (CCIS), CCCS in 35,7 (CCCS), in 28,5% (ODS score). A worsening of symptoms was found in only few patients (patients with FI: 0% (CCIS), patients with defecation disorder: 17,4% (CCCS), 4,3% (ODS score), patients with mixed disorder: 0,0% (CCIS), 28,6% (CCCS), 21,4% (ODS score)). A de novo onset of symptoms (obstructed defecation or FI) did not occure. 37,3% of patients had concomitant urinary symptoms (70,7% urinary incontinence, 24,4% micturition dysfunction and 4,9% mixed disorder). In 56,8% of these patients urinary symptoms were postoperatively at least improved, in 35,1% even completely resolved.

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Conclusion:

After 12 months ventral mesh rectopexy using biological meshs for FI and/or defecation disorder results in a significant symptom improvement. This relates to defecation disorders and FI. In more than 50% of the patients preoperatively existing urinary symptoms also improve. Patient satisfaction is high.

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Comparing the predictive powers of AJCC/CAP, Mandard, and Dworak/Rödel tumor regression grading systems in rectal cancer

(Abstract ID: 235)

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Background:

Tumor regression grade (TRG) is a measure of histopathologic response of rectal cancer to neoadjuvant chemoradiotherapy (CRT) and is associated with clinical outcome. The aim of this study was to compare the predictive accuracies of the four-tier American Joint Committee on Cancer and College of American Pathologists (AJCC/CAP), the Mandard (5, 3-tier), and Dworak/Rödel (5, 3-tier) TRG systems.

Materials and methods:

A review of our prospective colorectal cancer database identified 144 patients with locally advanced rectal adenocarcinoma (T3-4 and/or N1) treated with preoperative long-course CRT followed by total mesorectal excison between 2003 and 2012. Pathological specimens were classified into the AJCC/CAP, Mandard and Dworak/Rödel TRG schemes and compared by analysing the predictive capacity of each TRG system fitted to the multivariate Cox regression model using Harrell's C concordance statistics.

Results:

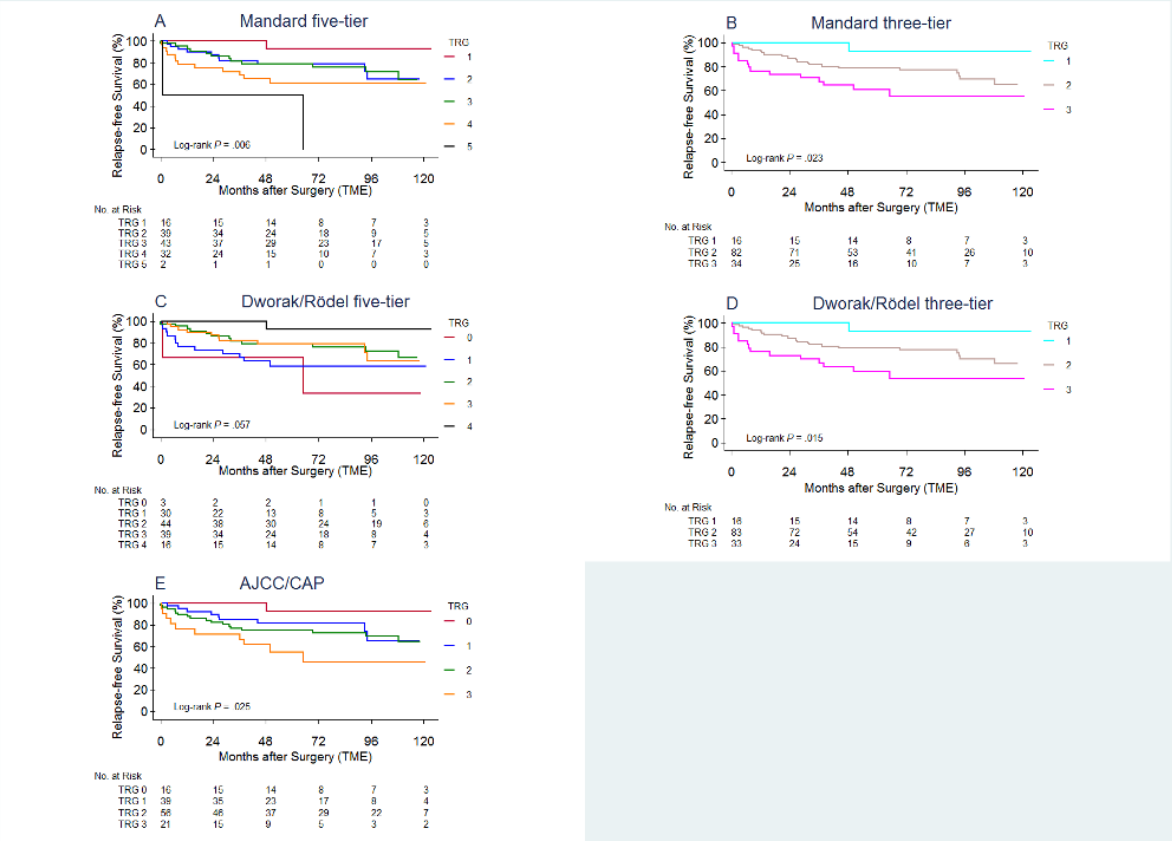
The concordance index (higher number = better prediction) for the model including the 4-tier AJCC/CAP was the highest with 0.746 (95% confidence interval 0.60-0.89). The c-statistics for the models including 5-tier Dworak/Rödel, 5-tier Mandard, 3-tier Dworak/Rödel, and 3-tier Mandard were 0.711 (0.57-0.55), 0.704 (0.56-0.85), 0.703 (0.56-0.84), and 0.694 (0.55-0.84) respectively.

The model including AJCC/CAP TRG system more accurately predicted relapse-free survival compared to the other TRG systems: 5-tier Mandard (P = 0.02), 3-tier Mandard (P = 0.07), 5-tier Dworak/Rödel (P = 0.048), and 3-tier Dworak/Rödel (P = 0.14)) respectively.

Conclusion:

In our cohort AJCC/CAP TRG system predicted relapse-free survival more accurately compared with classical TRG system (Mandard and Dworak/Rödel) and therefore we support the request to adopt AJCC/CAP as the standard TRG system.

Picture:



Relapse-free survival and TRG systems A) Mandard 5-tier, B) Mandard 3-tier, C) Dowrak/Rödel 5-tier and D) Dworak/Rödel 3-tier, and E) AJCC. Probabilities of relapse-free survival were estimated using the Kaplan-Meier method compared across different TRG groups using the log-rank test. All statistical tests were two-sided. AJCC = American Joint Committee on Cancer; TRG = tumor regression grade.

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The perception of physician empathy by patients with inflammatory bowel disease

(Abstract ID: 300)

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Background:

As a result of the early onset of inflammatory bowel disease (IBD) and need for lifelong treatment, treatment of IBD patients can be difficult. A good physician-patient partnership (PPP) plays an important role. Since physician empathy (PE) is a recognised resource for patients, and since many studies on PE used self-assessment by physicians, this study attempted to measure PE from the perspective of the patients, contrasting perceived and desired PE. Our study aimed furthermore to gain information about the psychosocial stress and resources of IBD patients, their trust in the treating physicians, and treatment satisfaction.

Materials and methods:

The German version of the Consultation and Relational Empathy (CARE) measure was completed as a paper-and-pencil questionnaire by IBD patients attending our facility (n = 32) and as an online survey by IBD patients at other locations throughout Germany (n = 89). In addition to the CARE measure, patients were asked to rate the importance of empathy items to explore whether there is a discrepancy between perceived (pPE) and desired empathy (dPE) (ΔPE= pPE - dPE). Patients were asked also about the subjective burden of their disease and their resources.

Results:

The mean (SD) rating of pPE was 3.93 (0.96) on a scale of 1 to 5 ("poor" to "excellent"); however, the mean (SD) dPE was 4.38 (0.48) on the same scale. ΔPE correlated with perceived empathy and with patients' satisfaction with treatment and trust in their health care providers. Patients reported quite a high subjective burden (mean [SD]: 2.93 [.63]) and named family, friends, and support groups as resources.

Conclusion:

Rather than assessing patient satisfaction with treatment and trust in their physician only with perceived PE, we suggest ΔPE as a useful additional parameter.

Can rectal endoscopic sonography be used to predict bowel infiltration in patients with endometriosis?

(Abstract ID: 338)

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Background:

The latest S2k guideline for the diagnosis and therapy of endometriosis does not clearly define the role of rectal endoscopic sonography (RES) in correctly staging patients with deep infiltrating endometriosis preoperatively. But rectal involvement of endometriosis increases the morbidity of operative procedures. Therefore we evaluated the diagnostic accuracy of RES in the prediction of rectal infiltration in our patient cohort.

Materials and methods:

In this retrospective study 861 patients who underwent an operation due to endometriosis from 2009 to 2015 were included. For 42% of the patients it was the first operation, 58% underwent a reoperation. Besides the clinical and gynaecological examination we performed a RES in 136 patients (15,8%, 11% when first operation, 20% when reoperation). In our preoperative pathway RES was added only when patients reported rectal bleeding, when gynaecological examination suspected bowel or rectal involvement or when deep infiltrating endometriosis of the rectum had been reported in previous operations.

Results:

Preoperative RES showed rectal infiltration in 22 patients which was correct in 19 patients (86,4%). In addition RES showed no rectal involvement in 114 patients which was correct in 79 patients (69,3%). This results in a sensitivity of 0,61 and a specificity of 0,96 with a positive predictive value of 0,86. No complications of RES were reported. When bowel involvement was seen intraoperatively (n=120, 14%) the operative procedures were as follows: 51,7% shaving, 35,8% anterior rectum resection and 12,5% discoid resection. Of these patients with intraoperatively detected infiltrating endometriosis 33,3% (n=40) did not have a preoperative RES.

Conclusion:

Preoperative RES adds important information regarding the possibility of rectal involvement in patients with deep infiltrating endometriosis. Based on RES findings patients can be informed about operative difficulties and strategies, can give informed consent to the surgeon and possible interdisciplinary operations can be thoughtfully planned. Therefore preoperative RES should be added routinely to the diagnostic algorithm for patients with deep infiltrating endometriosis.

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Anorectal Malignant Melanoma: curative abdominoperineal resection – patient selection with 18F-FDG-PET/CT

(Abstract ID: 361)

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Background:

Anorectal Malignant Melanomas (ARMM) are rare tumors, characterized by an early lymphatic spread and distant metastasis, resulting in an extremely poor overall survival. The objective of this study was to determine the pattern of regional lymph node metastasis (LNM) by CT and 18F-FDG-PET/CT in patients undergoing abdominoperineal resection (APR) and its impact on oncologic outcome.

Materials and methods:

A retrospective analysis of six consecutive patients who underwent APR due to primary ARMM was performed. Patients were staged by CT and PET/CT.

Results:

Four out of six patients had preoperative LNM involvement (two patients inguinal and perirectal, one iliacal, one perirectal), with two of them presenting with distant metastases additionally. Inguinal/iliacal LNM in two patients as well as liver metastasis in one patient were seen in PET/CT and missed by CT. The three patients with initial inguinal/iliacal LNM died during the observation period (overall survival: 10 (6-18) months). The three patients without inguinal/iliacal LNM involvement are currently alive, one patient showing a slowly progressive disease since five years and two patients are tumor-free since 8.5 and 1.5 years (patient had initial perirectal LNM).

Conclusion:

In ARMM, PET/CT is superior to CT in detection of LNM and distant metastasis. APR is possibly a curative approach if the PET/CT shows exclusively perirectal LNM despite locally advanced tumor growth.

Predictive value of Peritoneal Cancer Index for survival in patients with mucinous peritoneal malignancies of colorectal origin – a single center experience

(Abstract ID: 366)

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Background:

Peritoneal surface malignancy (PSM) treatment depends on tumor type. Mucinous PSM (m-PSM) is associated with better prognosis than non-mucinous PSM (nm-PSM). The PCI´s predictive ability for these tumor types has not yet been evaluated. This study investigated effects of peritoneal carcinomatosis index (PCI) on patient outcome depending on tumor type.

Materials and methods:

We analyzed 51 patients with PSM from colorectal origin treated with cytoreductive surgery (CRS) and hyperthermic intraperitoneal chemotherapy (HIPEC) between 2008 and 2015. PCI´s predictive ability was evaluated by multiple Cox-proportional hazard regression analysis and Kaplan-Meier curves.

Results:

The analysis of these patients showed a significant difference in PCI score of 15.5 ± 13.0 in patients with m-PSM vs. 9.1 ± 6.1 in patients with nm-PSM ($p = 0.023$), although there was no significant difference in patient survival ($p = 0.847$). Age, BMI, hospital stay and completeness of cytoreduction showed now significant difference between both groups. Patients with nm-PSM who showed PCI scores >= 16 demonstrated inferior two-year patient survival (25.0%) compared with patients with PCI scores < 16 (77.7%; $p = 0.011$). In contrast, patient survival was not different between the PCI groups in the m-PSM group 80.0% vs.66.8%; $p = 0.785$).

Conclusion:

PCI is prognostic in nm-PSM, but not in m-PSM. CRS and HIPEC may benefit not only patients with low PCI, but also those with high PCI and m-PSM.

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Complications after endorectal pull-through for megacolon

(Abstract ID: 616)

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Background:

In 1988 De la Torre-Mondragon and Ortega-Salgado reported the one-stage endorectal pull-through (ERPT) procedure without the use of a defunctioning colostomy for congenital megacolon. The mucosectomy, colectomy, and pull-through are performed transanally, and laparotomy or laparoscopy are seldom required.

Materials and methods:

From 01/01 to 08/13, 29 children (4 female) underwent an ERPT procedure: 22 de la Torre-Soave and 6 de la Torre-Swenson. Mean age at surgery was 11 months (range 1mo - 11years). The mean length of the resected bowel was 19 cm (range 12 - 50 cm). Five patients had previous operations: three colostomy, one ileostomy, and one internal sphincterotomy. Concurrently laparotomy or laparoscopy was performed in nine patients.

Results:

Five patients had complications needing surgery: one with pelvic abscess, one with postoperative bleeding, pelvic hematoma and anastomotic fistula, one with colon perforation with peritonitis, one with residual aganglionosis, and one with adhesions ileus. Two patients with anastomotic stenosis were treated by anal dilatation for weeks and one patient had temporary incontinence. All patients were followed-up 6 months to 12 years. All patients, but one are continent. 16 patients have 1 - 2 stools, seven patients have 3 - 4 stools, and one patient more than 4 stools per day. Five patients have constipation, one of them soiling. Postoperative enterocolitis was observed in two patients.

Conclusion:

ERTP proof to be a good method for young infants with rectosigmoidal aganglionosis and no previous episodes of enterocolitis. In older patients with massively dilated proximal bowel ERTP accumulate complications rates comparable to classic procedures.

Magnetic anal sphincter augmentation in fecal incontinence – function and preditive factors of success

(Abstract ID: 692)

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Background:

Aim: To identify predictive factors of success after magnetic anal sphincter augmentation (MAS) in fecal incontinence based on a prospectively collected database.

Materials and methods:

Consecutive patients with end-stage fecal incontinence, who underwent MAS between 12/2008 and 1/2015 were included. CCIS, FIQL, diary, and subjective patients' satisfaction were assessed before and after MAS implantation. Multivariate analysis for predictive factors of success and ROC curve analysis (CCIS based) for satisfaction were performed.

Results:

47 patients (mean(s.d.) age 66.72(±9.92), male:1) underwent MAS. After median follow-up of 36 months (range 6-84) total leakage rate, total CCIS, and FIQL (all dimensions) improved significantly. Gaz or liquid leaks, and minor leaks improved non-significantly. Satisfaction remained unchanged from 6 months until 36 months after operation. A reduction of CCIS of 5.5 points correlated best with satisfaction in ROC curve analysis. A reduction of >= 5.5 points in CCIS was obtained in 22 patients(52.4%) out of 42 who kept the device. Independent predictive factor for success of implantation was, if patients have not undergone prior operative treatments for FI before.

Conclusion:

This single centre prospective series on MAS suggests that only operative treatment for FI prior to MAS influenced the outcome negatively. This finding could help selecting patients for MAS implantation.

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Long term survival after complete cytoreduction and HIPEC treatment: Prognostic factors for patients with peritoneal metastasis from colorectal cancer

(Abstract ID: 793)

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Background:

Cytoreductive surgery (CRS) and Hyperthermic chemoperfusion (HIPEC) is the standard treatment for patients with colon cancer and resectable peritoneal carcinomatosis (PC). However, PC is often found as surprising diagnosis during elective or emergency surgery, when HIPEC treatment is not availabe or prepared. Therefore, several sequences of multimodal treatment are reported, including primary complete CRS and HIPEC or second look laparotomy after incomplete resection or in patients at high risk. Aim of study was to investigate the prognostic influence of different treatment courses, including primary complete resection, emergency surgery, inductive chemotherapy and second look laparotomy.

Materials and methods:

We investigated a series of 51 patients with peritoneal metastasis of colon cancer, who had complete cytoreduction (CCR0) either by one step cytoreduction (31) or by a second look concept (20). Overall survival, primary R-status, emergency surgery, extent of PC and systemic chemotherapy were assessed. Log-rank analysis, student´s t-test and correlation analysis were used for statistical calculation.

Results:

Overall survival was higher after CCR0 one step surgery compared to second look patients (44 vs. 31 months, median, p=0.04). However, there was no significant difference between one step surgery/HIPEC and second look treatment in overall survival, when R0/R1 resection was achieved during primary resection. Patients with R2 resection status after primary resection showed impaired surival (21.5 months, p=0.02). There was no difference between patients with inductive or additive chemotherapy.

Conclusion:

Primary complete CRS and HIPEC with CCRO resection status seems to be favorable in patients with resectable peritoneal metastasis. Complete cancer resection should also be mandatory, when HIPEC treatment is not available, followed by second look laparotomy and HIPEC.

Valence of preoperative rectal cancer staging

(Abstract ID: 794)

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Background:

With an increasing number of cancer survivors the valence of preoperative staging becomes more and more important in the treatment of rectal cancer (RC). Therapy relevant overstaging impairs quality of life rather then oncologic results. The aim of this retrospective single center study was to evaluate the significance of three different imaging methods (EUS,MRI,CT) with this regard.

Materials and methods:

This retrospective study evaluates the valence of three different imaging modalities in local staging for rectal cancer with special focus on therapy relevant overstaging. Patients with rectal cancer (RC) UICC stage I-III treated between 2002 and 2008 were identified using our CREDOS 2 documentation system. M status was not recorded which excluded patients with UICC stage IV from this study. Sensitivity, specificity and accuracy of CT, MRI and EUS were evaluated using the chi-square test. The different T stages and N stages were analysed seperately. The nodal status was set N+ for N1 and N2. In case the applied imaging modality could not define T/N stage precisely the terms TX and NX were used. Due to the fact that modern imaging still lacks precise response criteria to discriminate between vital tumor mass and the desired downsizing/downstaging effects only those patients receiving primary operation were subject to statistical analysis in this study. Dichotomous conversion of T stages was performed to assess imaging results according to their clinical relevance. We combined stages T1+2 as well as T3+4 in the light of actual treatment guidelines recommending primary surgery in the first and neoadjuvant treatment in the latter.

Results:

219 (62.4%) out of 351 RC patients were evaluable. 184 (84.9%) out of 219 patients underwent primary operation, thus qualifying for statistical analysis. The mean number of local staging examinations was 1. Sensitivity was exceptionally poor (0%) for CT in detecting T1 stage as it was for EUS (0%) in detecting T4 stage. Compared to EUS and MRI the acuracy identifying T3 stage was markedly reduced for CT (CT: 46% vs. EUS/MRI: 63% each). Overstaging was present in all of the three imaging modalities. Regarding EUS T-overstaging was found in 19 cases (30%) and N-overstaging in 13 cases (21%). CT and MRI revealed overstaging of the T category in 20% (n=29) and 34% (n=13) as well as overstaging of the N category in 20% (n=29) and 29% (n=11), respectively. Dichotomous conversion of T stages revealed relevant overstaging to the T3+4 category by EUS, CT and MRI in 10 (16%), 18 (13%) and 10 (26%) cases. 13 (21%) of EUS cases, 29 (20%) of CT cases and 11 (29%) of MRI cases were wrongly assigned to the N+ category. As a result, UICC stages II and III were found overrated in 13 (21%), 18 (13%) and 10 (26%) of EUS, CT and MRI cases, respectively.

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Table:

	EUS	CT	MRI
	n=63	n=143	n=38
Therapy-relevant overstaging into T3/4 category	10 (16%)	18 (13%)	10 (26%)
Therapy-relevant overstaging into N+ category	13 (21%)	29 (20%)	11 (29%)
Therapy-relevant overstaging into UICC II or III	13 (21%)	18(13%)	10 (26%)

Therapy-relevant overstaging by EUS, CT and MRI for rectal cancer. Results itemized for T/N status and summarized according to UICC

Conclusion:

None of the three imaging modalities EUS, CT ans MRI proved to be superior over another. MRI and EUS tended to local overstaging of UICC II and UICC III stages crucial for the decision on neoadjuvant treatment. A combination of MRI/EUS may overcome the individual shortcommings to minimize overtreatment.

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The Cumulative Incidence of Metachronous Peritoneal Metastases of pT4 Colorectal Adenocarcinoma

(Abstract ID: 816)

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Background:

There is an ongoing debate about the necessity of hyperthermic intraperitoneal chemotherapy procedure in pT4 colorectal cancer patients. It has been demonstrated that these patients have an increased risk of metachronous peritoneal metastases (PM). The aim of this study was to evaluate the cumulative incidence of metachronous PM in pT4 colorectal cancer patients in a tertiary care center.

Materials and methods:

This was a retrospective cohort study of patients undergoing curative resection of a pT4 colorectal cancer in a tertiary hospital between 2003 and 2012. Primary outcome was the cumulative incidence of metachronous PM. Uni- and multivariate survival analyses were performed using Cox-proportional hazards models.

Results:

A total of 191 pT4 colorectal cancer patients (M/F = 95/96) with a median age of 70 years (range 33-98) were identified. Patients with an UICC tumor stage IV (n=83) or a local R2 resection status (n=10) were excluded for further analyses. Of the remaining 96 patients 41 (43%) were classified as UICC stage II and 55 (57%) as UICC stage III. A R0 resection was achieved 90 patients (94%). Isolated or combined metachronous PM occurred in eleven (12%) and 13 patients (14%) accounting for an overall metachronous PM rate of 25%. The 3- and 5-year cumulative incidence rates for metachronous PM were 14% (95% confidence interval (CI) 8%-26%) and 23% (95% CI 12%-40%). The 3-year cumulative incidence rate in R0 resected patients was 13% (95% CI 4%-25%) compared to 50% (95% CI 9%-99%) in patients with R1 resection. Five-year overall survival rates for patients without, isolated, and combined metachronous PM was 79% (95% CI 65%-88%), 10% (95% CI 6%-36%), and 31% (95% CI 8%-58%) respectively.

Conclusion:

With a cumulative incidence of 23% the occurrence of metachronous peritoneal metastases in pT4 colorectal cancer patients is high. Especially in regard to the disastrous five-year overall survival estimates in this group of patients, the installation of a modified follow-up program may be helpful.

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Short and Long-term Survival of Colorectal Cancer Patients Following Multivisceral Resection

(Abstract ID: 821)

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Background:

A favorable long-term survival in locally advanced primary colorectal carcinoma with adhesions to neighboring organs can be achieved only after multivisceral resection with clear resection margins. The present study was undertaken to evaluate the short and long-term outcome after multivisceral resection in locally advanced primary colorectal cancer patients.

Materials and methods:

For this retrospective cohort analysis, 46 patients who underwent multivisceral resection of primary colorectal cancer were identified in the institutional prospectively maintained colorectal cancer database. Postoperative morbidity and mortality was investigated. Overall (OS) and cancer-specific survival (CSS) analyses were performed using the Kaplan-Meier method.

Results:

Of the 46 patients (mean age: 65 ±13 years, female: 55%) 70% (32 of 46) were diagnosed with a pT4, a pT3 (26%), and a pT1 (2 patients) stage tumor, respectively.

The small intestine (n=17), the ovary (n=16) and the uterus (n=12) were the most frequently resected organs. The rectum was affected most frequently with 43% of all cases.

A R0 resection was achieved in 90%. The perioperative morbidity and mortality rate was 39% and 6%, respectively.

Five-year OS and CSS rates for patients with UICC stage I - III (n=30) were 70% (95% confidence interval [CI]: 38%-87%) and 74% (95% CI: 39%-91%). Median overall survival time for R1 (10%) resected patients was 12 months compared to 72 months in R0 resected patients (90%) (P = 0.004).

Conclusion:

Multivisceral resection provides an acceptable morbidity and mortality and is associated with good long-term outcomes. In view of our results the decision-making process to perform a multivisceral resection should be treated liberally.

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Curative resection of colorectal cancer in octogenarians: results of risk factors and postoperative outcome

(Abstract ID: 931)

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Background:

Due to an increase of the ageing population the treatment of octogenarians with malignancies pose an interdisciplinary challenge. In the recent thirty years the percentage of patients with an age beyond eighty has almost doubled. However there is a lack of data regarding to the perioperative treatment and postoperative outcome in this cluster of patients with colorectal cancer.

Materials and methods:

We performed a retrospective unicenter data analysis of all patients in the years 2002-2012 with an age of >=80 years which underwent a surgical procedure due to colorectal cancer. Primary endpoint was the overall suvival. Secondary endpoints including postoperative morbidity regarding surgical-depending and non-surgical-depending complications. Furthermore the one-, two- and three-year-survival. Additionally we identified the risk factors influencing the primary and secondary endpoints by multivariate analysis.

Results:

156 patients (44.2% male) with a mean age of 83.5±2.8 years were enclosed. An ASA risk score of >=3 appeared in 69.8%. Intendent surgery was performed in 92.9% (n=145). The median survival was 44.6 (CI 26.8-62.2) months. The tumor was located in the colon in 71.2% (n=114) and 89.2% received an primary anastomosis. Only 40% had rectal cancer. Simultaneous cancer of the colon and rectum appeared in 5.8%. Forty-two patients (26.8%) had a preexisting malignant disease. 43.3% had an UICC-stadium of III and IV. Multivisceral resection was performed in 36 cases. A R0-resection was achieved in 94.9%. The one-, two- an three-year-survival was 73, 59 and 55% respectively. Independent risk-factors comprised UICC-stadium, wall-exceeded growth and positive lymph-node detection. This could not verified for already preoperative persisting comorbidities.

Conclusion:

Based on the demographic change an increasing number of elderly patients underwent different surgical procedures due to colorectal cancer. A resection with curative approach is mostly feasible. Prognosis and survival is comparable with younger patients. Regarding to the positive long-term prognosis and age-standardisized survival a surgical procedure due to colorectal cancer should performed with curative purpose. All therapeutic options for the treatment of colorectal cancer in octogenarians should be considered as well.

Rectal bleeding as alarm sign for transanal evisceration of small bowel. Report of a case.

(Abstract ID: 184)

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Background:

Transanal intestinal evisceration is a very rare pathologic entity with dramatic presentation, where the small bowel eviscerates through a rectal wall defect intraluminally and exits transanally.

Materials and methods:

The present case reported refers to a 91 year old lady with a history of rectal bleeding by local ischemia of the anterior rectal wall, who presented to us with intestinal loops extruding through the anus.

Results:

The patient underwent prompt surgical intervention with segmental small bowel resection, resection of the rectum and construction of an end colostomy, with her postoperative recovery being uneventful.

Conclusion:

Our report demonstrates local ischemia of the anterior rectal wall as an etiopathogenic factor and stresses its role as an alarm sign for a subsequent rectal perforation with evisceration of the small intestine.

Permacol collagen paste for perianal fistula: short term results

(Abstract ID: 207)

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Background:

For treatment of anal fistula a variety of surgical methods are available. While the less invasive sphincter-preserving methods have a lower risk of postoperative fecal incontinence, the recurrence rate appears to be higher. The fistula treatment with PermacolTM collagen paste, an acellular crosslinked porcine dermal collagen matrix suspension, represents a new method for the treatment of anal fistula. We present our first experience.

Materials and methods:

From October 2015 to September 2016 a total of 20 patients with anal fistula (16 (80%) with transsphincteric fistula and 4 (20%) with anovaginal fistula) were treated with Permacol paste. Patients were regularly followed up, starting with the first postoperative examination after one week and subsequently on demand, but always 6 and 12 months postoperatively. Special focus was on the healing rate of the fistula and on postoperative incontinence. Fistula healing was defined as the absence of signs of recurrence in clinical examination and proctoscopy/rigid rectoscopy. Fecal incontinence was assessed before surgery and at each follow-up.

Results:

The total group included 20 patients (mean age 53 [range 27-78], gender: 12x female, 8x male) with an average number of previous fistula operations of six. Seven patients (35%) suffered from Crohn's disease. 36% of patients had at least one failed attempt of fistula elimination (fistula plug, fistula excision) in the past. The mean follow-up time after Permacol fistula closure was 8 months [range 2-12]. The healing rate was 80%, in patients with at least a follow-up of 6 months (13 patients) 69%. None of the operated patients developed postoperative fecal incontinence. Two patients (10%) had an adverse event (1x perianal pain, 1x fluid accumulation) and needed a deposit of fistula drainage. Neither the presence of Crohn's disease (p=1,000), nor the age (p=1,000) or gender (p=0,603), nor active smoking (p=0,351), nor a number (> 4) of previous operations (p=1,000) had a significant impact on healing rate.

Conclusion:

Our preliminary data indicate that the use of Permacol paste appears to be a safe and effective method for patients with transsphincteric and anovaginal fistula. Long-term results are needed to confirm these promising results.

Psycho-oncologic screening in patients with peritoneal surface malignancies treated with cytoreductive surgery and intraperitoneal hyperthermic chemotherapy

(Abstract ID: 369)

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Background:

Psycho-oncologic screening is known to be a useful tool to identify oncologic patients who benefit from early postoperative psycho-oncological therapy.

Materials and methods:

This retrospective analysis included all patients who were treated for peritoneal surface malignancies with cytoreductive surgery (CRS) and hyperthermic intraperitoneal chemotherapy (HIPEC) at our department between 01/2013 and 02/2016. A psycho-oncologic screening form was preoperatively handed to the patient at the outpatient clinic and was filled out by the patient himself. The aim of this study was to raise demographic data and to examine correlations between high risk of psychological distress and clinical outcome of the patients.

Results:

A total of 150 patients were included in this analysis, while 76 (50.7%) patients participated in the psycho-oncologic screening reaching a score of 5.5 (±2.7) on average. 49 patients were identified at high risk for anxiety and depression (Score >=5). Patients with Cancer of unknown Primary (7.7±0.6; n=5) and low-grade appendiceal mucinous neoplasm (6.8±1.6; n=22) scored higher compared to patients with colorectal cancer (5.5±2.5; n=33), mesothelioma (4.8±2.9; n=18) or gastric cancer (4.4±3.4; n=35). Female patients had a higher score (6.0±2.6) compared to male patients (4.8±2.8; p=0.09). Patients age (p=0.78), comorbidities (p=0.30) and Peritoneal Cancer Index (p=0.25) had no significant influence on psycho-oncologic score. The postoperative rate for surgical 15/49 (30.6%) or non-surgical complications 16/49 (32.7%) in patients at high risk was comparable with patients with low risk (4/16 (25.0%), 5/16 (31.3%); p=0.46, p=0.59). Linear regression analysis revealed psychological problems in Sadness (HR 2.15; p=0.04) and Sleep (HR 2.94; p=0.06) with the strongest impact on psycho-oncologic screening score.

Conclusion:

The average psycho-oncologic screening score is not related to the medical prognosis of the patients due to their underlying disease and showed no correlation to the complication rate. Sadness and problems with sleep are of major influence in this score. Further studies including larger numbers of patients are necessary to establish more information about the psycho-oncologic screening and its clinical impact.

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Global Surgery – where are we?

(Abstract ID: 475)

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Background:

- 5 Billion people around the world to not currently have access to safe, affordable, surgical and anesthesia care when needed.

- Surgically treatable conditions now result in more deaths than HIV/AIDS, tuberculosis and malaria combined. However, Global Surgery is still the "neglected stepchild" of Public Health.

- $12.3 Trillion projected GDP losses in low-income countries associated with not investing in essential surgical & anesthesia care.

These are just a few numbers that show that universal access to quality surgical, obstetric, trauma and anesthesia care is a human right. Every human being is entitled to ready access to high quality, lifesaving, safe surgical, obstetric, trauma and anesthesia care performed in their communities. Significant improvements in surgical and anesthesia care, which save lives and prevent life-long disability or life-threatening complications, can be sustainably and affordably integrated within existing health systems.

Surgery is an essential component of health systems but has generally been neglected within global public health. This is despite growing evidence documenting the cost-effectiveness of essential surgical care in low- and middle-income countries (LMICs)

At the 68th WHO Assembly in Geneva in May 2015 resolution A68/15 was passed on "on Strengthening Emergency and Essential Surgical Care and Anaesthesia as a Component of Universal Health Coverage". This was a majore milestone.

My presentation will focus on the burden of surgical disease in low-income countries, the formation of the Lancet Commission on Global Surgery, collection of specific indicators for research studies to better understand the current surgical situation, health systems strengthening and the implementation of National Surgical Plans in several countries. I am intending to give a brief overview about Global Surgery. Global Surgery Research is almost exclusively conducted in the United States and this would be the first Global Surgery presentation at a German conference.

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Stent placement and Recanalization of the portal vein after complete thrombosis following extended upper GI surgery – a new therapy option

(Abstract ID: 599)

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Background:

A portal vein thrombosis after extended upper GI surgery can lead to severe or even life threatening complications such as complete liver failure, bleeding complications or ischaemic bowel necrosis. Depending on the size of the thrombosis extension a mortality of nearly 100 % is shown (especially in case of an acute thrombosis)

The primary goal of treatment should be an immediate recanalization of the thrombotic vessel.

Normally under local or systemically lysis - therapy a high recanalization rate is shown (40% total and 45% sufficient recanalization rate). After preceded extended surgery this therapy option is not usable due to bleeding complications.

In those situations the interventional placement of a portal vein stent is an alternative treatment option.

Materials and methods:

In cooperation of the department of surgery and the department of radiology at the LKH Hochsteiermark/Leoben three patients with a clinical life threatening portal vein thrombosis underwent an interventional stent placement to achieve a recanalisation.

All three patients where treated between 1/2015 and 12/2015

The stent placement was performed through a locking-system which had been surgical placed (via minimal - laparotomy) into a mesenteric vein.

Results:

In all three cases a recanalisation of the portal vein after a successful stent placement could be achieved.

Two times a total collapse of the liver function could be prevented. (The portal vein thrombosis occurred after a split - liver procedure respectively after extended Whipple resection with a venous graft implantation)

Within the third case a not stoppable, transfusion requiring, recurrent upper GI bleeding after Kausch - Whipple resection could be successfully treated.

Conclusion:

This interdisciplinary and interventional recanalization of the portal vein is a quick and safe procedure and the therapy success is immediately verifiable

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Web-based surgical education and training: a qualitative and quantitative assessment of presently available internet platforms

(Abstract ID: 935)

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Background:

Presently, there exist a great number of possibilities to access surgical content throughout the internet. The advantages of surgical educational web-based platforms have recently been outlined. We aimed to determine how many surgical education platforms exist today. Additionally, we compared the quality and breadth of knowledge as well as educational tools offered to medical students and surgeons in training by these websites.

Materials and methods:

Based on pre-existing website evaluation tools in the literature, a catalogue of acknowledged evaluation items was created as our evaluation tool to rate surgical educational websites. The evaluation tool assessed three major website characteristics: the website itself, video features and multimedia features offered. A systematic search process using www.google.de and www.yahoo.de was used to retrieve available websites. These websites were screened using previously defined inclusion criteria to produce the list of websites for our study analysis.

Results:

More than 80 websites were retrieved and screened. Of these, 30 platforms were found to meet the inclusion criteria. The study assessment showed great heterogeneity between websites as there was a wide range across our website, video and multimedia evaluation tools.

Conclusion:

Surgical platforms may provide additional learning benefits beyond conventional training in the operating room, sparing precious time and financial resources. The number of platforms is steadily increasing and they are characterized by considerable differences in their quality both in terms of content as well as available teaching tools.