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Abstracts

Acute Care Surgery

Abstract citation ID: znae118.001

Laparotomy for Traumatic Splenic Injury: Should we Increase our Efforts to Preserve the Spleen?

D. A. Jakob[1], M. Müller[2], A. Kolitsas[3], A. K. Exadaktylos[2], D. Demetriades[3]
[1]*Division of Trauma and Surgical Critical Care, Department of Surgery + Department of Emergency Medicine (Inselspital), Los Angeles General Medical Center, University of Southern California + Inselspital University Hospital of Bern, Bern*
[2]*Department of Emergency Medicine, Inselspital University Hospital of Bern, Bern*
[3]*Division of Trauma and Surgical Critical Care, Department of Surgery, Los Angeles General Medical Center, University of Southern California, Los Angeles*

Background: In trauma laparotomy the spleen is removed very liberally, and often little effort is made for splenic preservation.
Aims: The aim of this study was to assess the effect of surgical management (splenic repair vs. splenectomy) on outcomes in patients undergoing trauma laparotomy.
Methods: This is a trauma registry (TQIP) study (2013–2019), including adult patients with severe splenic injuries (grades III-V) undergoing trauma laparotomy. Characteristics and outcomes of patients who underwent splenic repair vs. splenectomy within 6 hours of admission were compared using different statistical approaches, i.e. 1:1 exact matching with consecutive conditional logistic regression analysis as primary analysis, multivariable logistic regression, propensity score matching and inverse-probability weighting as sensitivity analyses. The primary outcome was in-hospital mortality.
Results: A total of 11,247 patients with a severe splenic injury undergoing trauma laparotomy within 6 hours of admission were identified. Of these, 10,820 (96.2%) patients underwent splenectomy and 427 (3.8%) patients splenic repair within 6 hours of admission. Among patients who underwent an initial splenic salvage procedure, 23 (5.3%) patients underwent a splenectomy during the subsequent hospital stay. 400 patients with splenic preservation, were matched with 400 patients who underwent splenectomy (matched for age, sex, hypotension, trauma mechanism as well as AIS spleen grades 3,4,5 and AIS groups (AIS 0-2, AIS 3, AIS 4-5) for head, face, neck, thorax, spine, and lower & upper extremity). The mortality was significantly lower in the group of patients with splenic repair (6.5% vs 12.8%, p=0.002). The mortality benefit was subsequently verified by conditional regression analysis (aOR 0.4, CI 95% 0.2; 0.9). Multivariable logistic regression, propensity score matching, and inverse-probability weighting confirmed the lower mortality in the splenic repair group.
Conclusion: In trauma laparotomy splenic repair was independently associated with lower mortality compared with splenectomy. Splenectomy was required in approximately 5% of the patients after initial splenic repair. The findings provide evidence that efforts for spleen preservation in trauma laparotomy should be considered in selected cases.

Bariatrics

Abstract citation ID: znae118.002

Advantages of the 3- vs. the 2-Dimensional Laparoscopic Technology in Bariatric Surgery

C. de Vico[1], M. Burgard[1], B. Egger[1], F. Pugin[1]
[1]*General Surgery, HFR, Fribourg, Fribourg*

Background: Bariatric surgery procedures as the laparoscopic Roux-en-Y-Gastric Bypass (RYGB) are highly standardized procedures. The difficulty in two-dimensional (2D) laparoscopic surgery is the loss of the depth perception which complicates surgical techniques as suturing and knotting. The development of three-dimensional (3D) laparoscopy has been shown to reduce operative times and surgeons' performances errors.
Aims: To compare operative times, post-operative complications and the lengths of hospital stay of patients having undergone laparoscopic RYGB before and after the introduction of the 3D-technology.
Methods: We conducted a retrospective cohort study including patients having undergone RYGB (without cholecystectomy) at our institution by the same surgical team before and after the introduction of the 3D-laparoscopic technology (Karl Storz, Tuttlingen, Germany). The primary outcome was the operative time, the secondary outcomes the post-operative complications and lengths of hospital stay.
Results: 100 consecutive patients, operated on 2019-2021 were included; 50 were operated utilizing the 2D- and 50 the 3D laparoscopic technology. There were no statistically significant differences in age, gender, body mass index or comorbidities, however, patients in the 3D-group had significantly more previous interventions. Operative time and hospital length of stay were significantly reduced in the 3D-group (83 (± 20.8) vs. 91 (± 13.5) minutes; $p < 0.05$ and 2.1 (± 0.4) vs. 2.7 (± 1.1) nights; $p < 0.05$). There were no statistically significant differences found between groups concerning post-operative complications and re-interventions.
Conclusion: 3D technology may help reducing the operative time and length of hospital stay in laparoscopic RYGB surgery with similar post-operative complications. We cannot completely exclude reduced operative times by the still growing experience of the surgical team.

Abstract citation ID: znae118.003

Data-Driven Patient clusters of Type 2 Diabetes May Help to Identify Patients at Risk and Predict Metabolic Surgery Outcomes on Diabetes Remission and NAFLD Pregression

A. Poljo[1], J. M. Klasen[1], J. Süsstrunk[1], M. Kraljević[1], R. Peterli[1], B. P. Müller-Stich[1], A. T. Billeter[1]
[1]*Visceral Surgery, Clarunis - University Digestive Health Care Center Basel, Basel*

Background: Precision medicine and customized medicine have gained enormous attention in recent years, especially in the treatment of type 2 diabetes (T2D). Different subgroups of diabetes have been identified by research employing data-driven cluster analysis, each with a unique diabetes progression and complication risk (*Ahlqvist et al., Lancet Diabetes Endocrinol. 2018*).
Aims: We aimed to apply the proposed cluster analysis to a patent population post metabolic surgery and investigate the association with T2D remission and presence of NAFLD.
Methods: We retrospectively linked newly defined clusters to metabolic surgery outcomes in 53 T2D patients. Utilizing k-means and hierarchical clustering, three clusters emerged based on glutamate decarboxylase antibodies, age, BMI, HbA1c, and homoeostatic model assessment estimates of β-cell function (HOMA2-B%) and insulin resistance (HOMA2-IR). Intraoperative liver biopsies assessed nonalcoholic fatty liver disease (NAFLD) presence differentiating between simple steatosis (NAFL) and steatohepatitis (NASH). Clinical and biochemical data were collected over two years, focusing on T2D remission and NAFLD improvement.
Results: Cluster 1, characterized by the lowest BMI, highest NASH rate, impaired beta-cell function, and increased insulin resistance,

displayed a favorable response to surgery, indicating robust regeneration of beta-cells. Despite increased insulin production, T2D remission was surprisingly low at 44.0% after one year, in contrast to 75.00% in Cluster 2 and 100.00% in Cluster 3. Metabolic surgery notably reduced insulin resistance and promoted NASH remission, evidenced by a significant reduction in a non-invasive NASH detection score and liver enzyme levels across all three clusters.

Conclusion: Our findings suggest that patients in Cluster 1 already show a lack of beta-cell compensation being associated with a higher prevalence of NAFLD and poorer diabetic control and therefore especially might benefit from an earlier intervention. Data-driven classification might help to customize treatment plans and identify patients at higher risk of problems at diagnosis.

Abstract citation ID: znae118.004

How Preoperative Investigations Affect the Management of Bariatric Patients - Results of a Cohort Study of 897 Patients

A. Poljo[1], R. Schneider[1], J. Süsstrunk[1], J. M. Klasen[1], A. T. Billeter[1], R. Peterli[1], M. Kraljević[1]
[1]*Visceral Surgery, Clarunis - University Digestive Health Care Center Basel, Basel*

Background: Poorly defined preoperative diagnostic protocols worldwide vary in their emphasis on comprehensive investigations, with some prioritizing patient safety while others question routine procedures.

Aims: This study explores how diverse preoperative findings, from inflammatory processes to structural abnormalities, significantly influence patients' management and the choice of bariatric procedures, underscoring the complexity in decision-making for individualized surgical interventions based on a cohort study's findings.

Methods: In a retrospective analysis of prospective data of over 1000 bariatric surgery patients from January 2017 to December 2022, we specifically included those who underwent primary laparoscopic Roux-en-Y gastric bypass (LRYGB) or laparoscopic sleeve gastrectomy (LSG). In all patients, preoperative upper endoscopy was performed, with selected candidates also undergoing additional procedures like upper GI series and esophageal manometry, especially when LSG was planned. The study primarily analyzed the impact of preoperative examinations on therapeutic approaches.

Results: In this study, 897 patients were included, with 741 undergoing laparoscopic LRYGB and 156 LSG. All patients underwent upper endoscopy, revealing common findings such as type C gastritis, gastroesophageal reflux disease, and detection of Helicobacter pylori. Upper endoscopy prompted a therapeutic change in 216 patients (24.3%), resulting in a number needed to screen (NNS) of 4.1, with no significant differences based on the initially scheduled procedure. Preoperatively, upper GI series were more frequently conducted before planned LSG, uncovering hiatal hernias and motility disorders. However, no change in the surgical procedure resulted from upper GI series findings. Esophageal manometry, primarily performed for LSG, indicated normal findings in 84.6%, with a procedural change in 3 patients (2.0%). Overall, 14 (1.6%) patients experienced a change in the planned procedure, with 12 changes prompted by preoperative findings and two by technical difficulties.

Conclusion: We recommend routine upper endoscopy for all bariatric surgery patients, with additional manometry for planned LSG. Upper GI series should be reserved for selected cases and specific clinical indications.

Abstract citation ID: znae118.005

Laparoscopic Magnetic Sphincter Augmentation for Symptomatic Gastroesophageal Reflux After Roux-en-Y Gastric Bypass: Outcome in 13 Patients

E. Moser Schaub[1], Y. Fringeli[1], U. Kessler[1], J. Zehetner[1]
[1]*Department of Visceral Surgery, Hirslanden Clinic Beau-Site, Bern*

Background: Gastroesophageal reflux disease (GERD) represents a common burden after bariatric procedures, particularly after laparoscopic sleeve gastrectomy (LSG). While GERD after LSG is usually treated with conversion to Roux-en-Y gastric bypass (RYGB), there are limited surgical options to manage medically refractory GERD after RYGB due to the altered anatomy. The use of magnetic sphincter augmentation (MSA) is one option, but the literature on this topic remains scarce.

Aims: To present mid- to long-term outcome of patients treated with MSA for GERD after RYGB.

Methods: We performed a retrospective single-centre analysis of data from patients who underwent laparoscopic MSA for GERD between August 2015 and December 2023, and who had previously RYGB. Outcomes were persistence/recurrence of GERD symptoms, use of proton pump inhibitors (PPIs) and need for redo surgery related to MSA complications or recurrent GERD.

Results: Of the 312 MSA procedures performed for GERD, we identified 13 patients who underwent laparoscopic MSA after RYGB. There were 10 female patients (77%), with mean age of 42.6 ± 13.7 years and mean BMI of 27.2 ± 2.7 kg/m^2. Seven patients (54%) had de novo GERD. All MSA procedures included hiatoplasty. Median follow-up was 40 months (range 7-72) and median time between RYGB and MSA placement was 42 months (range 8-242). One patient (8%) required endoscopic dilatation due to persistent postoperative dysphagia. Two patients (15%) needed redo surgery: 1 redo hiatoplasty with adhaesiolysis and 1 conversion to esophagojejunostomy with implant removal. There was no erosion or migration of the MSA implant. Overall satisfactory control of reflux with discontinuation or reduction of PPIs was achieved in 9 patients (69%).

Conclusion: The use of MSA to manage refractory GERD after RYGB is a safe option and was effective in 69% of patients but is limited to patients with intact oesophageal motility.

Abstract citation ID: znae118.006

Laparoscopic Versus Robotic Revisional Bariatric Surgery

M. Burgard[1], P. Iranmanesh[1], C. Toso[1], S. Mönig[1], B. Egger[2], F. Pugin[2], M. Jung[1]
[1]*Visceral Surgery, Geneva University Hospital, Geneva*
[2]*Visceral Surgery, Cantonal Hospital Fribourg, Fribourg*

Background: Revisional bariatric surgery (RBS) represents up to 15% of all bariatric procedures. The most performed conversion procedures are Roux-en-Y-Gastric Bypass (RYGB) and Vertical Sleeve Gastrectomy (VSG) after adjustable gastric banding (AGB), VSG or vertical banded gastroplasty (VBG). While the overall complication rate is known to be higher compared to primary surgery, the optimal surgical approach, laparoscopic or robotic, remains controversial.

Aims: We aimed to compare laparoscopic and robotic RBS in terms of peri and post-operative complications, ICU admission, operative time, and the length of hospital stay.

Methods: We conducted a retrospective multi-center case control study of patients who underwent RBS from 2013 to 2023 in two centers. Cases and controls were matched by the index procedure, - AGB or a stapled procedure and the revisional procedure, - RYGB or VSG.

Results: 59 revisional procedures were performed (36 and 23 per center). After matching according to index and revisional procedures, 46 patients were included, 23 in the robotic and 23 in the laparoscopic group. There were no statistically significant differences in demographics, BMI, or comorbidities between the groups. The overall peri- and early post-operative complication rate was similar while patients in the laparoscopic group had a higher rate of severe complications and reoperations (13% versus 0%), however, without reaching a statistically significant difference ($p = 0,07$). The operative time was shorter in the laparoscopic group (161 +/- 55 versus 232 +/- 63 minutes, $p < 0,05$).

Conclusion: Our retrospective study showed a tendency towards more severe perioperative complications and reoperations in laparoscopic compared to robotic revisional surgery in patients with similar index and conversion procedures. Patients with complex revisional RYGB could benefit from robotic surgery. As the literature provides contrasting results, further studies should be performed to address this question.

Basic research

Abstract citation ID: znae118.007

A Comparative Analysis of Secreted miRNAs Reveals Candidate Biomarkers for Pleural Mesothelioma Detection

A. Kraft[1,2], M. Meerang[3], M. B. Kirschner[3], V. Boeva[2,4,5], I. Opitz[3]

[1]Deparment of Thoracic Surgery, University Hospital Zurich, Zurich
[2]Department of Computer Science, ETH Zurich, Zurich
[3]Deparment of Thoracic Surgery, University Hospital Zurich, Zurich
[4]INSERM, U1016, Cochin Institute, CNRS UMR8104, Paris Descartes University, Paris
[5]ETH AI Center, ETH Zurich, Zurich

Background: MicroRNAs secreted by tumour cells through exosomes or in non-encapsulated form, were shown to promote tumour growth and treatment resistance, underscoring their potential as cancer biomarkers.

Aims: Here, we compare miRNAs secreted by pleural mesothelioma (PM) primary cells with miRNAs secreted by non-PM cells, in order to identify diagnostic biomarkers of this devastating disease.

Methods: We established primary cell cultures from pleural effusion of 12 PM and 7 non-PM patients. Secreted miRNAs were profiled as: (1) total secreted miRNA in cell culture supernatant (Sup), and (2) exosomal (Exo) miRNAs. Exosomes were extracted using iZON qEV columns. RNA was extracted with mirVana PARIS kit. Sequencing libraries were prepared using the QIAseq miRNA Library Kit (Qiagen). Reads were mapped on the mature miRNA sequences (MirBaseDB), followed by DESeq2 differential expression analysis. MiRNA target genes were selected using MirDB and functionally annotated using DAVID.

Results: We identified 309 and 84 deregulated miRNAs in PM-Exo and PM-Sup samples, respectively (p-value <0.05, Fig. 1A). Among the up-regulated miRNAs, we found let-7c-3p and miR-16-5p, which are known tumour suppressors, and miR-23a-3p and miR-30a-5p (Fig. 1B). Interestingly, miR-30a-5p belongs to the same family as miR-30e-5p, which together with miR-23a-3p was previously identified as part of the long survival signature in PM. Additionally, we identified 11 miRNAs that showed up-regulation in both PM-Exo and PM-Sup. Further analysis of these candidate miRNAs revealed that exosomal expression of miR-30a-5p was a significant predictor of patient survival (Fig. 1C). Finally, we identified potential target genes of the 11 up-regulated miRNAs - the target genes were significantly associated with transcriptional regulation and cell division (p-value <0.05).

Conclusion: Our comparative analysis of secreted miRNAs identified 11 candidate biomarkers for PM. Our findings emphasise the importance of the PM secretome in advancing our understanding of mesothelioma biology and discovering novel cell-free biomarkers. Further in-depth analyses are currently underway.

Abstract citation ID: znae118.008

Characterization of Colon Anastomosis Healing in Obese Mice

V. Delaune[1], S. Lacotte[2], A. Bouroumeau[3], A. Bornand[3], F. Slits[2], Q. Gex[4], N. C. Buchs[5], C. Toso[1]
[1]Visceral Surgery, Geneva University Hospitals, Geneva
[2]Hepatology and transplantation laboratory, Geneva Medical University, Geneva
[3]Pathology, Geneva University Hospitals, Geneva
[4]Nephrology laboratory, Geneva Medical University, Geneva
[5]Visceral Surgery, Hospital de la Tour, Meyrin

Background: Colon anastomosis leak is the most feared complication in colorectal surgery, with high morbidity and mortality. Despite the identification of correctible risk factors, its incidence has remained stable for the past 50 years. One of the risk factors is obesity, a systemic disease whose prevalence is continuously increasing worldwide. To understand the implicated mechanisms, and to develop therapeutic strategies, characterization of colon anastomosis healing in obese subjects is mandatory.

Aims: We aimed to describe the colon anastomotic healing process in obese mice, with a secondary aim to identify potential targets to decrease post-operative leaks.

Methods: Three groups of mice were fed different diets for 16 weeks: normal diet only (ND), high-fat diet reverted to normal diet on day of surgery (HF-ND), or high-fat diet only (HF-HF). Surgery consisted of left colon hemi-transection on the anti-mesenteric wall, and subsequent anastomosis with separate stitches. N=5 mice from each group were sacrificed at days 3, 5, 7, 10 and 14 after surgery.

Results: HF-HF mice had diarrhea and lost weight up to day 10 after surgery, compared to day 1 for ND mice. Overall, abscess rate was 4% in ND and HF-ND, and 8% in HF-HF mice. Free leak rate was 0% in ND and HF-ND, and 16% in HF-HF mice (p=0.03). Angiogenesis was decreased in HF-HF mice at day 5 compared to ND mice (p=0.02).

Conclusion: Obese mice undergoing continued high-fat diet (HF-HF) globally demonstrated worst outcomes after colon anastomosis with increased leak rates, and decreased angiogenesis. Despite having similarly low angiogenesis, these results seem to be mitigated in high-fat diet fed mice reverting to normal diet on day of surgery (HF-ND), hinting towards an involvement of gut microbiota. Further analysis of gut microbiota and angiogenesis pathways are warranted in order to determine therapeutic strategies.

Abstract citation ID: znae118.009

Co-Delivery of Recombinant Super-Affinity VEGF and PDGF-BB Accelerates Diabetic Wound Healing by Improving Angiogenesis, Arteriogenesis and Blood Flow

R. D'amico[1,2], P. Bicker[2], A. Uccelli[2], J. Hubbell[3], L. Gürke[1], T. Wolff[1], E. Mujagic[1], R. Gianni Barrera[2], A. Banfi[2]
[1]Vascular surgery, University Hospital Basel, Basel
[2]Cell and Gene Therapy Lab - Department of Biomedicine, University of Basel, Basel
[3]Pritzker School of Molecular Engineering, University of Chicago, Chicago

Background: Diabetic ulcers are characterized by local ischemia, usually without macroangiopathy. We have previously found that the combination of VEGF and PDGF-BB in a fibrin matrix is effective in stimulating arterial growth to diabetic wounds.

Aims: We developed modified forms of VEGF and PDGF-BB to bear super-affinity for the extracellular matrix (SA-VP), in order to decorate the wound tissue without the need for a biomaterial. We investigated the dose-dependent effects on local blood flow and wound healing, by applying the treatment either to the healthy tissue around the wound or to the damaged wound bed.

Methods: Full thickness wounds were created on the dorsal skin of diabetic (db/db) mice. SA-VP or saline were applied to the wound bed or divided into 4 injections around the wound edge. Wound closure and blood flow were measured on days 4 and 8 after treatment and tissues were harvested for histology on day 8. Data were analysed by Anova with Tukey's post-hoc test for multiple comparisons.

Results: Wound healing was improved dose-dependently by SA-VP by both delivery routes. Histologically, angiogenic areas and total amount of angiogenesis were significantly increased by the highest SA-VP dose, again independent of delivery route ($p = 0.034$). However, the total amount of recruited arterioles was significantly increased only in the healthy tissue around the wound and only by intradermal injections of SA-VP ($p = 0.008$). In agreement with the arteriogenic effect, the blood flow at day 4 was significantly increased only by injections of the highest SA-VP dose around the wound ($p = 0.018$).

Conclusion: SA-VP treatment significantly accelerates wound healing in a diabetic murine model with a clear dose-dependent effect. Targeting the undamaged tissue around the wound by injections induces more effective arteriogenesis. However, direct treatment of the wound bed is equally effective for healing. These results support further development for a potential clinical use.

Abstract citation ID: znae118.010

Investigating the Effect of Liver Regeneration on Tumor Growth: Development of a Mouse Model with Orthotopic Implantation of Patient-derived HCC Organoids

P. Sedlaczek[1], F. Haak[1], N. L. E. Aegerter[1], P. Müller[1], S. Piscuoglio[2], M. Coto-Llerena[2], S. D. Soysal[3], G. F. Hess[1], O. Kollmar[1]
[1]Visceral Surgery, University Center of Gastrointestinal and Liver Diseases, Basel
[2]Biomedicine, University of Basel, Basel
[3]Medical Faculty, University of Basel, Basel

Background: Recurrence after hepatocellular carcinoma (HCC) treatment is a significant problem. It affects more than 70% of patients undergoing liver resection. Recurrence can arise from undetected micro metastasis or de novo cancer. Clinical and experimental studies suggest that liver regeneration ensuing surgical resection may activate occult micro-metastasis leading to regeneration induced tumor recurrence. However, in vivo patient-derived organoid (PDO) HCC models that are translatable to patient tumors are sparse.

Aims: Here, we aim to establish a new in vivo model to understand the impact of liver regeneration on HCC tumor growth.

Methods: PDOs were generated from HCC tissue obtained from patients undergoing liver resection at the Clarunis University Digestive Health and Care Center and transduced with firefly luciferase. Implantation was performed via laparotomy and orthotopic injection of the organoids in the right superior liver lobe. Tumor growth is monitored by *in vivo* bioluminescence imaging until the endpoint of the experiment. As a primary endpoint tumor growth two weeks after liver resection was defined. Experimental groups underwent either minor (30%) or major (65%) hepatectomy of tumor-free liver, whereas the control group received a re-laparotomy with subsequent closure of the abdomen. Normal liver and tumor tissue were characterized using immunohistochemistry.

Results: Two HCC-PDO lines were successfully implanted. Compared to the control, after minor and major liver resection the mean weight increased significantly to 0.82% ($p < 0.0001$) respectively 0.99% ($p < 0.0001$). Preliminary data about the tumor volume have yet to be concluded. Histology and immunohistochemistry staining for HCC confirmed the origin of the PDOs from the original patient tumor.

Conclusion: The establishment of an orthotopic xenograft mouse model for HCC PDO was successful. Through liver resection, a regenerative environment could be achieved, to investigate the molecular behavior of HCC recurrence after surgery. This offers the basis to study potential new targets and mechanisms to improve HCC-treatment.

Abstract citation ID: znae118.011

Property of Hemorrhoid Tissue Mesenchymal Stem Cell Tow-Dimensional and Tridimensional Cultures for the Treatment of Anal Incontinence

A. Balaphas[1,2], S. El Hajji[1,2], B. Moeckli[1,2], E. Liot[1], A. Modarressi[2], G. Meurette[1], T. Laumonier[2], S. Lacotte[2], J. Meyer[1], C. Toso[1], F. Ris[1]
[1]*Division of Digestive Surgery, University Hospitals of Geneva, Geneva*
[2]*Department of Surgery, University of Geneva, Geneva*

Background: Autologous mesenchymal stem cells (MSC) from different origins, including adipose tissue, have been proposed for the treatment of anal incontinence with encouraging preclinical and clinical outcomes. Cell transplantation as tridimensional structures instead of individual cell suspension seems to increase cell viability and implantation. We previously developed a protocol for MSC isolation directly from haemorrhoidal tissue (he-MSC) in human and demonstrated that the isolated cells fulfil MSC criteria.

Aims: Evaluate the characteristics and secretome of he-MSC in both two-dimensional or tridimensional cultures.

Methods: Informed consent was obtained from all patients. Tissue samples were procured from haemorrhoidectomy specimens or liposuction waste product and processed and characterized according to previously reported methods. He-MSC were cultured as spheroids using the "hanging-drop technique" or agarose pits. Immunofluorescence was performed to assess the expression of mesenchymal proteins and cell viability. Conditioned media of tow-dimensional cultures or spheroids in suspension were generated using low serum culture medium and analysed with semi-quantitative cytokine arrays (120 cytokines) and ELISA assays.

Results: Cultured cells demonstrated expression of vimentin and good viability, even as spheroids (2.6±2% cell death). Cytokine profile of he-MSC secretome was similar to that of adipose tissue-derived MSC (AT-MSC), with shared core cytokines (FGF-9, OPG, CCL2, CCL11, CCL13, IGFBP-4, IGFBP-6). Concentration of HGF measured by ELISA was higher in he-MSC conditioned medium than in AT- MSC conditioned medium (19613±3528 versus 179±84 pg/ml $p<0.001$) whereas VEGF concentration followed an opposite trend (7627±947pg/ml versus 181±74 pg/ml $p<0.001$). Production of mesenchymal proteins and growth factors was not affected by the spheroid configuration of cells.

Conclusion: We demonstrated that he-MSC exhibit a similar secretome profile compared to AT-MSC. Generation of spheroids did not compromise cell viability or their ability to produce structural proteins and growth factors, validating he-MSC spheroids use for further *in vivo* studies prior to clinical validation.

Abstract citation ID: znae118.012

Spatial Transcriptomics Reveals Interaction of Injury-Derived Osteopontin with Mesothelial Cells in Serosal Scarring

J. Bayer[1], B. Slade[1], T. Yarahmadov[1], D. Sanchez-Taltavull[1], V. Purvanov[2], Y. Borbély[1], D. Candinas[1], D. Legler[2,3], P. Kubes[4], D. Stroka[1], J. Zindel[1]
[1]*Department of Visceral Surgery and Medicine, Inselspital, Bern University Hospital, University of Bern, Bern*
[2]*Biotechnology Institute Thurgau (BITg), University of Konstanz, Kreuzlingen*
[3]*Theodor Kocher Institute, University of Bern, Bern*
[4]*Department of Pharmacology and Physiology and Snyder Institute for Chronic Diseases and Department of Microbiology, Immunology & Infectious Diseases, Cumming School of Medicine, University of Calgary, Calgary*

Background: Abdominal surgeries are often live-saving procedures. However, surgical interventions in the peritoneal cavity can cause the formation of post-surgical adhesions. These irreversible scar bands can trigger severe complications, such as chronic pelvic pain, small bowel obstruction, and infertility in women. Unfortunately, no effective treatment options for adhesion patients exist. On a cellular level, mesothelium-derived mesenchymal myofibroblasts have been identified as key pro-fibrotic players in adhesion formation.

Aims: Our aim is to study the molecular mechanisms of mesothelial cell recruitment in serosal repair and scarring, and thereby to identify potential targets for specific pharmacological anti-adhesion treatments.

Methods: We used a mesothelial cell reporter mouse system ($Wt1^{CreERT2}xRosa26^{tdTomato}$) and experimental injury models to study the differences of mesothelial cell recruitment to sites of adhesion formation in comparison to wound sites healing scar-free. To answer how injury zones affect the accumulation of mesothelial cells, we used untargeted spatial transcriptomics, identifying candidate molecules that were i) upregulated in adhesion formation sites, ii) not highly expressed in scar-free wound sites, and iii) had the potential to interact with mesothelial cells.

Results: We observed strong spatiotemporal correlation between accumulation of $tdTomato^+$ cells and consecutive scarring. Spatial deconstruction of scar-specific signaling identified the candidate molecule *Secreted phosphoprotein 1*; an inflammatory zone-specific gene that encodes Osteopontin (OPN). After confirming increased OPN protein levels 7d post-surgery, we investigated its effect on adhesion formation using $Spp1^{-/-}$ mice. Indeed, *Spp1*-deficient mice showed significantly lower adhesion scores compared to control mice. Mechanistically, recombinant OPN had no chemotactic effect on primary human mesothelial cells, however triggered the upregulation of transcription factors associated with mesothelial-to-mesenchymal transition.

Conclusion: Together, these findings suggest a pivotal role for OPN in linking inflammation at injury sites with mesothelial cell recruitment in post-surgical serosal scarring. Therefore, OPN represents a potential target for novel pharmacological strategies to specifically inhibit scarring without affecting normal wound repair.

Children

Abstract citation ID: znae118.013

Circumscribed Thinning of the Calvaria - A Long-Term Sequela After Vacuum Extraction Delivery

B. Liniger[1]
[1]*Inselspital Bern and Spitalzentrum Biel, Biel*

Background: Vacuum extraction deliveries are associated with a number of complications like injuries to the skin, subperiosteal, subgaleal and intracranial hemorrhages. Even skull fractures have been described, but data on persistent changes in the bone structure of the skull like thinning of the calvaria is lacking in the literature.

Aims: We describe a previously unreported long-term sequela of vacuum extraction delivery.

Methods: We present a series of 8 children, who were referred because of an irregularity of the cranial surface without other symptoms. The investigations revealed a circumscribed thinning of the calvaria in all 8 cases. Detailed history and the specific

clinical findings were crucial in the assessment. Various imaging techniques were used to visualize the lesions and rule out some differential diagnoses.

Results: All children had undergone a vacuum-assisted delivery. All irregularities of the cranial surface were discovered incidentally. Clinical examination revealed a round (6) or linear (1) channel-shaped indentation of the calvaria in 7 cases. The shape and size of the annular thinning of the calvaria matched devices commonly used in vacuum extraction very well. In one patient, a localized protrusion of the calvaria was investigated, but an indentation more posteriorly was detected in the CT scan. CT scan was performed in 6 patients, in 2, parents refused this examination. In the follow-up, no progression or symptoms was observed in any of the patients.

Conclusion: Such long-term sequelae after vacuum-assisted delivery have not been reported yet and the underlying mechanism is unclear. In children who present with irregularities of the cranium, an accurate history, including the mode of birth, and detailed clinical examination should be performed. Knowledge about the presented pathology may help to avoid extensive investigations, particularly CT scan. The publication of further cases could help to propagate the circumscribed thinning of the calvaria after vacuum extraction as a distinctive clinical entity.

Abstract citation ID: znae118.014

Enough Is Enough – How Many Rectal Suction Biopsies Do You Need to Diagnose Hirschsprung's Disease?

S. Metzger[1], H. R. Neeser[1], I. Robbiani[1], A. K. Rodewald[2], T. Nigbur, A. Di Natale[1], U. Moehrlen[1], S. J. Tharakan[1]
[1]*Pediatric Surgery, University Children's Hospital Zurich, Zurich*
[2]*Institute for Pathology and Molecular Pathology, University Hospital Zurich, Zurich*

Background: Rectal suction biopsy (RSB) is the gold-standard for diagnosing Hirschsprung's disease (HD) in infants. However, despite this being a common procedure no standard exists on how many biopsy specimens and at which level they should be taken.

Aims: The aim of this study is to determine the conclusiveness of RSB specimens in relation to their location within the rectum in diagnosing HD. With this, we would like to define how many specimens are necessary to diagnose HD and eventually propose a standardized protocol to conduct RSB.

Methods: We reviewed the epidemiological data and pathology results of 92 patients undergoing RSB between January 2011 and May 2022 at our institution. We perform RSB by taking 4 specimens at 1 cm, 3 cm and 5 cm above the dentate line, as well as one specimen at the dentate line.

Results: We included 92 patients who had 115 biopsies performed with a mean of 3.77 specimens per session. Of the specimens taken at 1 cm above the dentate line 73.9% were conclusive, at 3 cm 75.9% and at 5 cm 79.2%. Specimens taken at the dentate line were squamous or transitional epithelia in 31.5% and therefore of no use for HD diagnostics. If the specimen at 3 cm was conclusive, the whole session was more likely to be diagnostic.

Conclusion: We propose that taking a total of three specimens, namely one at 1 cm, one at 3 cm and further biopsy at 3 or 5 cm above the dentate line, is enough to diagnose or exclude HD.

Abstract citation ID: znae118.015

Evaluation of Tolerance Towards Ureteral Double-J-Stents in Children: An Unmet Need

M. Frech[1], D. Planta[2], R. Vuille-Dit-Bille[2], S. Holland-Cunz[2]
[1]*University Children's hospital Basel, Basel*
[2]*Pediatric Surgery, University Children's Hospital Basel, Basel*

Background: Ureteric double-J-stents (DJS) are commonly applied devices in urology that often cause irritative symptoms in adults, leading to decreased quality of life. Little is known about how they are tolerated by children. Furthermore, standardized patient-centered care for children has not yet been established.

Aims: The aim of this study was to assess the tolerance of children towards DJS by evaluating their irritative symptom rate and to raise awareness of the need for a standardized evaluation method.

Methods: A prospective observational single-center study was conducted over a period of 14 months on children with indwelling DJS. A questionnaire addressing 5 categories (voiding symptoms, general symptoms, social activities and/or sexual health, catheter removal, and medication) was developed for different age groups and employed after stent removal.

Results: Twenty patients requiring DJS with a mean age of 5.8 years (ranging from 3 months to 15 years) were enrolled in the study. During the indwelling time (mean 6 weeks), 65% (n=13) of the patients suffered from irritative symptoms (intermittent pain and/or voiding problems). There was a positive association between age and the reported pain score (Spearman's $\rho = 0.54$, $p = 0.04$).

Conclusion: Irritative symptoms caused by DJS were systematically assessed in children for the first time. To guarantee patient-centered care, our study's high rate of irritative symptoms must be accounted for when employing DJS. With the questionnaire, we provide an example of a sensitive tool to evaluate the management of children with DJS and treatment options to reduce stent-related symptoms.

Abstract citation ID: znae118.016

Long-Term Follow-Up after Ureteral Reimplantation in Children: A 12-Year Analysis

T. Gerwinn[1], M. Zellner[2], A. Prouza[1], U. Kennedy[1], M. Horst[1], L. Mazzone[1]
[1]*Pediatric Urology, University Children's Hospital, Zurich*
[2]*Radiology, University Children's Hospital Zurich, Zurich*

Background: Ureteral reimplantation (UR) is a well-established procedure, yet there exists a notable absence of evidence-based guidelines for postoperative follow-up. Existing literature suggests that routine follow-up extending beyond one year may not yield significant advantages, particularly for asymptomatic children. However, it is crucial to acknowledge that many studies supporting this assertion rely on relatively short observation periods.

Aims: This study seeks to address the potential emergence of late-presenting complications post UR. Our objective is to comprehensively evaluate our patient cohort for the incidence of conditions warranting the establishment of standardized, long-term follow-up practices after UR.

Methods: Retrospective review of 137 medical records from children who underwent UR at our institution between January 2006 and June 2013. Inclusion criteria required a minimum 10-year postoperative follow-up.

Results: Fifty-three renal units in 34 children met inclusion criteria. Ureterovesical junction (UVJ) obstruction occurred in 7.5% of the units and was diagnosed within eight months after UR. Obstruction occurred exclusively after Politano-Leadbetter reimplantation and was silent in all cases. Postoperative UTIs occurred in 9 children. Notably, these were all singular events without signs for recurrent reflux. A decade after surgery, one child developed chronic kidney disease (CKD) due to preexisting reflux nephropathy (RN), while one child was newly diagnosed with RN during follow-up despite the timely surgical correction of vesicoureteral reflux (VUR). or hypertension linked to RN were recorded.

Conclusion: Children with uncomplicated postoperative recoveries within the first-year, devoid of evident UVJ obstruction, exhibit a low subsequent risk, suggesting limited benefit from repeated scheduled long-term follow-up. Nevertheless, we recommend that general practitioners conduct regular monitoring, considering individual risk factors, to enhance the detection of late-onset hypertension or proteinuria as potential indicators of RN during adolescence.

Abstract citation ID: znae118.017

Retroperitoneoscopic Renal Surgery in Infants <10kg, Description of First 50 Patients

O. Sanchez[1], J. Birraux[2], I. Andrieu Vidal[2], E. Broennimann[1], E. Stathopoulos[1], M. Alam[2], C. Sommer[1]
[1]*University Center of Pediatric Surgery of Western Switzerland, University of Lausanne, Lausanne*

[2]University Center of Pediatric Surgery of Western Switzerland, University of Geneva, Geneva

Background: Most paediatric urologists have adopted minimally invasive surgery when approaching the kidney for reconstructive or ablative surgery. Although small weight has previously been described as a limiting factor for retroperitoneoscopic surgery, as of 2017, we have approached all non-oncological initial renal surgery by retroperitoneoscopy regardless of patient weight, with a standardised technique for port placement and initial dissection.

Aims: The aim is to present our current experience and short-term results with a minimally invasive approach to renal surgery in small patients.

Methods: We present a description of the cohort and performed operations with conversion and intra-operative complication rate.

Results: The median age of our patients is 4,7 months (26days-12months), mean weight is 5,8Kg (3,5 Kg-9,6 Kg) F:M 16:34, we performed 12 nephrectomies, 5 hemi-nephrectomies, 3 uretero-ureterostomies, 30 pyeloplasties, with 3 patients presenting with crossing vessels. No patient needed transfusion; 1 patient presented with nephrostomy catheter migration needing a second anaesthesia on day 1. We had to perform 1 conversion to open surgery because of unclear anatomy following percutaneous drainage. No patients showed significant loss of function on the remaining pole after hemi-nephrectomy.

Conclusion: The retroperitoneoscopic approach and its advantages in terms of minimal post-operative pain, quick recovery and reliable results can safely be offered to all our paediatric patients for routine and complex non-oncological renal surgery.

Abstract citation ID: znae118.018

Use of Fish Skin Grafts for Wound Management: Report of 5 Pediatric Cases

M. Doan[1], I. Cherry[2], L. Tarhini[3], A. de Buys Roessingh[4]
[1]Department Of Pediatric Surgery, Hopital Riviera Chablais, Rennaz
[2]Department Of Plastic and Reconstructive Surgery, Universite Libre De Bruxelles, Bruxelles
[3]Faculty Of Pharmaceutical Science, Universite Libre De Bruxelles, Bruxelles
[4]Department Of Pediatric Surgery, Centre Hospitalier Universtaire Vaudois, Lausanne

Background: Managing wounds and scars in children presents a significant challenge for surgical and rehabilitation teams. Studies have already explored the potential of fish skin grafts with Omega-3 in hard-to-heal lower extremity chronic ulcers and deep-burn management.

Aims: The purpose of this study is to assess the safety and outcome of intact fish skin grafts with Omega-3 when used as skin replacement therapy in the pediatric population.

Methods: This article was conducted in adherence to our hospital's ethical guidelines. Patients enrolled in this study were identified retrospectively. Their medical records were reviewed, and data was collected concerning patient demographics, initial mode of injury, indication for fish skin placement, operative data, postoperative care, complications and outcomes. The acellular dermal matrix was obtained from North Atlantic codfish skin (Gadus morhua) farmed in Isafjordur, Iceland.

Results: All patients underwent meticulous wound debridement and patch application under general anesthesia and were discharged the same day. Wound surface ranged between 10 and 110 cm^2 (mean: 53 cm^2). Standard analgesic medications were taken for a maximum period of 48 hours in all patients. Upon follow-up at our outpatient clinic, shrinkage in the wound surface was observed in all patients after a few days, followed by early wound granulation. Two patients underwent subsequent split-thickness grafting to achieve healing. The mean time required to achieve complete epithelialization was 48.6 days (range: 29 – 62 days). No hypersensitivity or allergic reaction was reported. The definitive outcome was satisfactory in all wounds, meaning complete wound coverage.

Conclusion: The findings from this case series reveal that fish skin grafts with Omega-3 can be an effective and a safe scaffold in the process of repairing damaged tissues in the pediatric population. We have been able to accomplish a quality skin replacement therapy, with no donor site morbidity.

Continuing Education, Training, Professional Politics

Abstract citation ID: znae118.019

Compatibility of Family Planning and Surgical Training in Switzerland

S. Faes[1], J. Ferreirinha[1], M. Weber[1]
[1]Klinik für Viszeral-, Thorax- und Gefässchirurgie, Stadtspital Zürich, Zürich

Background: Surgeons undertake a long training and have stressful work schedules during optimal childbearing age. Training and career plans can entice young surgeons to renounce part-time work and delay pregnancy, risking pregnancy complications and infertility.

Aims: This survey study aims to determine the prevalence and constraints of part-time work and family planning among young surgeons in Switzerland.

Methods: An anonymous, voluntary survey was distributed to young board-certified surgeons. It queried work schedules and desire for part-time work as well as history of pregnancies and use of assisted reproductive treatment.

Results: A total of 375 surgeons participated, 308 were included (157 female, 151 male). There were no differences in current age (male median 37 (IQR 5), female 37 (6), p=0.93), median age at medical school graduation (male 26 (2), female 26 (2), p=0.90), and mean time to board certification (male 8.3 (SD 2.4), female 8.2 (SD 2.7), p=0.61). Female surgeons had a higher rate of part-time employment (38% vs 19%, p=0.0002). More male surgeons had children compared to their female counterparts (70% vs 45%, p<0.0001). Female surgeons were older (median 35 (IQR 4.5)) than male surgeons (median 33.5 (IQR 3.25), p=0.0002) and female partners of male surgeons (median 32 (IQR 3), p<0.0001) at birth of their first child. Female surgeons more frequently desired further children (71% vs 38%, p<0.0001) and delayed pregnancy due to training (74% vs 22%, p<0.0001). Female surgeons had longer time to conceive (>12 months 24% vs 10%, p=0.014), lower spontaneous pregnancy rates (82% vs 93%, p=0.029) and higher rates of assisted reproductive treatment (14% vs 4%, p=0.0089). Female surgeons more frequently perceived their gender as a negative career influence (67% vs 5%, p<0.0001).

Conclusion: Whilst part-time work and family planning are challenging for surgeons of both genders, female surgeons face striking inequities when trying to consolidate family planning with their profession.

Abstract citation ID: znae118.020

Music Therapy in Patients Undergoing Ambulatory Surgery: A Single-Blind Randomized Trial

F. Mongelli[1,2], T. Doria[1], G. la Regina[1], C. A. Cammalleri[1], F. Sabbatini[1], D. la Regina[1,2]
[1]Surgery, Ospedale Regionale di Bellinzona e Valli, Bellinzona
[2]Faculty of Biomedical Sciences, Università della Svizzera Italiana, Lugano

Background: Day surgery procedures constitute an essential part of surgical practices in hospitals worldwide. However, outpatients may experience anxiety, fear, and stress negatively impacting patients' ability to follow the established ambulatory surgery pathway. While medications are generally administered to reduce perioperative stress, there are several measures to avoid their use. Music therapy (MT) can be used as a complementary, drug-free, safe, and cost-effective intervention.

Aims: The purpose of our study was to evaluate the impact of MT on perioperative stress and patient satisfaction in patients undergoing ambulatory surgery.

Methods: We conducted a randomized study in patients undergoing ambulatory surgery. The MT group listened to relaxing music for the whole hospital stay, while the control group received the standard treatment. Both groups were managed in the pre- and postoperative periods according to current clinical practice and ultimately received the Leiden Perioperative care Patient Satisfaction (LPPS) questionnaire before hospital discharge.

Results: During the study period, 33 patients were included, 16 randomized to the MT arm and 17 to the control arm. The average age of the patients was 51.1±16.2 years, and 10 (31.2%) patients were women. The postoperative period was uneventful for almost all patients (95.8%), and we observed a high level of satisfaction. No

patient required medication for anxiety treatment in the postoperative period. Pre- and postoperative vital signs were similar in both arms. A slightly higher LPPS score was noted in the MT group (179±8 vs. 171 ±20 pts, p=0.174).

Conclusion: Despite limitations, our study demonstrated that MT in patients undergoing ambulatory surgery might be advantageous in reducing perioperative stress, potentially increasing satisfaction, and enhancing patients' perception of being cared for in a multidisciplinary manner, without neglecting the emotional aspect.

Abstract citation ID: znae118.021

Proficiency and Depth of Surgical Education in Switzerland is Heading in the Wrong Direction

T. Schöb, I. Klein[1]
[1]*Department of General Surgery, Cantonal Hospital Graubünden, Chur*

Background: In Switzerland, surgical resident training has become increasingly difficult over the past decades for numerous reasons. While the number of surgical residents has doubled over twenty years, the average workweek dropped from 70 to 50 hours. At the same time, the surgical caseload increased only marginally as opposed to the proportion of administrative responsibilities, resulting in a substantial decrease of intraoperative exposure in surgical residency training.

Aims: To assess the surgical exposure of our residents.

Methods: This study is a review of all performed surgical procedures in the field of general, abdominal, thoracic, vascular and trauma surgery at a category-A Cantonal hospital in Switzerland, performed from September 1st 2021 to August, 31st 2023. The primary outcome was surgical exposure of residents as primary, secondary, and assisting surgeons. Secondary outcomes were case-distribution during daytime workhours as opposed to on-call hours per resident.

Results: The surgical exposure of a surgical resident at our cantonal hospital as primary and secondary surgeon was 41.19 and 39.06 minutes respectively per week. This surgical exposure as was paired with a total of 127.46 minutes as assisting surgeons per week. On average this results in 1.34 operations per week and 60.3 cases per year per surgical resident. 73.51% of these cases are performed during daytime work hours and 26.49% during on-call hours.

Conclusion: To fulfill the minimal number of 510 cases in the mandatory FMH surgical catalogue of becoming a general surgeon, a total residency period of 8.46 years would become necessary to take the exam based on the average number of operative cases in this category-A teaching hospital which is considerably longer compared to residency training 20 years ago. While surgical procedures and techniques continue to become more complex, the need to exploit ways to maintain a sufficient level of surgical exposure inside and outside the OR is eminent.

Endocrine

Abstract citation ID: znae118.022

Autonomous and Self-sustained Circadian Oscillators Displayed in Human Primary Parathyroid Cell Culture Drive Parathormone Secretion

V. Petrenko[1,2], C. Dibner[1,2], O. Golaz[3], F. Triponez[1], C. de Vito[4], M. S. Demarchi[1]
[1]*Surgery, University Hospitals of Geneva, Geneva*
[2]*Cell Physiology and Metabolism, University of Geneva, Geneva*
[3]*Diagnostics Department and Department of Internal Medicine Specialities, University Hospitals of Geneva, Geneva*
[4]*Clinical Pathology, University Hospitals of Geneva, Geneva*

Background: Most cells in our body possess circadian oscillators controlling diurnal rhythmicity of body metabolism. The role of molecular clocks in regulating the function and disfunction of human parathyroid gland (PG), responsible for calcium homeostasis, has not been unraveled. Hyperparathyroidism is a common endocrine pathology, characterized by an unadapted PTH secretion to calcium levels.

Aims: Here we aimed at characterizing molecular makeup of circadian clocks in human primary parathyroid cell culture (HPPCC), and at establishing differential transcriptional patterns of normal and pathological PGs.

Methods: RNA extracted from normal, adenomatous, and hyperplastic PG tissues was subjected to RNA sequencing (RNAseq) analysis. The rim of normal PG tissue was dissected from parathyroid adenoma specimens based on the higher autofluorescence intensity assessed by the near infra-red imaging. HPPCCs were established from adenomatous and hyperplastic PG biopsies. Efficient circadian clock disruption was achieved in HPPCCs by small interfering RNA-mediated knockdown of *CLOCK*. The functionality of circadian clock machinery was assessed by continuous recording of circadian bioluminescence introduced via lentivectors and paralleled with around-the-clock measurement of PTH secretion using perfusion system.

Results: The RNAseq analyses revealed transcriptional signatures that distinguished between pathological and normal PGs, and among adenomatous and hyperplastic PGs. We report, for the first time, robust anti-phasic circadian rhythmicity of Per2-luciferase and Bmal1-luciferase reporters in HPPCCs synchronized *in vitro*. Strikingly, we observed circadian rhythmicity of PTH secretion by parathyroid adenoma cells. Moreover, clock disruption in PG adenoma cells has an impact on transcription of functional genes.

Conclusion: Our data indicate presence of cell-autonomous molecular clock in human PG cells paralleled with circadian rhythmic PTH secretion and provide large-scale transcriptional pattern of parathyroid adenoma and hyperplastic tissues.

Abstract citation ID: znae118.023

Minimally-Invasive Robotic-Assisted Resection for Intrathoracic Goiter – A Feasible Alternative to Thoracotomy and Sternotomy

A. S. Hotz[1], H. Gelpke[1], A. Zehnder[1], S. Schmidt[1], A. Goldmann[1]
[1]*Cantonal Hospital Winterthur, Winterthur*

Background: Goiter is a common presentation in daily clinical practice. It usually grows slowly and in rare cases with intrathoracic extension. There is no clear definition of intrathoracic goiters. The incidence in the literature varies from 3% to 7%. Most intrathoracic goiters are localized in the anterior mediastinum, with less than 25% are localized in the posterior mediastinum. This presents a challenge for surgical resection. Traditionally, the intrathoracic portions have been resected via sternotomy for anterior goiters and thoracotomy for posterior goiters. With the increasing use of robotic surgery, new possibilities for minimally invasive surgery and especially robotic procedures have emerged. This may reduce morbidity and length of hospital stay.

Aims: The study aims to show that minimal-invasive, robotic-assisted resection for intrathoracic goiter is safe and feasible.

Methods: During the study period from January 2021 to December 2023, 548 thyroid operations were performed in our clinic. All operations were prospectively recorded in the Eurocrine registry and retrospectively analyzed. Goiter was defined as intrathoracic according to perioperative findings (caudal border not visible on sonography and/or further preoperative investigations ordered). Primary and secondary endpoints were outcome, conversion rate, and incidence of intrathoracic goiter.

Results: In our clinic, 19/548 patients (3.5%) presented with intrathoracic goiter. 17/19 patients were operated via conventional cervical approach. In 2 patients, minimal-invasive robotic mobilization of the large posterior portion of the goiter was performed in combination with conventional cervical thyroidectomy. No conversion was required. Based on our cases, we present robotic intrathoracic thyroid mobilization as a novel technique to avoid thoracotomy.

The rate of recurrent nerve palsy in intrathoracic goiter was 1/28 (3.5%) nerves at risk and occurred with conventional approach. No secondary bleeding or other complications were observed.

Conclusion: The minimal-invasive robotic approach seems to be a promising alternative to open procedures such as thoracotomy and can reduce morbidity and length of hospital stay.

Abstract citation ID: znae118.024

Syndromic MEN1 Parathyroid Adenomas Consist of Both Subclonal Nodules and Clonally Independent Tumors

C. Nesti[1], K. Bräutigam[2], B. Niederle[3], A. Perren[4], R. M. Kaderli[1]
[1]Department of Visceral Surgery and Medicine, Inselspital Bern, Bern
[2]Institute of Tissue Medicine and Pathology, University of Bern, Bern
[3]Division of Visceral Surgery, Medical University of Vienna, Vienna
[4]Institute of Tissue Medicine and Pathology, University of Bern, Bern

Background: Primary hyperparathyroidism with parathyroid tumors is a characteristic presentation in Multiple Endocrine Neoplasia Type 1 (MEN1), historically referred to as "primary hyperplasia." The question of whether these tumors signify a multi-glandular clonal disorder or hyperplasia remains inconclusive. Loss of Menin protein expression serves as a reliable surrogate marker for biallelic inactivation and indicates a mutation in the MEN1 gene. The cyclin-dependent kinase inhibitor 1B (CDKN1B) gene, associated with MEN4, encodes the p27 protein, whose expression is inadequately explored in the context of syndromic MEN1.

Aims: The aim was to explore the molecular basis of syndromic MEN1 parathyroid adenomas, identifying hyperplasia, multiple independent clones, and the extent of Menin loss. Additionally, p27 expression was assessed to evaluate its potential in indicating a germline mutation, especially in distinguishing MEN4 as a clinical alternative to MEN1.

Methods: In this investigation, we examined histomorphology and protein expression of Menin and p27 in parathyroid adenomas from 25 patients in two independent, well-characterized MEN1 cohorts. Loss of heterozygosity (LOH) patterns were evaluated using fluorescence in situ hybridization (FISH) in one MEN1-associated parathyroid adenoma. Furthermore, next-generation sequencing (NGS) was conducted on eleven nodules from four MEN1 patients.

Results: Morphologically, the majority of MEN1 adenomas displayed multiple distinct nodules, characterized by predominantly lost Menin expression and reduced p27 protein expression. FISH analysis indicated that most nodules exhibited MEN1 loss, with or without centromere 11 loss. NGS demonstrated both subclonal evolution and the existence of clonally unrelated tumors.

Conclusion: Syndromic MEN1 parathyroid adenomas, therefore, consist of multiple clones with subclones, aligning with the current framework of the novel WHO classification of parathyroid tumors (2022). The observed loss of p27 expression in a significant fraction of MEN1 parathyroids emphasizes the need for caution when inferring MEN4 solely based on p27 expression.

Hand

Abstract citation ID: znae118.025

High-Intensity Focused Ultrasound Therapy for an Osteoidosteoma in a Pediatric Finger: A Case Report

J. Hüppi[1], N. Zechmann-Müller[1], C. Binkert[2]
[1]Hand and Plastic Surgery, Cantonal Hospital Winterthur, Winterthur
[2]Radiology, Cantonal Hospital Winterthur, Winterthur

Background: High intensity focused ultrasound (HIFU) is a non-ionizing and non-invasive application for benign and malign disease. Ultrasonic waves are concentrated to achieve high level of energy and therefore necrosis due to coagulation.

Aims: We will describe one pediatric case where an osteoidosteoma war successfully treated by HIFU.

Methods: A seven-year-old boy presented in our department for hand surgery due to indolent swelling of the distal phalanx of the right ring finger. Neither recent trauma, nor positive family history was present. Clinical examination showed significant enlargement of the distal phalanx with minimal pain on palpation and unlimited mobility. Conventional radiography showed discrete fuzzy sclerosis of the metaphyseal part of the growth plate. MRI was not conclusive. Bone biopsy showed reactive change with no signs for acute inflammatory event. Periodic checks were performed, with no change in clinical and radiographic aspect. Nine months after the first appointment, the patient presented with pain after minor trauma and increase of the swelling. Radiography showed a nidus in the distal phalanx leading to a suspected diagnosis of an osteoidosteoma. Therefore, MRI-guided HIFU (MR-HIFU) was recommended one year after the first appointment.

Results: MR-HIFU was performed to destroy the osteoidosteoma. Six months after the intervention the patient presented with no further exponential growth and the difference to the other phalanges was minimized. Furthermore, radiography showed no retention of the nidus with a plane distal phalanx.

Conclusion: MR-HIFU is a promising approach in the non-invasive treatment of tumorous neoplasm. Because of its non-ionizing ultrasonic waves, there is no upper limit in dosing. The deposition of heat is in general limited by the surrounding tissue. The main factors preventing MR-HIFU treatment are thick bone around the nidus, a superficial position with risk for skin burn and the vicinity to neural structures. Osteoidosteomas are generally rather small and therefore well suited for MR-HIFU.

Abstract citation ID: znae118.026

New Diagnostic-Based Systematic Classification for Skier's Thumb Injuries: A Revision That is Needed

A. Strohmaier[1], C. Wirtz[1], L. Krafft[1], M. Häfeli[1]
[1]Clinic for Hand Surgery, Cantonal Hospital Graubünden, Chur

Background: Acute injuries to the ulnar collateral ligament (UCL) of the first metacarpophalangeal joint (MCPj), commonly referred to as Skier's thumb injuries, can be further categorized into different types based on bone lesions and joint instability. However, none of the existing classifications encompasses all types and combinations of injuries. A unified classification system that provides direct treatment recommendations for each type is required, particularly for cases with no clear indications.

Aims: To develop a new classification system for acute UCL injuries of the first MCPj that comprehensively defines all possible combinations and types of injuries and facilitates treatment decision-making for each specific type in daily clinical practice.

Methods: The retrospective study included patients with acute UCL lesions who underwent conservative or operative treatment at our clinic between 2018 and 2023. This classification addresses ligamentous or osseous lesions, fracture fragment size and dislocation, ligament configuration (e.g. Stener lesions), and joint stability. Correlated radiography, ultrasonography, MRI, and intraoperative findings were used to define all combinations and variants of skier`s thumb injuries. Pre-therapeutic joint stability was characterized according to the criteria established in the literature. Dislocation criteria for bone lesions were defined in a preliminary observer trial. The classification was applied by three hand surgeons with different training levels. Treatment applied and a 3-months follow-up was documented.

Results: In 213 patients with acute UCL tears, the new classification was consistently applied, and the treatment derived was largely aligned with the recommendations in the literature for both absolute and relative indications for splint or operative therapy. The vast majority of the patients were stable after 3 months.

Conclusion: This new classification is the first to combine the clinical and radiological aspects of skier`s thumb injuries into one classification and encompasses all variants. It is comprehensive, can be easily applied retrospectively, and provides clear treatment recommendations in most cases.

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Our Experience with Primary Trapeziometacarpal Implant Arthroplasty in Severely Comminuted Rolando Fractures

M. Greminger[1], R. Buechel[1]
[1]Plastic and Hand Surgery, Cantonal Hospital St. Gallen, St. Gallen

Background: The concept of primary joint replacement in severely comminuted fractures in elderly patients has proven to be a suitable treatment option in the shoulder, elbow and knee joint. Comminuted intra-articular fractures of the first metacarpal base can pose significant technical challenges, and no established gold standard treatment currently exists. Conventional methods like open reduction and internal fixation or external fixation are commonly employed, emphasizing the importance of anatomical reduction for restoring the

articular surface. However, achieving articular surface congruity is often unattainable in severely comminuted intra-articular fractures, leading to short-term joint stiffness and instability, as well as long-term complications like secondary osteoarthritis.

Aims: This case report aims to share our experience with the use of primary trapeziometacarpal implant arthroplasty in the treatment of two patients with severely comminuted Rolando fractures.

Methods: In two cases of comminuted Rolando fractures, a primary trapeziometacarpal prosthesis (MAÏA™) was implanted based on preoperative decision-making facilitated by 3D-CT analysis. Patient's visual analogue score for pain, range of motion, pinch and grip strength compared to the contralateral side were asked and examined.

Results: Both patients exhibited successful adaptation to their daily routines within a three-month postoperative period. No complications, such as cup or stem loosening or dislocation, were identified. Both patients almost reached equal range of motion, pinch and grip strength compared to the contralateral side.

Conclusion: The use of primary trapeziometacarpal implant arthroplasty seems to be a viable alternative for managing severely comminuted Rolando fractures, particularly in elderly patients and those with pre-existing osteoarthritis. This approach offers promising outcomes. Studies with other implant arthroplasties have shown better outcomes in patients treated primarily, than after several failed surgeries. We suggest the same is true for the trapeziometacarpal joint. Further studies are necessary to validate the efficacy of this intervention in a larger cohort of patients.

Abstract citation ID: znae118.028

Ultrasound-Based Measurement of Dorsal Scaphoid Displacement During Watson Test in Scapholunate Ligament Lesion

N. Huber[1], A. Schweizer[1], L. Reissner[1]
[1]*Hand Surgery, Balgrist, Zürich*

Background: Scapholunate ligament lesion (SLL) is the most common ligament lesion in the wrist. The diagnosis of scapholunate ligament injuries in clinical practice is not standardised and there are various clinical and radiological methods that have varying degrees of reliability.

Aims: The aim of our work was to find a method that was simple, easily reproducible and did not require expensive and time- consuming second-tier examinations. We therefore assessed the reliability of sonography during Watson test (WT) in detecting SLL.

Methods: 20 patients with MRI and intraoperatively confirmed SLL were assessed preoperatively between July 2020 and April 2023. Sonography was performed on the scaphoid dorsal subluxation (DS) in wrist neutral and during WT and compared with the healthy contralateral side. The DS was measured by two independent investigators and intra- and interobserver reliability were assessed.

Results: We found a statistically significant difference between DS of the scaphoid of the healthy (0.89 mm, SD 0.67 mm) compared to the pathological side (1.67 mm, SD 0.95 mm). Reliability was very good, and SEM was lower than 0.4 mm for all measurements.

Conclusion: Sonographic measurement during WT showed promising results with very good reliability; this method could be routinely adopted for the detection and diagnosis of SLL without the need for second-tier examinations.

Hepatopancreatobiliary (HPB)

Abstract citation ID: znae118.029

A Multicenter Exploration of the APRI/ALBI Score in Associating Liver Partition and Portal Vein Ligation for Staged hepatectomy' (ALPPS)

J. P. Jonas[1], M. Linecker[2], P. C. Müller[3], S. Sander[4], V. Ardiles[5], Z. Wen[6], I. Romic[7], M. Kysela[8], S. Truant[9], T. Reese[10], F. Rauchfuss[11], F. Ullmer[12], R. Wahba[13], O. Hahn[14], C. Guidetti[15], R. Fernandez-Placencia[16], R. Robles Campos[17], E. Sparrelid[18], H. Petrowsky[4], J. Santol[19], D. Eshmuminov[4], C. Oberkofler[20], F. Rössler[4], M. Amann[21], P. Ignatavicius[22], J. Oberholzer[4], P. Starlinger[23]
[1]*Department of Visceral -and Transplant Surgery, University Hospital Zurich, Zurich*
[2]*Department of Visceral- and Transplant Surgery, University Medical Center Schleswig-Holstein, Kiel*
[3]*Department of Surgery, Clarunis – University Centre for Gastrointestinal and Hepatopancreatobiliary Diseases, Basel*
[4]*Department of Visceral- and Transplant Surgery, University Hospital Zurich, Zurich*
[5]*HPB and Liver Transplant Unit, Hospital Italiano de Buenos Aires, Buenos Aires*
[6]*Department of hepato-biliary-pancreatic surgery and liver transplantation, The first affiliated hospital Guangxi Medical University, Nanning*
[7]*Department of Hepatobiliary Surgery and Organ Transplantation, University hospital Centre Zagreb, Zagreb*
[8]*Department of hepato-biliary-pancreatic surgery and liver transplantation, IKEM, Prague*
[9]*Department of Digestive Surgery and Liver Transplantation, University Hospital C. Huriez, Lille*
[10]*Department of Surgery, Division of Hepatobiliary and Pancreatic Surgery, Asklepios Hospital Barmbek, Semmelweis University of Medicine, Hamburg*
[11]*Deptartment of General, Visceral and Vascular Surgery, University Hospital Jena, Jena*
[12]*Department of Surgery and Transplantation, University Hospital RWTH Aachen, Aachen*
[13]*Department of General, Visceral and Cancer Surgery, Transplant Center Cologne, Cologne*
[14]*1st Department of Surgery, Semmelweis University, Budepest*
[15]*Hepato-Pancreato-Biliary Surgery and Liver Transplantation Unit, University of Modena and Reggio Emilia, Modena*
[16]*Hepato-Pancreato-Biliary Section, Instituto Nacional de Enfermedades Neoplasicas, Lima*
[17]*Department of Surgery, Virgen de la Arrixaca Hospital, Murcia*
[18]*Department of Clinical Science, Intervention and Technology, Division of Surgery and Oncology, Karolinska University Hospital, Stockholm*
[19]*Department of Surgery, Clinic Favoriten and Sigmund Freud Private University, Vienna*
[20]*Vivévis AG-Visceral, Tumour and Robotic Surgery, Clinic Hirslanden, Zurich*
[21]*Department of Surgery, State Hospital Wiener Neustadt, Wr Neustadt*
[22]*Department of Surgery, Lithuanian University of Health Sciences, Kaunas*
[23]*Department of Surgery, Division of Hepatobiliary and Pancreatic Surgery, Mayo Clinic, Rochester*

Background: Perioperative morbidity and mortality remain a point of concern for the Associating Liver Partition and Portal Vein Ligation for Staged hepatectomy (ALPPS) procedure. Post-hepatectomy liver failure (PHLF) after the second step poses the most significant risk factor for futile outcome. Recovery of liver function after the first step of ALPPS is critically important to allow for sufficient liver function after this surgery. The APRI+ALBI score has been proposed as an easily assessable score to monitor liver function and its dynamic recovery.

Aims: We explored if the APRI+ALBI score was able to assess liver function recovery after the first step of ALPPS and allow for optimal timing of the 2nd step.

Methods: Based on the ALPPS registry, patients from 2012 to 2020 with available APRI+ALBI score were included. Postoperative outcomes (PHLF A – C, PHLF B + C, 90-day mortality and severe morbidity) were defined as per standard definitions. The APRI/ALBI score was monitored perioperatively.

Results: Overall, 464 patients from 16 international participating centers in the ALPPS registry were included. Clinically relevant PHLF (B + C) was observed in 7.5 % and of these 63 % of patients ultimately died due to liver failure. The APRI+ALBI score immediately increased after each surgical intervention and continuously decrease thereafter. Failure of the APRI+ALBI score to decrease until the 2nd step of ALPPS predicted PHLF B+C (p = 0.001; AUC 0.78). Particularly patients with high APRI +ALBI scores and short interstage intervals were at risk to develop PHLF B+C.

Conclusion: The APRI+ALBI score objectifies liver function recovery after the 1st step of ALPPS and failure to sufficiently decreased is associated with a higher risk for PHLF B+C. This might allow for optimized planning of the 2nd step of ALPPS to allow for sufficient liver function recovery to minimize the risk for PHLF B+C and associated futile outcome.

Abstract citation ID: znae118.030

Clinical Presentation and Risk Factors of Acalculous Cholecystitis in Outpatients, a Literature Review and Retrospective Study

C. Dogny[1], I. Fournier, S. Sgardello[2]
[1]*CHVR, Sion*
[2]*General Surgery, CHVR, Sion*

Background: Acute acalculous cholecystitis in healthy patients is relatively understudied. It is usually described in patients within the intensive care unit, where it is associated with high mortality rates reaching 30%-50% in the literature.

Aims: To review patients who have developed AAC in outpatient or non-ICU settings, identify risk factors and clinical presentation, and compare these data with those in the literature.

Methods: We first performed a literature review. We then determined the inclusion criteria: acalculous cholecystitis confirmed by either an ultrasound, or CT scan, at pathology and intraoperatively. We excluded all patients hospitalized within the ICU or who developed AAC because of multiorgan failure or patients without histopathological evidence. We performed a 5-year search in our institution's database with the terms "cholecystitis" and "acalculous cholecystitis.

Results: 23 patients were included in our study based on histopathology. The most frequent co-morbidities were cardiovascular and metabolic syndrome. The most common complaint was abdominal pain, ten patients (50%) presented to the emergency department with an increase of at least two of three biological markers (CRP, bilirubine and leucocytosis). We had no mortality reported at 30 days.

Conclusion: Epidemiologically, our population's characteristics correspond to those of other studies, with most patients being male. The majority of patients were ASA III suggesting that this disease concerns more polymorbid patients despite a high percentage of healthy patients. Right upper quadrant pain, whether associated with leukocytosis or not, seems to be the main factor leading to further investigation. Abdominal US is considered the diagnostic technique of choice. However, most patients in our study underwent US and CT. We found that acalculous cholecystitis in outpatients, does not have the high mortality rate that was previously attributed to it, but is more frequent in polymorbid patients with cardiovascular risk factors.

Abstract citation ID: znae118.031

Decoding the Clavien-Dindo Classification: Artificial Intelligence (AI) as a Novel Tool to Grade Postoperative Complications

S. Staubli[1], H. L. Walker[2], F. Saner[3], C. H. Salinas[4], D. C. Broering[3], M. Malago[3], M. Spiro[5], D. A. Raptis[3]
[1]*HPB and Liver Transplantation, Royal Free Hospital, London GB*
[2]*Obstetrics & Gynaecology, University College London, London*
[3]*Organ Transplant Center of Excellence, King Faisal Specialist Hospital and Research Center, Riyadh*
[4]*Global Healthcare Sciences, University Oxford, Oxford*
[5]*Department of Anaesthesia and Intensive Care, Royal Free Hospital, London*

Background: The CDC standardizes grading of postoperative complications. However, consistent, and precise application in dynamic clinical settings is challenging. AI offers a potential solution for efficient automated grading.

Aims: To assess ChatGPT's capability of grading postoperative complications using the Clavien-Dindo classification (CDC) via Artificial Intelligence (AI) with Natural Language Processing (NLP).

Methods: ChatGPT's accuracy in defining the CDC, generating clinical examples, grading complications from existing scenarios, and interpreting complications from fictional clinical summaries, was tested.

Results: ChatGPT 4 precisely mirrored the CDC, outperforming version 3.5. In generating clinical examples, ChatGPT 4 showcased 99% agreement with minor errors in urinary catheterization. For single complications, it achieved 97% accuracy. ChatGPT was able to accurately extract, grade, and analyze complications from free text fictional discharge summaries.

Conclusion: ChatGPT 4 demonstrates promising proficiency and accuracy in applying the CDC. In the future, AI has the potential to become the mainstay tool to accurately capture, extract, and analyze CDC data from clinical datasets.

Abstract citation ID: znae118.032

Frailty Assessment for Risk Stratification in Pancreatic Surgery – Results of a Single-Center Cohort Study

M. Frey[1], E. Krombholz[2], S. Patalong[2], A. Wirsching[2], A. Nocito[2]
[1]*Visceral and Transplantation Surgery, University Hospital Zurich, Zurich*
[2]*General, Visceral and Vascular Surgery, Cantonal Hospital Baden, Baden*

Background: Large cohort studies found an increase in frailty with age. Age is a known risk factor for pancreatic cancer. Seventy percent of new diagnoses are made in patients aged more than 65 years. Pancreatic resections represent the only hope for cure but are associated with high morbidity. The definition "fit for pancreatic surgery", currently mainly based on age and comorbidities, is continuously challenged.

Aims: The aim of this study is to analyze the impact of frailty on postoperative outcomes after pancreatic resections.

Methods: Data of consecutive patients undergoing pancreatic resections between January 2015 and July 2022 were retrospectively analyzed. Postoperative complications were graded by the Clavien-Dindo Classification, Comprehensive Complication Index (CCI) and complications specific to pancreatic resections as recommended and published by the International Study Group of Pancreatic Surgery. The modified frailty index (mFI) was defined by 11 variables. An mFI score above 0.27 was set to define frailty.

Results: A pancreatic resection was performed in 159 patients, of which 23 (15%) were classified as frail. Pancreatoduodenectomies were similarly distributed in both groups. Frail patients were older (median of 74 vs. 69 years). Male gender was associated with frailty (83%, p=0.001)., Moreover, frailty was associated with an increased rate of preoperative biliary drainage. Although intensive care stay was increased in the frail group (median 3 vs. 0 days; p=0.01), total length of hospital stay was not affected. Frailty was associated with severe complications as defined by a comprehensive complication index >50 (35% vs. 10%; p=0.003), an increased rate of severe type C pancreatic fistula (13% vs. 2%, p=0.04), and a higher 90-day mortality (13% vs. 2%, p=0.04).

Conclusion: Assessment of frailty should be used for preoperative risk stratification since frailty is associated with a higher morbidity and mortality after pancreatic resections.

Abstract citation ID: znae118.033

Full Robotic Versus Open ALPPS: A Bi-Institutional Comparison of Perioperative Outcomes

P. C. Müller[1,2], C. Guidetti[3], P. Magistri[3], J. P. Jonas[2], R. Odorizzi[3], P. Kron[2], G. Guerrini[3], C. E. Oberkofler[2], S. Di Sandro[3], P. A. Clavien[2], H. Petrowsky[2], F. Di Benedetto[3]
[1]*Department of Surgery, Clarunis – University Centre for Gastrointestinal and Hepatopancreatobiliary Diseases, Basel*
[2]*Department of Surgery and Transplantation, University Hospital Zurich, Zurich*
[3]*Hepato-pancreato-biliary Surgery and Liver Transplantation Unit, University of Modena and Reggio Emilia, Modena, Italy, Modena*

Background: In primarily unresectable liver tumors, ALPPS (*Associating Liver Partition and Portal Vein Ligation for Staged hepatectomy*) may offer curative two stage hepatectomy trough a fast and extensive hypertrophy. However, concerns have been raised about the invasiveness of the procedure. Full robotic ALPPS has the potential to reduce the postoperative morbidity trough a less invasive access.

Aims: The aim of this study was to compare the perioperative outcomes of open and full robotic ALPPS.

Methods: The bicentric study included open ALPPS cases from the University Hospital Zurich, Switzerland and robotic ALPPS cases from the University of Modena and Reggio Emilia, Italy from 01/2015 to 07/2022. Main outcomes were intraoperative parameters and overall complications.

Results: Open and full robotic ALPPS was performed in 36 and 7 cases. Robotic ALPPS was associated with less blood loss after both stages (418±237ml vs. 319±197ml; P=0.04 and 631±354ml vs. 258±53ml; P=0.01) as well as a higher rate of interstage discharge (86% vs. 37%; P=0.02). OT was longer with robotic ALPPS after both stages (371 ±70min vs. 449±81min; P=0.01 and 282±87min vs. 373±90min; P=0.02). After ALPPS stage 2, there was no difference for overall complications (86% vs. 86%; P=1.00) and major complications (43% vs. 39%; P=0.86). The total length of hospital stay was similar (23±17 days vs. 26±13; P=0.56).

Conclusion: Robotic ALPPS was safely implemented and showed potential for improved perioperative outcomes compared to open ALPPS in an experienced robotic center. The robotic approach might bring the perioperative risk profile of ALPPS closer to

interventional techniques of portal vein embolization/liver venous deprivation.

Abstract citation ID: znae118.034

Preliminary Results from the International Registry on Liver Venous Deprivation (EuroLVD)

G. R. Joliat[1], P. Chevallier[2], S. Wigmore[3], D. Martin[1], I. Labgaa[1], E. Uldry[1], N. Halkic[1], T. Newhook[4], J. N. Vauthey[4], R. Memeo[5], B. Dasari[6], E. Braunwarth[7], R. Duran[8], A. Denys[8], E. Melloul[1]
[1]*Visceral Surgery, Lausanne University Hospital CHUV, Lausanne*
[2]*Radiology, Hôpital L'Archet, CHU de Nice, Nice*
[3]*Clinical Surgery, Royal Infirmary of Edinburgh, Edinburgh*
[4]*Surgical Oncology, The University of Texas MD Anderson Cancer Center, Houston*
[5]*Hepatobiliary and Pancreatic Surgery, Miulli Hospital, Bari*
[6]*Hepatopancreatobiliary and Transplant Surgery, Queen Elizabeth Hospital, Birmingham*
[7]*Visceral, Transplantation and Thoracic Surgery, Medical University of Innsbruck, Innsbruck*
[8]*Medical Radiology, Lausanne University Hospital CHUV, Lausanne*

Background: Liver venous deprivation (LVD) is a recently developed method to reach maximal liver hypertrophy before major hepatectomy. LVD combines simultaneous portal and ipsilateral hepatic vein embolization. An international registry was created in 2021.

Aims: This study aimed to describe the outcomes after LVD of patients included in the registry.

Methods: Since its creation, 7 international expert HPB centers participated to the registry. Preoperative characteristics, data on liver regeneration after LVD, and postoperative results after hepatectomy were collected. Future liver remnant (FLR) and standardized FLR ratios were defined as FLR/total functional liver volume and FLR/total estimated liver volume.

Results: A total of 191 patients were included (71 women). Median age was 63 (IQR 53-69) and body-mass index 24.8 kg/m^2 (IQR 22.3-28.7). Fifty-three patients were ASA III/IV.

Main surgical indication was colorectal metastases (n=116). Median FLR and standardized FLR ratios before LVD were 33% (IQR 26-47) and 32% (IQR 23-39). Median time for the LVD procedure was 122 minutes (IQR 99-164). In one patient right hepatic vein embolization failed. Complications after LVD occurred in 14 patients (7%), including 7 hemorrhages/hematomas.

After LVD, median FLR and standardized FLR ratios significantly increased to 46% (IQR 39-59, p<0.001) and 44% (IQR 35-50, p<0.001), corresponding to a median kinetic growth rate of 3.2%/week (IQR 1.6-5.3). Hepatectomy was performed in 142 patients (69 extended hepatectomies), while 49 dropped out (7 for insufficient hypertrophy (4%), 27 for tumor progression (14%), and 15 for other reasons (8%)). Seventy-one patients had postoperative complications (50%), and only 2 developed postoperative liver failure (1%). Median Comprehensive Complication Index was 20.9 (IQR 0-30.8) and 10 patients were reoperated (7%).

Conclusion: The preliminary data of this international registry showed that LVD had a high technical success rate (190/191) with few post-procedural complications and significant kinetic growth. Major hepatectomy after LVD appeared to be safe.

Abstract citation ID: znae118.035

Preoperative MRCP is not Associated with Lower Complication Rates but Shorter Hospital Stay in Laparoscopic Cholecystectomy

J. Zeindler[1], G. F. Hess[1], P. Sedlaczek[1], S. Muenst[2], M. Bolli[1], O. Kollmar[1], S. D. Soysal[3]
[1]*Abdominal Surgery, Clarunis - University Centre for Gastrointestinal and Liver Diseases, Basel*
[2]*Institute of Medical Genetics and Pathology, University Hospital Basel, Basel*
[3]*Faculty of Medicine, University of Basel, Basel*

Background: Laparoscopic cholecystectomy is a very common procedure and while preoperative magnetic resonance cholangiopancreatography (pMRCP) is widely used for detection of choledocholithiasis and preoperative planning, the benefits in patients with normal preoperative cholestatic parameters remain unclear.

Aims: We aimed to investigate a large cohort of patients after laparoscopic cholecystectomy to analyse the impact of pMRCP on complication rates.

Methods: This retrospective cohort study consecutively includes all patients receiving elective or acute laparoscopic cholecystectomy between 2010 and 2020. Exclusion criteria were conversion to open cholecystectomy and preoperatively elevated cholestatic parameters. Complication rates were recorded and patients stratified depending on the use of pMRCP for preoperative planning.

Results: 3163 patients underwent laparoscopic cholecystectomy between 2010 and 2020, 2568 of which showed normal cholestatic parameters preoperatively. Of these patients, 684/2568 (27%) were male and 1884/2568 (73%) female. The most frequent indications for laparoscopic cholecystectomy were cholecystolithiasis in 72% (1845/2568) of cases, followed by cholecystitis in 18% (465/2568). The majority of patients (2267/2568, 88%) indeed received pMRCP, while the remaining 301/2568 patients did not. Postoperative complication rates did not significantly differ between the two groups (396/2267 (17%) in the pMRCP group and 58/301 (19%) without pMRCP, p=0.469). One case of pancreatitis occurred in the pMRCP group, versus two reported cases in the other group. Interestingly, the length of hospital stay after cholecystectomy was significantly shorter in the group with pMRCP versus without (4 days (range 1-61 days) versus 7 days (range 1 – 66 days), respectively, p = 0.023).

Conclusion: Preoperative MRCP seems to not prevent complications in laparoscopic cholecystectomy, since postoperative complication rates were comparable between the two patient groups with and without pMRCP. However, postoperative hospital stay was significantly shorter in patients undergoing pMRCP compared to patients without pMRCP.

Abstract citation ID: znae118.036

Recurrence and Survival after Robotic vs. Laparoscopic Liver Resection in Very-Early to Early Stage (BCLC 0-A) Hepatocellular Carcinoma: A Retrospective Cohort Study with Propensity Score Matching

L. Bernardi[1], L. Bernardi[2], E. Balzano[3], R. Roesel[2], P. Vacca[3], A. Senatore[2], M. L. Garo[2], P. Majno-Hurst[2,4], A. Cristaudi[2,4], D. Ghinolfi[3]
[1]*Lugano Regional Hospital, Lausanne*
[2]*Department of surgery, Lugano Regional Hospital, Lugano*
[3]*Hepatobiliary surgery and liver transplant division, University of Pisa, Pisa*
[4]*Faculty of biomedical sciences, University of Southern Switzerland, Lugano*

Background: Robotic (RLR) and laparoscopic liver resection (LLR) provide similar short-term outcomes in hepatocellular carcinoma (HCC) of stage BCLC 0-A, but data on recurrence and survival are still lacking in populations with high prevalence of cirrhosis.

Aims: We investigated the outcomes of RLR vs. LLR for HCC in a cohort with high rate of cirrhosis. The primary endpoint was recurrence-free (RFS) and overall survival (OS); incidence, pattern, and treatment of recurrence were the secondary ones.

Methods: RLRs and LLRs for HCC of stage BCLC 0-A from two tertiary centers for liver surgery were retrospectively reviewed. Propensity score matching (PSM) was used to mitigate selection bias. Survival was estimated with Kaplan Meier method with Log rank.

Results: One-hundred-ninety-six patients underwent RLR (n=68) or LLR (n=128) for BCLC 0-A HCC.

After 1:1 PSM, two groups (RLR=68; LLR=68) of patients with similar characteristics, liver function and HCC features were obtained: age (median) 71-year-old, males 73.5%, underlying cirrhosis 91.2% (Child A 96.8%, MELD <9 96%), portal hypertension 22.1%, single-HCC 90.4%.

At a median follow-up of 29.0 months, 2- and 5-year RFS were 78.0 vs. 59.0% and 54.0 vs. 53.0% (p=0.107), while OS was 97.0 vs. 90.0% and 87.0 vs. 90.0% (p=0.951) for RLR vs. LLR respectively. Incidence of recurrence was similar (35.3 vs. 39.7%; p=0.723) and was mostly within the liver (29.4 vs. 30.9%; p=1.000) or within 2 years after hepatectomy (54.2 vs. 81.5%, p=0.116) in RLR vs. LLRs. Curative-intent treatment of recurrences did not differ (liver transplantation 19.6%, redo-resection 15.7%) except for a tendency to more redo-resections of recurrences after RLR (29.2 vs. 3.7%; p=0.062).

Conclusion: Oncologic outcomes of RLR were not inferior to those of LLR in selected HCC patients of stage BCLC 0-A with underlying cirrhosis. Both techniques guaranteed similar salvageability at HCC recurrence in our experience.

Abstract citation ID: znae118.037

Selective Inhibition of Hepatocyte Claudin-3 Ameliorates Fibrotic and Cholestatic Liver Damage by Enhancing Bicarbonate Secretion and Bile Dynamics.

F. Baier[1], F. Baier[2], D. Stroka[2], N. Melin[2], T. Yarahmadov[2], D. Sánchez-Taltavull[2], S. Moghadamrad[3], S. Murugan[2], A. Keogh[2], A. Odermatt[4], C. Gómez Castellá[4], E. Feraille[5], A. Sassi[5], U. Deutsch[6], B. Engelhardt[6], M. Furuse[7], D. Candinas[2]
[1]*University of Bern and Inselspital Bern, Bern*
[2]*Department for Visceral Surgery and Medicine, University of Bern and Inselspital Bern, Bern*
[3]*Faculty of Biomedical Sciences, Università della Svizzera italiana, Lugano*
[4]*Department of Pharmaceutical Sciences, University of Basel, Basel*
[5]*Department of Cellular Physiology and Metabolism, University of Geneva, Geneva*
[6]*Theodor Kocher Institute, University of Bern, Bern*
[7]*Division of Cell Structure, National Institute for Physiological Sciences, Okazaki*

Background: Cholestatic-fibrotic liver diseases have a high unmet medical need. Tight junctions, which maintain the blood-biliary-barrier in the liver, have important biological functions that impact cholestatic diseases. A main component of the hepatic tight junction is claudin-3.

Aims: In this study, we explored the function of claudin-3 and demonstrate its potential as a new drug target in cholestatic-fibrotic liver diseases.

Methods: Adult C57BL/6 N background *Cldn3*$^{+/+}$ or *Cldn3*$^{-/-}$ mice were subjected to extra- and intrahepatic cholestasis via surgical ligation of the common bile duct (BDL) or chemically, by gavage or feeding alpha-naphthyl isothiocyanate (ANIT). Hepatic necrosis and serum liver injury markers were determined. Bile flow and bicarbonate levels were quantified. Bile acid levels were measured by LC-MS/MS in serum and liver tissue. Claudin-3 was knocked down using liver specific claudin-3 GalNAc-siRNAs.

Results: Claudin-3 is expressed in normal- and cholestatic liver tissues. *Cldn3*$^{-/-}$ mice have a higher bile-flow rate, more bicarbonate secretion, and the bile is less concentrated with bile acids and bilirubin. Following bile duct ligation or ANIT, *Cldn3*$^{-/-}$ mice showed macroscopically less signs of bile acid retention and a different bile color. Hepatic bile acid levels were significantly lower in normal- or cholestasis challenged *Cldn3*$^{-/-}$ mice. Following BDL, ANIT gavage- or ANIT feeding, liver injury in was remarkably ameliorated in *Cldn3*$^{-/-}$ mice. Liver specific knockdown of claudin-3 using GalNAc-siRNAs ameliorated cholestasis at a lower success rate compared to the complete knockout.

Conclusion: Knockout or GalNAc-siRNA mediated inhibition of claudin-3 protected the liver from injury in models of extra- or intrahepatic cholestasis. Further pre-clinical and clinical studies need to be conducted to show whether claudin-3 inhibition is an efficient and safe therapeutic approach for the treatment of cholestatic liver diseases. As next step towards translation of our results, we are currently screening and optimizing human GalNAc conjugated claudin-3 inhibitors.

Abstract citation ID: znae118.038

Spatial Heterogeneity of Immune Drivers Coordinates the Organisation of Antitumor Immunity in Pancreatic Cancer, Affecting Patient Outcome

A. S. Wenning[1], P. Aeschbacher[1], B. Gloor[1], E. Karamitopoulou[2], A. Perren[2], I. Marinoni[2]
[1]*Department of Visceral Surgery and Medicine, University Hospital Bern, Bern*
[2]*Institute of Tissue Medicine and Pathology, University of Bern, Bern*

Background: Pancreatic ductal adenocarcinoma (PDAC) is considered low immunogenic with "cold" tumor microenvironment (TME) and is mostly unresponsive to immune checkpoint blockade therapies.

Aims: We aim to decipher the impact of intratumoral heterogeneity of immune determinants on antitumor response.

Methods: 130PDAC specimens were classified according to overall survival in long-term survivors (LTSs, n=29, OS≥60 months) and short-term survivors (STSs, n=101, OS<60 months). Spatial compartment masks were defined by immunofluorescence imaging (tumor cells: Pancytokeratin^{+}CD45^{-}, leukocytes: CD45^{+}Pancytokeratin^{-}, stroma cells: PanCK^{-}CD45^{-}). 4regions of interest from tumor center (TC) and the invasive front (IF) were examined by transcriptomic and proteomic analysis using the Nanostring platform for immune pathway targets. Results of NGS and morphological features were integrated. 20samples underwent immunophenotypic analysis by multiplex immunofluorescence.

Results: LTSs displayed mostly homogeneous morphology with extended glandular differentiation and immunogenic TME both at TC and IF, with increasing gradient towards the IF. There was higher presence of immune checkpoint-associated and immunogenic genes and proteins at the IF as compared to the TC, including CD40, CD3, CD8, CD4, GZMB and PD-L1. In contrast, STSs were characterized by morphologic heterogeneity, including areas with reduced glandular differentiation and high tumor budding, and a mostly immunosuppressive TME with negative gradient towards the IF. Moreover, there was reduced gene expression and protein abundance at the IF as compared to the TC, including CD3, CD8, CXCL10, GZMB, IFNG, HLA-DR and CD40.

Conclusion: LTSs display a highly immunogenic TME, underscoring their effective antitumor immunity, especially at the area of IF compared with STSs. A significant intratumoral heterogeneity between TC and IF exists with regards to immune determinants in both, LTSs and STSs, which might explain the different antitumor immune responses, affecting patient outcome. The differential expression of immune drivers may help selecting patients for combination therapies to improve antitumor immunity and harness the responsiveness to immune checkpoint inhibitors in PDAC.

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The PAncreatic Surgery Composite Endpoint PACE – Development and Validation of a Clinically Relevant Endpoint Requiring Lower Sample Sizes

C. Kümmerli[1], F. Nickel[2,3], P. C. Müller[1], M. W. Schmidt[4], L. P. Schmidt[4], P. Wise[2,3], R. Klotz[2], C. Tjaden[2], M. Diener[5], P. Probst[6], T. Hackert[2], M. W. Büchler[2,7]
[1]*Department of Surgery, Clarunis University Digestive Health Care Centre Basel, Basel*
[2]*Department of General, Visceral and Transplantation Surgery, Heidelberg University Hospital, Heidelberg*
[3]*Department of General, Visceral and Thoracic Surgery, University Medical Center Hamburg-Eppendorf, Hamburg*
[4]*Department of Gynecology and Obstetrics, University Medical Centre Mainz, Mainz*
[5]*Department of General, Visceral, and Thoracic Surgery, Hospital of Nuremberg, Nuremberg*
[6]*Department of Surgery, Cantonal Hospital Thurgau, Frauenfeld*
[7]*Botton-Champalimaud Pancreatic Cancer Center, Champalimaud Foundation, Lisbon*

Background: Single endpoints in prospective and randomized studies have become impractical due to their low frequency and the marginal benefit of new interventions.

Aims: To provide a composite endpoint in pancreatic surgery.

Methods: Data from prospective studies were used to develop (n=1273) and validate (n=544) a composite endpoint based on postoperative pancreatic fistula, post-pancreatectomy hemorrhage as well as reoperation and reinterventions. All patients had pancreatectomies of different extents. The association of the developed PAncreatic surgery Composite Endpoint (PACE) with prolonged length of hospital stay (LOS) >75th percentile and mortality were assessed. A single-institution database was used for external validation (n = 2666). Sample size calculations were made for single outcomes and the composite endpoint.

Results: In the internal validation cohort, the PACE demonstrated an AUC of 78.0%, a sensitivity of 90.4% and a specificity of 67.6% in predicting a prolonged LOS. In the external cohort, the AUC was 76.9%, the sensitivity 73.8% and the specificity 80.1%. The 90-day mortality rate was significantly different for patients with a positive versus a negative PACE both in the development and internal validation cohort (5.1% vs 0.9%; P< 0.001), as well as in the external validation cohort (8.5% vs 1.2%, P< 0.001). The PACE enabled sample size reductions of up to 80.5% compared to single outcomes.

Conclusion: The PACE performed well in predicting prolonged hospital stays and can be used as a standardized and clinically relevant endpoint for future prospective trials enabling lower sample sizes and therefore improved feasibility compared to single outcome parameters.

Abstract citation ID: znae118.040

Which Surgical Technique for Liver Resection is Favourable in Patients with Colorectal Liver Metastases?

J. Zeindler[1], G. F. Hess[1], M. von Heesen[2,3], S. Muenst[4], M. Bolli[1], S. D. Soysal[5], O. Kollmar[1,2], A. M. Schmitt[6]
[1]*Abdominal Surgery, Clarunis - University Centre for Gastrointestinal and Liver Diseases, Basel*
[2]*Department of General, Visceral, Vascular and Pediatric Surgery, University of Saarland, Homburg*
[3]*Department of General- and Visceral Surgery, University Hospital Göttingen, Göttingen*
[4]*Institute of Medical Genetics and Pathology, University Hospital Basel, Basel*
[5]*Faculty of Medicine, University of Basel, Basel*
[6]*Department of Internal Medicine, Medical Oncology, University Hospital Basel, Basel*

Background: The liver is the most common metastatic site after curative treatment for colorectal cancer (CRC). Around 50% of all patients with CRC will develop colorectal liver metastases (CRLM). Liver resection (LR) represents a curative treatment option. Benefits of anatomic (ALR) versus non-anatomic liver resection (NALR) show a lack of consistent evidence. While ALR seems to be associated with a higher postoperative complication rate, NALR could lead to more recurrences.
Aims: We investigated complication and survival rates of patients with CRLM after both resection types.
Methods: This is a multicentre cohort study using retrospectively and prospectively collected data. All patients undergoing LR for CRLM between 2009 and 2020 from 3 specialised centres in Switzerland and Germany were included. Complication and survival rates after ALR versus NALR were analysed using uni- and multivariate Cox regression models.
Results: 624 patients were included. Median follow-up time was 25.49 months. In 292/624 patients (47%) ALR was performed, while 53% underwent NALR. Complications according to the Clavien-Dindo classification have been observed significantly more often in the ALR group (p=0.001). Especially severe complications grade III and IV have been more present after ALR (36/292 vs. 26/332 and 13/292 vs. 11/332, respectively). Both, length of ICU and postoperative hospital stay have been significantly longer in the ALR group (p<0.001 each). The uni- and multivariate models have shown no significant differences in overall survival (OS) and recurrence free survival rates (RFS) between both groups (for OS adjusted HR of 0.84 (95% CI 0.59 - 1.21; p=0.35) and for RFS adjusted HR 0.92 (95% CI 0.69 - 1.22, p=0.56)).
Conclusion: This multicentre prospective study investigating ALR versus NALR for CRLM has shown no significant differences in OS and RFS. However, postoperative complications have been reported significantly more often after ALR. NALR seems to be the better choice for patients with CRLM undergoing LR.

Hernia (Inguinal, Abdominal, …)

Abstract citation ID: znae118.041

Robotic-Assisted Inguinal Hernia Repair with The Dexter System™: A Prospective Multicentre Clinical Investigation

L. Gantner[1,2], H. Mignot[3], J. Pochhammer[4], F. Grieder[1], S. Breitenstein[1]
[1]*Viszeral-/Thoraxchirurgie, Kantonsspital Winterthur, Winterthur*
[2]*Chirurgisches Zentrum Zürich, Hirslanden, Zürich*
[3]*Chirurgie, Centre Hospitalier de Saintes, Saintes*
[4]*Klinik für Allgemeine, Viszeral-, Thorax-, Transplantations- und Kinderchirurgie, Universitätsklinikum Schleswig-Holstein, Kiel*

Background: Robot-assisted transabdominal preperitoneal inguinal hernia repair (rTAPP) is established as safe and feasible with various robotic platforms. The Dexter robotic system is an open platform with a sterile surgeon's console, two robotic instrument arms, and one robotic endoscope arm.
Aims: We conducted a prospective multicentre study (ClinicalTrials.gov NCT05873582) to assess the safety and performance of this new robotic platform.
Methods: Three centres in France, Germany, and Switzerland participated. The primary objectives of the study were to document the successful completion of the rTAPP procedures and to collect data on the occurrence of adverse events and device-related events perioperatively and up to 30 days post-surgery. The procedures were performed by three surgeons with varying levels of experience in robotic systems, including novice, intermediate and expert.
Results: Fifty patients were operated for inguinal hernia repair (33 unilateral, 17 bilateral). The mean age and BMI of the patients were 60 years (±15) and 25.7 kg/cm^2 (±3.3), respectively. All surgeries were successfully completed as planned using three standard laparoscopy trocars sized 10/12mm. Each procedure was performed with robotic assistance, and there were no conversions to open surgery. No intra-operative complications, device deficiency, or adverse events of Clavien-Dindo Grade III to V occurred. The mean skin-to-skin operative time was 55 min (±14) for unilateral hernia repair and 95 min (±22) for bilateral hernia repair. The mean robotic console time was 34 min (±12) for unilateral hernia and 68 min (±21) for bilateral hernia repairs. The patients were discharged within 1day (± 1 day) after surgery.
Conclusion: Our rTAPP experience with the Dexter system confirms feasibility, safety, and comparable operative times to other robotic platforms. This study demonstrates the practicality and safety of the robotic techniques, positioning the Dexter system as a valuable tool in hernia repair.

Abstract citation ID: znae118.042

Robotic-Assisted Treatment of Large Incisional Abdominal Wall Hernias: A Cost Analysis

F. Mongelli[1,2], F. Sabbatini[1], D. la Regina[1,2], N. Murgante Testa[1], R. Pini[1]
[1]*Surgery, Ospedale Regionale di Bellinzona e Valli, Bellinzona*
[2]*Faculty of Biomedical Sciences, Università della Svizzera Italiana, Lugano*

Background: Robotic-assisted treatment of ventral hernia offers many advantages, however, studies reported higher costs for robotic surgery compared to other surgical techniques.
Aims: We aimed at comparing hospital costs in patients undergoing large ventral hernia repair with either robotic or open surgery.
Methods: We retrospectively searched from a prospectively maintained database patients who underwent robotic or open surgery for the treatment of the large ventral hernias from January 2016 to December 2022. The primary endpoint was to assess the costs incurred by the hospital in both groups. For eligible patients, data was extracted analyzed using a propensity score-matching.
Results: During the study period, 67 patients were retrieved from our database. 34 patients underwent robotic-assisted surgery while 33 underwent open surgery. Mean age was 66.4 years ±4.1 years, 50% of patients were male. After a propensity score-matching, a similar total cost of 18,297±8,435 EUR vs. 18,024±7,514, p=0.913 in robotic-assisted and open surgery groups were noted. Robotic surgery showed higher operatory theatre-related costs (7,532±2,091 EUR vs. 3,351±1,872 EUR, p<0.001), which were fully compensated by a shorter hospital stay of 5.3±4.5 vs. 10.4±5.2 days, p=0.002 (costs: 4,265±4,366 EUR vs. 7,373±4,698 EUR, p=0.032).
Conclusion: Our study showed that in the treatment of large ventral hernia, robotic surgery had higher operatory theatre-related costs, however, they were fully compensated by shorter hospital stays and resulting in similar total costs.

Lower Gastrointestinal Tract (Small Bowel, Colon, Rectum)

Abstract citation ID: znae118.043

Anastomotic Leakage after Colorectal Surgery is Associated with a Specific Tissue-Microbiome Signature

A. Cianfarani[1,2], V. Sitta[1,2], J. Galafassi[1,2], F. Mongelli[1,3], E. Sorrenti[2,3], M. Villa[2,3], J. Djordjevic[2,3], P. Majno-Hurst[1,3], G. Iezzi[2,3], D. Christoforidis[1,3,4]
[1]*Department of Surgery, Ente Ospedaliero Cantonale, Lugano*
[2]*Laboratory for Surgical Translational Research, Ente Ospedaliero Cantonale, Bellinzona*

[3]Faculty of Biomedical Sciences, Università della Svizzera Italiana, Lugano
[4]Department of Visceral Surgery, CHUV, Lausanne

Background: Anastomotic leakage (AL) occurs in 5-15% of colorectal resections. In addition to well-known risk factors, recent evidence suggests that the gut microbiota might critically affect anastomotic healing. However, studies in humans are limited.
Aims: To explore differences in pre-operative microbiome of patients with or without AL and identify anastomosis-protective or damaging bacterial species.
Methods: Clinical records of patients undergoing left colon or rectal resection with anastomosis at our department between 2013 and 2021 were screened. AL cases were matched equally to controls by propensity score, based on common AL risk factors. The microbiome was analyzed by amplification and sequencing of the V4 region of the 16S gene of DNA extracted from formalin-fixed paraffin-embedded mucosa taken at the proximal and distal margin of the resected specimen, mixed in equal amounts. Differential abundance of identified operational taxonomic units (OTUs) in AL-cases and controls was tested by using the R-package DESeq2.
Results: Among 588 patients screened, 41 cases and 42 matched controls were eligible for microbiome analysis. Patient characteristics were similar except for a higher percentage of rectal resections in the AL group. Out of 5406 OTUs identified, 197 OTUs were differentially abundant between the two groups (adjusted-p value <0.05). Of those, 175 OTUs were more prevalent in the AL-group, in particular Fusobacterium periodonticum (32% vs. 5% of patients) and bacteria from the Hyphomicrobium genera (39-44% vs. 12-21%); 22 were more prevalent in the control group, in particular Akkermansia muciniphila (26 vs. 17%) and Eubacterium sireum (19 vs. 5% of patients).
Conclusion: Our analysis unravels AL-associated microbiome-signatures and identifies bacterial species highly prevalent in particular in patients with AL. These findings could be used for future research to develop targeted antibiotic therapy that helps prevent AL.

Abstract citation ID: znae118.044

Concomitant Cervical and Anal Screening for Human Papillomavirus (HPV) – Worth the effort or waste of time?

I. Espirito Santo[1], A. Kefleyesus[1], B. Pache[2], C. Chilou[1], M. Hübner[1], D. Hahnloser[1], F. Grass[1]
[1]Department of Visceral Surgery, University Hospital Lausanne, University of Lausanne, Lausanne
[2]Department of Gynecology, University Hospital Lausanne, University of Lausanne, Lausanne

Background: Human papilloma virus (HPV) infection represents the most common sexually transmitted disease and a major risk factor for disease progression to anal cancer.
Aims: This study aimed to analyze the rate of concomitant anal dysplasia in a prospectively surveilled cohort of sexually active women.
Methods: This study represents a follow-up analysis of the *AnusGynecology* (ANGY) study (doi.org/10.3390/cancers14205096). This prospective, cross-sectional single-center study recruited women for concomitant cervical and anal screening of HPV genotypes and cytology during a single appointment. Cervical / anal smears +/- biopsies if deemed necessary were performed by board-certified specialists during a single outpatient visit. All women with findings of either HPV or any type of dysplastic lesions on anal smears were offered follow-up in a specialized high-resolution anoscopy (HRA) outpatient clinic.
Results: Overall, 275 patients (mean age 42±12) were included. Among them, 102 (37%) had cervical high risk (HR)-HPV. Anal smear cytology was performed in 255 patients (93%), while 19 patients (7%) underwent anal biopsy during the combined visit. In total, HPV was (incidentally) revealed in 91 patients (33%) on anal smears, while any degree of anal dysplasia was found in 30 patients (11%), 6 if which were high-grade squamous intraepithelial lesions (H-SIL). Furthermore, 10 out of 19 biopsies were positive (3 H-SIL lesions).

Only half (48/93, 52%) of women agreed to undergo the recommended specialized follow-up evaluation. Of them, 18 (38%) were diagnosed with dysplastic lesions (9 L-SIL and H-SIL, respectively) on biopsies, while the remaining visits revealed no abnormalities.
Conclusion: The present study revealed a significant number of dysplastic lesions in women willing to undergo specialized proctologic evaluation after abnormal findings on initial screening. Close follow-up of these women is hence strongly recommended.

Abstract citation ID: znae118.045

Decentralized Colorectal Cancer Care: Benefit or Burden in the Pandemic? – An International Comparative Study in two Health Care Systems (DCCC Study)

B. Wiesler[1], J. M. Gass[2,3], J. Metzger[2], M. Hartel[4], C. Nebiker[4], U. Zingg[5], D. Stimpfle[5], C. T. Viehl[6], A. Müller[6], M. Worni[1,7], P. Studer[7], L. Eisner[8], C. Andreou[8], R. Rosenberg[9], R. Galli[9], B. P. Müller[1], K. Denhaerynck[10], P. Hall[11], C. Gallagher[11], C. Lilley[11], M. Zuber[1,12], H. M. Paterson[13], M. von Strauss Und Torney[1,12]
[1]Department of Visceral Surgery, Clarunis University Centre for Gastrointestinal and Liver Diseases, Basel
[2]Department of Visceral Surgery, Cantonal Hospital of Lucerne, Lucerne
[3]Department of Health Sciences and Medicine, University of Lucerne, Lucerne
[4]Department of Visceral Surgery, Cantonal Hospital of Aarau, Aarau
[5]Department of Visceral Surgery, Spital Limmattal, Schlieren
[6]Department of Surgery, Spitalzentrum Biel, Biel
[7]Stiftung Lindenhof I Campus SLB, Swiss Institute for Translational and Entrepreneurial Medicine, Bern
[8]Department of Surgery, Cantonal Hospital of Olten, Olten
[9]Department of Visceral Surgery, Cantonal Hospital of Basel-Land, Liestal
[10]Department of Public Health, University of Basel, Basel
[11]Edinburgh Cancer Research Centre, University of Edinburgh, Edinburgh
[12]St. Clara Research Ltd., St. Clara Hospital, Basel
[13]Department of Visceral Surgery, Western General Hospital Edinburgh, Edinburgh

Background: Beneficial effects of centralization could be shown. During SARS-CoV2 pandemic however, the centralization in the UK healthcare system led to cessation of screening colonoscopies and oncological resections. In the decentralized healthcare system of Switzerland, a high frequency of colonoscopies could be maintained.
Aims: The aim of this international study is to evaluate if a decentralized health care systems can prevent the threatening unmet needs of colorectal cancer patients under pandemic conditions.
Methods: This observational trial was performed in the south-east of Scotland and in the extended northwest of Switzerland with a catchment area of 1.5 Mio. inhabitants each. Patients with colorectal cancer diagnosed during January 2019 and December 2022 were included.
Results: Six thousand six hundred and eighty patients were included in this preliminary analysis (4059 in the NHS group and 2621 in the Swiss group). In Scotland the median number of diagnosed patients per quarter was 258 pre-pandemics, 218 during lockdown and 258 after lockdown (p=0.56). There was no significant alteration of the median diagnosed patients per quarter during different phases in Switzerland (165 pre-pandemic vs. 187 during lockdown vs. 162 post-lockdown, p=0.56). In Scotland the median number of all performed tumor treatments per quarter were lower during lockdown (83 pre-pandemic vs. 75 during lockdown vs. 93 post-lockdown, p<0.01). In Switzerland the median treatment numbers per quarter didn´t differ during different phases (56 pre-pandemic vs. 62 during lockdown vs. 60 post-lockdown, p=0.51). The number of patients diagnosed with a T4 tumor during pandemic was higher in Scotland than in Switzerland (28% vs. 19%, p<0.01). The 30-day mortality under pandemic condition was 7.5% (65 of 859) in Scotland compared to 3.7% (14 of 374) in Switzerland (p=0.01).
Conclusion: SARS-CoV2 pandemic led to a reduction in performed cancer treatments in Scotland. In Switzerland's decentralized healthcare system, cancer treatments were maintained during pandemic.

Abstract citation ID: znae118.046

Evaluation of the Low Anterior Resection Syndrome and Quality of Life in Patients Having Undergone Sphincter Sparing Rectal Cancer Surgery

J. Fiechter[1], R. Sguinzi[1], L. Bafumi[2], B. Gremaud[2], B. Geng[1], L. Bühler[1], B. Egger[1]

[1]General Surgery, HFR Fribourg, Fribourg
[2]Faculty of Medicine, University of Fribourg, Fribourg

Background: In order to avoid abdomino-perineal amputation and permanent colostomy in patients with low rectal cancer sphincter sparing low anterior resection (SSLAR) techniques with/without neoadjuvant radio-chemotherapy are administered. However, a lot of SSLAR-patients have life quality limiting symptoms afterwards, like fecal urgency, incontinence, constipation and sensation of incomplete rectal emptying. Such symptoms are defined as "low anterior resection syndrome" (LARS). LARS quantification can be made by a specific and validated quality of life (QoL) questionnaire (see annex).

Aims: Assessment of the QoL in patients after SSLAR suffering from LARS before and after specific therapy.

Methods: This is a monocentric, retrospective cohort study including patients having undergone SSLAR for rectal cancer 2014 - 2021. Initial LARS-scores were obtained by completion of the specific questionnaire. Patients with a minor LARS (scores 21-29) were treated with electrostimulation and bio-feedback physiotherapy. Those with a major LARS (scores >29) were first investigated by anal manometry followed by physiotherapy. After treatment LARS-scores were obtained again.

Results: Of 136 identified SSLAR-patients, 68 did not fulfill the inclusion criteria's (see annex). Of the remaining 54 patients, 20.4% had a minor, 37% a major and 42.6% no LARS. Of all LARS-patients, 13 completed pelvic physiotherapy, 4 are still completing and 14 (26%) refused such a treatment. The mean-LARS score was 32.77 and 22.92, before and after treatment, respectively (p=0.004). Risk factor analysis (diabetes, type of anastomosis, neoadjuvant radio-chemotherapy, previous operations, nicotine, alcohol) did not reveal any significant difference between groups.

Conclusion: More than 50% of patients undergoing SSLAR are suffering from LARS, more than one third from major LARS. QoL is impressively improved by specific physiotherapeutic measures. In order to avoid later treatment hesitancy (26%), we began to initiate early specific physiotherapy as a standard in all SSLAR-patients.

Abstract citation ID: znae118.047

Randomised Controlled Pilot Trial on GHOST Ileostomy versus Conventional Loop Ileostomy in Patients Undergoing low Anterior Resection for Rectal Cancer

P. Probst[1], R. Klotz[2], M. K. Diener[3], P. Knebel[2], F. J. Hüttner[3]
[1]Department of Surgery, Cantonal Hospital Thurgau, Frauenfeld
[2]Department of General, Visceral and Transplantation Surgery, Heidelberg University Hospital, Heidelberg
[3]Department of General, Visceral and Thoracic Surgery, Klinikum Nürnberg, Nürnberg

Background: Anastomotic leakage is the most important complication after colorectal surgery. In patients undergoing low anterior resection with total mesorectal excision (LAR/TME) a loop ileostomy is fashioned to protect the low anastomosis. Ghost ileostomy is a pre-stage ileostomy, which can be converted to a diverting ileostomy, if anastomotic leakage is suspected. If there are no signs of anastomotic leakage an actual ileostomy can be avoided.

Aims: The objective was to evaluate whether ghost ileostomy is a safe alternative to a conventional loop ileostomy.

Methods: GHOST was a randomised controlled pilot trial without formal hypothesis. Patients undergoing LAR/TME for rectal cancer were intraoperatively randomised to receive a ghost ileostomy or loop ileostomy. Patients were followed prospectively for 6 months. Comprehensive complication index, transformation of ghost ileostomy into loop ileostomy, presence of an ostomy at 6 months, Wexner score and quality of life were assessed.

Results: Thirty patients were equally randomised. The CCI was 30.7 (± 17.7) in the ghost ileostomy group compared to 29.7 (± 18.6) in the loop ileostomy group at 6 months (p=0.889). The ghost ileostomy was converted into a loop ileostomy in 6 of 15 (40.0%) patients. At 6 months after low anterior resection, 6 (40.0%) patients in the ghost ileostomy group and 7 (46.7%) patients in the ileostomy group still had an ileostomy. There was no mortality and no need for creation of a terminal ostomy within the trial. Neither postoperative function assessed by the Wexner score, nor the overall quality of life showed significant differences.

Conclusion: Ghost ileostomy seems to be a viable and safe option to a more selective approach regarding creation of an ileostomy in patients undergoing LAR/TME. However, the difficult patient selection with exclusion of patients at high risk of anastomotic leakage limits its widespread application and should be optimised in future trials.

Abstract citation ID: znae118.048

Snapshot Audit Early Onset Colorectal Cancer (EOCC) – What is the Current Situation in Switzerland?

H. Gros[1], S. Taha-Mehlitz[1], S. Erdem-Sanchez[1], J. M. Klasen[1], U. Friedrich[1], D. Steinemann[1], A. K. Huber[2], M. Gass[2,3], D. Rodjakovic[4], R. Galli[4], C. Nebiker[5], M. Hartel[5], A. Müller[6], C. Viehl[6], C. Di Pietro Martinelli[7], M. Holzgang[7], S. Happ[8], T. Simon[8], D. Stimpfle[9], U. Zingg[9], S. Teixeira Da Cunha[10], L. Eisner[10], P. Studer[11], M. Worni[1,11], M. von Strauss Und Torney[1,12]
[1]Department of Visceral Surgery, Clarunis University Centre for Gastrointestinal and Liver Diseases, Basel
[2]Clinic for General and Visceral Surgery, Lucerne Cantonal Hospital, Lucerne
[3]Department of Health Sciences and Medicine, University Lucerne, Lucerne
[4]Clinic Surgery & Visceral Surgery, Cantonal Hospital Baselland, Liestal
[5]Clinic General & Visceral Surgery, Cantonal Hospital Aarau, Aarau
[6]Surgery Clinic, Spitalzentrum Biel, Biel
[7]Surgery Centre St. Anna, Hirslanden Clinic St. Anna, Lucerne
[8]Clinik for Surgery, Spitalzentrum Oberwallis, Visp
[9]Clinic for General, Vascular, & Visceral Surgery, Hospital Limmattal, Schlieren
[10]Surgery Departement, Cantonal Hospital Olten, Olten
[11]Clinic for Visceral Surgery, Lindenhof, Bern
[12]St. Clara Forschung AG, St. Claraspital, Basel

Background: Early onset colorectal cancer (EOCC), defined as colorectal cancer (CRC) ≤ 50 years, has seen an alarming rising incidence in western countries.

Aims: This research aims to determine the current state of incidence, symptoms, diagnostic methods, and treatment approach in EOCC compared to late onset CRC (LOCRC) in the extended Northwestern Switzerland.

Methods: Patients seeking care for CRC between April-November 2023 were enrolled in a prospective multicenter (11 hospitals within extended Northwestern Switzerland) observational cohort study. Information was collected using questionnaires and patient charts.

Results: We included 315 patients, thereof 38 (10.8%) EOCC. In total 211 (58.9%) patients were male, mean age was 42.5 and 71.2 years, respectively. Rectal bleeding was the main symptom in both groups (60.5% vs 37.0%), followed by change in bowel habits in EOCC and fatigue in LOCRC without reaching significance. Rectal bleeding and mucous, abdominal pain, change of bowel habits and bloating were significantly more often in EOCC. Significantly more LOCRC patients stated that their physical condition affected sexual erection and social interaction, whereas in EOCC, family life was significantly affected. For both groups, endoscopy was the leading diagnostic tool. EOCC had a diagnostic delay of 6.5 weeks compared to their counterparts. No difference in frequency of neoadjuvant treatment, surgical approach or need for emergency surgery was observed. In EOCC, a trend to more lymph node retrieval was observed and significantly more EOCC received an ostomy. Postoperatively, significantly more EOCC than LOCRC patients received adjuvant chemotherapy (55.6 % vs 28.6 %).

Conclusion: Our analysis illustrates the current standard-of-care of EOCC in the extended Northwestern Switzerland. EOCC compared to LOCRC patients present themselves differently to the medical community, leading to a different approach to their symptoms, which eventually results in a delayed diagnosis. Based on these results, it is time to foster awareness and start redefining national screening criteria.

Abstract citation ID: znae118.049

The Incidence of Incisional Hernia after Colorectal Surgery Depends on the Extraction Site: A Cohort Analysis

M. Burgard[1], E. Liot[1], G. Meurette[1], C. Toso[1], F. Ris[1], J. Meyer[1]
[1]Visceral Surgery, Geneva University Hospital, Geneva

Background: Although minimally invasive surgery has reduced the incidence of incisional hernia in colorectal surgery, specimen extraction site still constitutes a risk for incisional hernia.

Aims: We aimed to analyse the incidence of incisional hernia according to the specimen extraction site.

Methods: We conducted a retrospective observational cohort study of consecutive patients who underwent elective laparoscopic colorectal surgery for colorectal cancer between 01.2013 and 12.2021. The primary outcome was the CT-proven incidence of incisional hernia at the level of the extraction site until the end of follow-up (12.2023). Patients with open surgery, previous hernia repair, reoperations during the study period or without imaging follow-up were excluded.

Results: One hundred and fifty-eight patients were included. One hundred and four patients (65,8 %) had an extraction site located on the midline, and 54 patients (34,2 %) had an extraction site which was off midline. The midline was preferably used as extraction site during right and transverse colectomy (96,5% and 100% respectively), and off midline was used in left hemicolectomy, sigmoid colectomy and anterior resection (60%, 88%, 93,8% respectively). The overall incidence of incisional hernia at the level of the extraction site was of 29,8 % (31 patients) when midline was chosen as the extraction site, and of 1,9% (1 patient) when the extraction site was off-midline (p-value<0,001). Seven patients (6,7%) required hernia repair in the midline group and no patient (0%) in the off-midline group (p-value=0.051). The mean follow-up was of 3.1+/-2.1 years. Uni-and multivariate logistic regression identified the choice of extraction site as a risk factor for incisional hernia (odds ratio: 22,5, 95%CI: 2,3-27,1, p-value: 0,03).

Conclusion: Choosing the midline as an extraction site exposes patients to the risk of incisional hernia. Fully minimally invasive colorectal resection using off-midline incision as extraction site should be encouraged.

Abstract citation ID: znae118.050

Utero-Ovarian "out of field" Transposition Before Pelvic Radiation in a Patient with Rectal Cancer: A First Swiss Experience

I. Fournier[1,2], D. Huber[3], Y. Hurni[3], I. Dischl[4], F. J. Pena Rios[5]
[1]*General Surgery, Hopital du Valais-CHVr-Sion, Sion*
[2]*Visceral Surgery and transplantation, Geneva University Hospital, Geneva*
[3]*Gynecology and Obstetrics, Hopital du Valais-CHVr-Sion, Sion*
[4]*Oncology, Hopital du Valais- CHVr -Sion, Sion*
[5]*Radio-oncology, Hopital du Valais-CHVr-Sion, Sion*

Background: Colorectal cancer represents the third most common cancer and the second leading cause of cancer-related mortality worldwide. The incidence of rectal cancer is rising faster and is increasing among young adults. Due to advances in diagnosis and treatment, most young patients with rectal cancer present long-term survival. Treatment-related infertility represents a largely unaddressed problem.

Fertility preservation is essential in managing young women requiring chemo- and radiotherapy for rectal cancer. Ovaries and oocytes are very sensitive to radiation and chemotherapeutic agents, and current fertility preservation strategies include oocytes, embryos, or ovarian tissue cryopreservation and ovarian transposition out of the radiation field. Nevertheless, patients have little probability of procreating due to irreversible uterine radiation damages. Utero-ovarian "out of filed" Transposition [UOT] represent an interesting perspective specially in countries were pregnancy surrogacy is not allowed.

Aims: Demonstrate feasibility of an innovative surgical procedure permitting uterine functional preservation after long course neoadjuvant therapy for low rectal cancer including total chemo and radio-chemotherapy.

Methods: First Clinical Swiss experience case presentation. In addition, of a systematic review of the literature available to date on all cases of UOT was realized, and 13 patients from 9 articles were included.

Results: A 28-year-old nulligravida patient was diagnosed with a low-grade rectal adenocarcinoma. Before neoadjuvant therapies, the patient underwent laparoscopic UOT. The intervention was performed without complications, and the patient received neoadjuvant treatments as planned. TaTME and uterus repositioning were completed six weeks after the radiotherapy's end. No complications were observed during the first 9 postoperative months. Adequate utero-ovarian perfusion was assessed by Doppler ultrasound, cervicovaginal anastomosis appeared healed correctly, and the patient experienced menstrual bleeding. Data from the literature review of reported cases of UOT were presented.

Conclusion: UOT represents a valuable option to preserve fertility in patients requiring pelvic radiotherapy. This study provides additional evidence on the feasibility and safety of UOT.

Other

Abstract citation ID: znae118.051

Impact of Virtual Reality Distraction on Pain and Anxiety for Bedside Abdominal VAC Dressing Change (VIRPA) – A Randomized Controlled Clinical Trial

B. Barberá Carbonell[1], M. Hübner[1], F. Grass[1], R. Djafarrian[2]
[1]*Lausanne University Hospital, Lausanne*
[2]*Visceral Surgery, Lausanne University Hospital (CHUV), Lausanne*

Background: Virtual reality (VR) distraction techniques are promising adjuncts to reduce pain and anxiety.

Aims: This study assessed the impact of VR distraction during bedside change of vacuum assisted closure (VAC) dressings.

Methods: In this non-blinded randomized superiority trial, patients scheduled for bedside change of a subcutaneous VAC dressing were allocated to receive distraction through VR masks in addition to a standardized pain protocol (intervention) or pain protocol alone (control). Primary endpoints were pain scores assessed by a visual analogue scale (VAS:0-10), secondary outcomes were anxiety (State Trait Anxiety Inventory (STAI-Y:20-80), VAS:0-10), hemodynamic parameters and satisfaction (VAS:0-10).

Results: Nineteen and twenty-one patients were randomized to receive intervention and control, respectively. Baseline characteristics were well balanced including age (61±11 *vs.* 62±17), sex (female: 9 *vs.* 13), American Society of Anesthesiologists (ASA) scores (≥3: 18 *vs.* 18, all non-significant). Pre- and postoperative pain levels were 2.2±2.2 *vs.* 2.0±2.1 (p=0.38) for the intervention group compared with 2.6±2.1 *vs.* 2.2±1.6 (p=0.26), with no significant difference between the groups (p=0.38). Similar findings for blood pressure and heart rates. Anxiety was reduced in both groups post VAC change in the intervention and control group: STAI 40±12 pre-VAC *vs.* 30±8 post VAC and 45±14 pre-VAC *vs.* 32±9 post VAC (both p<0.01), ΔVAS -2 (interquartile range IQR 0, -3) *vs.* -2 (IQR 0, -5), both p<0.01. Postinterventional satisfaction was 8.3±1.9 (intervention) *vs.* 7.5±2.4 (p=0.11).

Conclusion: In this study, pain and anxiety were well managed with a standardized pain protocol with or without adjunct VR distraction. Further studies will focus on patients with insufficient control of pain and anxiety with a standard protocol.

Abstract citation ID: znae118.052

Milestones in Surgical Complication Reporting – Twenty years of Clavien-Dindo Classification & ten years of Comprehensive Complication Index (CCI®)

F. Abbassi[1], M. Pfister[2], A. Domenghino[3], K. L. Lucas[4], M. A. Puhan[5], P. A. Clavien[6]
[1]*Abdominal Surgery and Transplantation, University Hospital Zurich and University of Zurich, Zurich*
[2]*Wyss Zurich Translational Center, ETH Zurich and University of Zurich, Zurich*
[3]*Department of Abdominal Surgery and Transplantation, University Hospital Zurich, Zurich*
[4]*Department of Visceral, Thoracic, Vascular Surgery and Angiology, City Hospital Triemli, Zurich*
[5]*Epidemiology, Biostatistics and Prevention Institute, University of Zürich, Zurich*
[6]*Wyss Translation Center, University of Zurich, and Swiss Medical Network, Zurich*

Background: Standardized outcome reporting is key for proper assessment of surgical procedures. A recent consensus conference recommended the Clavien-Dindo classification (CDC) and the Comprehensive Complication Index (CCI®) for assessing postoperative morbidity. However, their use in randomized controlled trials (RCTs) has not been assessed, and several challenging scenarios for grading complications require consensus-based guidance.

Aims: The aim of this study was to assess the use of the CDC and CCI® in RCTs and to provide guidance on their standardized and consistent application.

Methods: We identified all RCTs that used the CDC or CCI® as a primary or secondary outcome.

In addition, we asked 163 international surgeons to independently grade complications of 20 clinical cases covering seven challenging scenarios. Finally, a core group of five experts used this information do develop consistent recommendations.

Results: Up to July 2023, 1424 RCTs used the CDC or CCI® to assess postoperative morbidity. Annual use was steadily increasing with now over 200 new RCTs per year.

Eighty-nine (55%) surgeons completed the survey. Complications requiring multiple interventions, complications of complications, complications occurring prior to referral, and expected and unrelated complications should all be counted as separate complications and included in the CCI®. Invasive diagnostics without findings should not be considered as a complication since purely diagnostic.

Conclusion: We observed an extensive and steadily increasing use of CDC and CCI® in RCTs, highlighting the importance of their consistent application. Provided by the original developers of the CDC and CCI® and based on an international survey of their frequent users, the current consensus offers much-needed guidance for challenging scenarios. This will further improve the consistency and accuracy of complication reporting, leading to higher quality RCTs, improved cost estimations, and better quality control, ultimately benefiting all stakeholders.

Thorax

Abstract citation ID: znae118.053

Air-Leak-Management Supported by Ventilation-SPECT/CT: A New Perspective on a Long-Known Problem

H. Gelpke[1], L. Guglielmetti[1], H. Nagel[2], B. Klaeser[2], A. Zehnder[1]
[1]*Visceral and Thorax Surgery, Cantonal Hospital Winterthur, Winterthur*
[2]*Radiology and Nuclear Medicine, Cantonal Hospital Winterthur, Winterthur*

Background: Prolonged air leakage (PAL) is a common problem after lung surgery. Localization of air leaks (AL) remains challenging in some cases especially in minimally invasive surgery. Ventilation-SPECT/Computertomography (vSPECT/CT) has been reported as potential aid to identify and localize AL.

Aims: To evaluate vSPECT/CT as potential aid for the localization of AL and explore its use as support for PAL management.

Methods: Retrospective analysis of a case series of seven patients with PAL after minimally invasive thoracic surgery at our institution in 2023 for which vSPECT/CT was applied.

Results: Six patients underwent oncologic lung resections, one patient underwent thymectomy for a thymoma. In 5/7 cases an AL was spotted with vSPECT/CT (maximal AL ranged from 40-2000 ml/min). In the remaining two cases (with a maximal AL of 1900ml/min for 1 day, and 10 ml/min after more than 4 weeks and continuous clinical signs of PAL), the AL could neither be localized during revision surgery.

Nevertheless, the AL ceased in all patients after revision surgery. In two cases the detected AL supported the continuance of conservative treatment as it confirmed a leak within the prior resection site (maximal AL 40ml/min and 200ml/min). These results are depicted in the attached visual abstract.

Conclusion: The use of vSPECT/CT for localizing ALs proved to be precise in all instances where an imaging spot was observed (5/5 cases). Additionally, in the two cases where no spot was detected, no AL was found during subsequent revision surgery. These initial results are promising and support further prospective studies of a broader group of cases, reinforcing the role of vSPECT/CT as valuable aid in managing PAL.

Abstract citation ID: znae118.054

Correlation of Self-Assessed Manual Dexterity and Actual Performance in Surgical Simulation – One Year Follow Up

S. Hillinger[1], T. Brunn[1], I. Opitz[1], U. Held[2], L. Hofer[2], N. Zellweger[1], B. Battilana[1], R. Werner[1]
[1]*Thoracic Surgery, University Hospital Zürich, Zürich*
[2]*Institute of Epidemiology, Biostatistics and Prevention, University of Zürich, Zürich*

Background: Simulation training has proved to be beneficial in many fields of professions including medicine and might be included already during medical school.

Aims: We evaluated if medical students rate their manual dexterity as good or above average and if this self-assessment (SA) correlates with the actual performance in a surgical simulation.

Methods: Basic surgical tasks have been performed by medical students in the 3rd and 4th year for a total of 4 rounds on 2 identical Lap-Sim® surgical simulators. Three questionnaires, before and after the simulation as well as follow up after 1 year had to be answered.

Descriptive statistics stratified by career goal (surgical/undecided/ nonsurgical) for outcomes of simulation parameters are reported. Associations between surgical career goal and SA of manual dexterity with three performance parameters (tissue damage, time and path length) are estimated in linear regression models.

Results: Out of 102 participating students 41 stated surgery as their career goal, 18 a nonsurgical field, and 43 were undecided. 87.8% of the surgical group rated their dexterity as good or above average (86.1% in the undecided group), 88.9% of the nonsurgical group as below average or good. A positive association of SA with tissue damage has been found statistically significant (p=0.033).

One year after the simulation (n=97) 13.4% changed their career goal from undecided to surgical, whereas 8.2% changed from undecided to non-surgical. 92.7% wanted to have simulation training integrated into the curriculum.

Conclusion: A correlation of self-assessed manual dexterity has been found in the surgical group for tissue damage, but not for time and path length. Simulation training might help students in decision making for a surgical field and therefore recruit future surgeons, which could be shown in the one-year follow-up.

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Does Surgical Margin Affect Recurrence and Survival after Pulmonary Segmentectomy for cT1 Lung Cancer?

A. Donlagic[1], E. Zanfrini[1], E. Abdelnour-Berchtold[1], J. Y. Perentes[1], T. Krueger[1], C. Forster[1], M. Gonzalez[1]
[1]*Thoracic surgery, Lausanne University Hospital, Lausanne*

Background: During segmentectomy for early-stage non-small cell lung cancer (NSCLC), the recommended distance between the tumour and the intersegmental plane is at least 1 cm and the recommended ratio between tumour and surgical margin (M/T) should be at least 1.

Aims: The aim of the study is to evaluate the association between surgical margin and the risk of recurrence, as well as overall survival, after pulmonary segmentectomy.

Methods: Single centre study of consecutive patients undergoing pulmonary segmentectomy for cT1N0M0 NSCLC from January 2017 to December 2022.

Results: In total, 291 patients (median age: 69 years) underwent segmentectomy for cT1a (n=65), cT1b (n=152) and cT1c (n=74) cN0 NSCLC. Surgical approach was performed by video-assisted thoracic surgery in 99% and conversion thoracotomy was necessary in 2.4%. Single segmentectomy was performed in 183 patients (63%). The median number of dissected lymph nodes was 7 (IQR 4-12). The median size of tumour was 15 mm (IQR 11-20). The median surgical margin was 13mm (IQR 7-22) with 32% of patients had surgical margin of less than 10mm with only one patient with R1 resection. M/T ratio >1 was achieved in 49%. Nodal upstaging was found in 14 patients (5%). During the follow-up, 63 patients (21%) were lost and removed from analyses. Local recurrence was observed in only 3 patients (1%) and distant in 19 patients (8%). Recurrence free survival was significantly associated with PET FDG uptake > 3 (HR:4.89), pleural invasion (HR: 3.02) and nodal upstaging (HR: 3.79). However, surgical margin <10 mm or ratio < 1 were not correlated with increased recurrence (HR: 0.78; p=0.624) (HR: 0.69; p = 0.404) or poorer survival (HR: 1.14; p=0.806) (HR: 1.73; p= 0.309), respectively.

Conclusion: Our preliminary data indicates that local recurrence is infrequent after pulmonary segmentectomy for cT1N0 NSCLC, even with a limited surgical margin.

Abstract citation ID: znae118.056

Dysregulated MicroRNAs Contribute to Chemotherapy-Resistance of Pleural Mesothelioma

M. B. Kirschner[1], F. Schläpfer[1], M. Meerang[1], I. Opitz[1]
[1]Department of Thoracic Surgery, University Hospital Zurich, Zurich

Background: Dysregulated expression of microRNAs has been shown to contribute to response to chemotherapeutic agents in several cancers, including pleural mesothelioma (PM). In previous work, we found expression of several tissue-microRNAs to correlate with patient's response to cisplatin-pemetrexed.

Aims: We want to understand how altering the expression of these microRNAs affects cell growth and chemo response.

Methods: PM cell lines MSTO-211H (biphasic), H28, Meso-1, Mero-82 (epithelioid) and non-malignant MeT-5A were reverse transfected with synthetic microRNA mimics for 15 candidates. Following transfection, cell growth, colony forming ability, and migratory potential were assessed using standard assays. Furthermore, transfected cells were exposed to increasing concentrations of cisplatin to evaluate sensitivity to these drugs.

Results: Overexpression of seven candidate microRNAs resulted in growth inhibition in all investigated PM cell lines five days post transfection. The strongest effects were observed for miR-380-5p, miR-221-3p, miR-210, miR-625-3p, and miR-19b, which reduced cell growth to 30-60%. Growth of non-malignant MeT-5A cells remained largely unaffected (Fig. A). Overexpression of those microRNAs also resulted in a strong reduction of colony forming ability (Fig. B), while an effect on wound healing capacity (migration) could not be observed. Finally, we found that especially overexpression of miR-221-3p, miR-625-3p and miR-19b was able to sensitise cells towards cisplatin, with the strongest effect observed in MSTO-211H for miR-221-3p (IC50 from 17.6µM to 2.7µM) and miR-19b (IC50 from 17.6µM to 0.7µM), and in Mero-82 for miR-625-3p (IC50 from 3.75µM to 0.8µM) (Fig. C).

Conclusion: We show that overexpression of several microRNAs has the potential to alter PM cell growth and colony forming ability. Furthermore, microRNA overexpression can sensitise cells towards cisplatin, although the degree of sensitisation varies between different cell lines. Current analyses focus on the response towards the cisplatin/pemetrexed doublet and on the effect on cell cycle and expression of associated genes.

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Loco-Regional Ropivacaine Analgesia Via a Surgically Placed Intercostal Catheter after Anatomic Lung Resection: Prospective, Placebo-Controlled, Double-Blind; Randomized Superiority Trial

A. Hojski[1], M. Krämer[2], P. Gecas[2], D. Bolliger[3,4], A. Lampart[3], D. Lardinois[2]
[1]University Hospital Basel, Basel
[2]Division of Thoracic Surgery, Department of Surgery, University Hospital Basel, Basel
[3]Clinic for Anaesthesia, Intermediate Care, Prehospital Emergency Medicine and Pain Therapy, University Hospital Basel, Basel
[4]Department of Clinical Research, University Hospital Basel, Basel

Background: Even after minimally invasive anatomic lung resection, pain remains a burden for patients. Current guidelines recommend the surgical placement of intercostal catheters at the end of the surgery to promote faster recovery after lung surgery.

Aims: The aim of this trial was to investigate the analgesic efficacy of continuous loco-regional application of ropivacaine via an intercostal catheter and to establish this method as a possible standard of care in postoperative analgesia management.

Methods: Between December 2021 and October 2023, we evaluated the efficacy of surgically inserted intercostal catheters. Patients were eligible when undergoing anatomic VATS lung resection under general anesthesia for confirmed or suspected stage I lung cancer (UICC, 8th edition). Patients received ropivacaine at a concentration of 2 mg/ml or a placebo through an elastomer pump, flow rate of 6-8 ml/h for 72 hours after surgery. The sample size was calculated to find an NRS (numerical rating scale) difference associated with a pain reduction of 1.5 points.

Results: 14 patients were randomly included in the ropivacaine group and 18 in the placebo group. The patients' characteristics and preoperative pain scores were similar in both groups.

Between the observed groups there was no statistically significant difference in postoperative pain scores and morphine consumption. The NRS score for cough 24 hours postoperatively was 4.9 (±2.2) in the ropivacaine group and 4.3 (±2.4); p=0.474 in the placebo group. In addition, we were unable to determine any influence of the pain management on the relative postoperative pulmonary function.

Conclusion: Our results suggest that the analgesic efficacy of continuous loco-regionally applied ropivacaine administered through a surgically placed intercostal catheter after surgery does not have a positive effect on postoperative pain scores or morphine requirements. Instead, local analgesia started at the beginning of the procedure and covering several intercostal spaces should be considered.

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Potential Advantage of Magnetic Resonance Imaging in Detecting Thoracic Wall Infiltration in Pleural Mesothelioma. A Retrospective Single Center Analysis.

I. Barreto[1], S. Franckenberg[2], T. Frauenfelder[2], I. Opitz[3], O. Lauk[3]
[1]Visceral Surgery and Transplantation, University Hospital Zurich, Zurich
[2]Institute of Diagnostic and Interventional Radiology, University Hospital Zurich, Zurich
[3]Thoracic Surgery, University Hospital Zurich, Zurich

Background: Thoracic wall infiltration in pleural mesothelioma (PM) can be an important prognostic factor when determining the extent of resection. Currently, standardized imaging for restaging after neoadjuvant systemic therapy comprises contrast enhanced Computed Tomography (CT) or Positron Emission Tomography (PET/CT) scan.

Aims: However, thoracic Magnetic Resonance Imaging (MRI) could be a better discriminator of chest wall infiltration prior to surgery. To increase the preoperative staging accuracy, we introduced a MRI protocol at our center.

Methods: A retrospective analysis of this prospective new imaging protocol was performed from 07/2018 to 08/2023, including descriptive analysis for patient`s sex, age, nicotine consumption, asbestos exposure, histological subtype, TNM-stage, RECIST criteria and number of neoadjuvant therapy cycles. Preoperative restaging included routine imaging and MRI. After histological diagnosis of PM, neoadjuvant therapy was conducted, followed by partial pleurectomy or extended pleurectomy/decortication, with intraoperative biopsies of suspicious chest wall lesions. The CT/MRI results were compared to the intraoperative biopsies. Sensitivity and specificity of both modalities were analyzed.

Results: Twenty-five patients (mean age 65.4, 12% female) with possible chest wall infiltration were included out of the 35 patients with PM treated during the observation period. Of the 10 patients with actual chest wall infiltration, 9 (90%) had a T-Stage of 3 or higher, 9 (90%) had PM of epithelioid histologic subtype and 4 (40%) a R2-Resection. The mean overall survival of all patients was 18.88 months (8-58).

In our study, thoracic MRI showed a high sensitivity (90%) and specificity (100%) for the detection of chest wall infiltration, especially when compared to the CT scan (sensitivity of 10%).

Conclusion: With the adjunctive use of thoracic MRI we demonstrated a higher sensitivity for detection of chest wall infiltration compared to conventional imaging prior to surgery. This may facilitate the preoperative assessment of the extent of resection. Nevertheless, larger studies are required to confirm these results.

Abstract citation ID: znae118.059

Risk Factors for Prolonged Air Leakage after Uniportal Anatomical Segmentectomy

O. Rieder[1], K. Gioutsos[2], M. Galanis[2], T. L. Nguyen[2], Ö. Senbaklavaci[2], P. Dorn[2]
[1]Inselspital – University Hospital Bern, Bern
[2]University Clinic for Thorax Surgery, Inselspital – University Hospital Bern, Bern

Background: As the population ages and comorbidities increase, minimal invasive anatomical segmentectomies are increasingly being performed. Complications are to be considered in this vulnerable population.

Aims: Our aim was to investigate the incidence and risk factors for prolonged air leak in patients undergoing minimally invasive single-port pulmonary segmentectomy at our institution.

Methods: Retrospective analysis of all patients undergoing uniportal segmentectomy in our department from March 2015 to August 2023. Prolonged air leak (PAL) was defined as an air leak that lasted longer than 5 days.

Results: 575 segmentectomies were performed using uniportal video-assisted thoracoscopic surgery (uVATS). 374 complex segmentectomies (65.0%) and 405 (70.4%) single segmentectomies were performed. Prolonged air leak occurred in 88 patients (15.3%). Length of stay and duration of drainage were 8.6 (±4.86) and 10.6 (±8.12) days in the PAL subgroup, whereas they wer 3.6 (±2.25) and 2.0 (±1.3) days in the non-PAL group, both statistically significant. Patients with COPD GOLD II/III were significantly more common in the PAL group.

Using machine learning, two models were developed that predicted the occurrence of PAL with an accuracy of 70 %. The first model detected the following parameters as significant: removal of segment 2 or 8, diabetes, inhalers, squamous cell carcinoma. The second model recognized DLCO (%), pack-years, FEV1 (%) and operation time as parameters.

Furthermore, we used recursive partitioning to develop a decision tree that stratified PAL risk by answering 1-3 yes/no questions. Patients with >28 pack-years and DLCO < 71% had a 77% probability of developing prolonged air leak.

Conclusion: Severe COPD, low DLCO and FEV1, increased pack-years, inhalers, diabetes, and segment 2 or 8 surgery were identified as risk factors for prolonged air leak. These findings may help in the planning of surgery and the use of sealants at the end of surgery in high-risk patients.

Transplantation

Abstract citation ID: znae118.060

Immune Checkpoint Inhibitors Before Liver Transplantation May Increase the Risk of Rejection: A Meta-Analysis

B. Moeckli[1], C. Toso[1], C. H. Wassmer[1], S. El Hajji[1], R. Kumar[1], S. Lacotte[2], P. Compagnon[1]
[1]*Departement of Surgery, Geneva University Hospitals, Geneva*
[2]*Transplantation and Hepatology Laboratory, University of Geneva, Geneva*

Background: Immune checkpoint inhibitors (ICI) represent a major breakthrough in cancer immunotherapy. Several molecules have shown efficacy in HCC and are increasingly used as a bridging therapy before liver transplantation. Initial reports have raised concern about severe rejections in patients following ICI therapy.

Aims: This meta-analysis assesses the risk of neoadjuvant ICI therapy before liver transplantation.

Methods: We systematically searched MEDLINE, Web of Science and Embase for studies including all patients treated with ICI therapy before liver transplantation from a given center. A random-effects model was applied to pooled results with *a priori* determined subgroup analyses.

Results: Eight studies published during the past three years fulfilled all inclusion criteria. All studies are noncomparative case series, one prospective, and seven retrospective. Studies included 52 patients who received various PD1 inhibitors between 1 and 253 days prior to liver transplantation. Patients treated with an ICI ahead of transplantation demonstrated an overall relative risk (RR) of 2.5 [95% CI: 1.4-3.8] for an acute rejection event. Furthermore, a subgroup analysis showed that patients who received PD1 inhibitors up to 30 days (RR 7.2 [95% CI: 4.9-10.5]) or between 30 and 60 days (RR 7.2 [95% CI: 5.1-10.3]) prior to liver transplantation suffered a higher rejection risk than patients with a "washout period" beyond 60 days (RR 1.8 [95% CI: 0.6-4.9]). The ICI, age, and underlying etiology were insignificant for RR in their subgroup analysis.

Conclusion: PD1 inhibitors within two months of liver transplantation may significantly elevate rejection risk. This meta-analysis provides valuable insights to inform clinical decision-making. Nevertheless, future trials remain imperative to establish definitive guidelines.

Abstract citation ID: znae118.061

Impact of Transjugular Intrahepatic Portosystemic Shunt on Hepatocellular Carcinoma: Prospective Cohort of Liver Transplant Candidates' Analysis

S. El Hajji[1], C. Toso[1], B. Möckli[1], P. Compagnon[1], S. Lacotte[1], F. Cauchy[1]
[1]*Geneva University Hospitals, Geneva*

Background: Transjugular intrahepatic portosystemic shunt (TIPS) is used to mitigate the side effects of portal hypertension. However, its impact on hepatocellular carcinoma (HCC) remains unclear.

Aims: We aimed to evaluate its effect on HCC dynamics and patients' survival.

Methods: We analysed 43'734 liver transplant candidates diagnosed with HCC from the prospective Scientific Registry of Transplant Recipients database (1985-2022). A total 7'404 patients with and without TIPS were propensity score matched 1:3. We assessed wait-list changes in total tumor volume, HCC count, and alpha-fetoprotein levels. We examined survival rates from time of listing and post-transplantation, as well as the incidence of HCC recurrence post-transplantation.

Results: Pre-matching, TIPS patients exhibited poorer liver function and less advanced HCCs. Post-matching, TIPS correlated with a decrease in HCC nodules count (-0.24 vs 0.11, p = 0.008) over a median waiting period of 225 days (IQR 94; 441) and better overall survival rate from listing (93.0% vs 89.1% at one year, p = 0.0003). TIPS was not associated with altered changes in waitlist tumor volume (0.26 vs -0.07 cm3/month, p = 0.26) and AFP (14.62 vs 12.67 ng/mL, p = 0.79) compared to the non-TIPS group. Post-transplant survival rates (91.8% vs 91.7% at one year, p = 0.25) and HCC recurrence (5.2% vs 5.4% at 5 years, p = 0.73) were similar, with a median follow-up of 5.6 years (IQR 2.7; 9.6)

Conclusion: TIPS improved waitlist survival and is associated with decreased HCC nodule count, potentially due to a better efficacy in HCC treatment. However, TIPS did not have a measurable impact on HCC growth or aggressiveness.

Abstract citation ID: znae118.062

Long-Term Ex Situ Normothermic Kidney Perfusion

R. X. Sousa Da Silva[1,2], J. Binz[2,3], F. Huwyler[2,3], B. M. Helmchen[4], L. Mancina[1,2], K. Wernlé[1,2], Y. Kalbas[5], M. Müller[1], M. Hefti[2], D. Becker[2], M. Weisskopf[6], M. W. Tibbitt[2,3], P. Dutkowski[1,2], P. A. Clavien[1,2], P. Kron[1]
[1]*Swiss HPB and Transplant Center Zurich, Department of Surgery and Transplantation, University Hospital Zurich, Zürich*
[2]*Liver4Life Wyss Zurich, Wyss Translational Center, Wyss Zurich, ETH Zurich and University of Zurich, Zürich*
[3]*Macromolecular Engineering Laboratory, Department of Mechanical and Process Engineering, ETH Zurich, Zürich*
[4]*Department of Pathology and Molecular Pathology, and Institute of Molecular Cancer Research (IMCR), University Hospital Zurich, Zürich*
[5]*Department of Traumatology, University Hospital Zurich, Zürich*
[6]*Center for Surgical Research & Central Biological Laboratory, University Hospital Zurich, Zürich*

Background: Marginal grafts are increasingly considered for transplantation due to the widening gap of available donor grafts and waiting recipients. Graft assessment and repair prior to implantation are therefore essential to minimize the risk of failure. Normothermic perfusion has not been widely evaluated for kidney grafts, with existing perfusions limited to 2 days.

Aims: The aim of this study was to develop a long-term (>3 days) normothermic *ex situ* swine perfusion model in kidney grafts, while maintaining organ viability. We also wanted to investigate possible regenerative processes of the kidney during this period outside the donor animal.

Methods: Swine kidneys were retrieved with minimal injury. After cannulation, organs were perfused at 37°C for up to several days in a newly designed normothermic *ex situ* device with automated blood gas and glucose regulation, addition of nutrition, antibiotics, and vasodilators. Kidney biopsies, urine and perfusate samples were taken daily for analysis as well as markers of viability.

Results: In total 17 kidneys were perfused. Four kidneys were perfused for 3 or more days. Viability was maintained up to 4 days without

histological evidence of glomerular and minimal to moderate tubular necrosis. We observed upregulation of ki67 and pH3 in tubular cells with mean values of up to 14.2% and 2.2% respectively. This expression of ki67, a proliferation associated protein, correlated with the duration of *ex situ* perfusion.

Conclusion: This is the first report of normothermic kidney perfusion for up to 4 days with unprecedented observation of upregulated ki67 and pH3 after multiple days of perfusion. These preclinical results open the door for development of long-term perfusion protocols for discarded human grafts while also hinting at limitations and challenges.

Trauma

Abstract citation ID: znae118.063

Accuracy in Navigated Percutaneous Sacroiliac Screw Fixation: A Systematic Review and Meta-Analysis

R. Haveman[1], B. van de Wall[2], P. Haefeli[2], F. Beeres[2], R. Babst[3], B. C. Link[2]
[1]*Cantonal Hospital Lucerne, Lucerne*
[2]*Orthopaedic and Trauma Surgery, Cantonal Hospital Lucerne, Lucerne*
[3]*Faculty for Health Sciences and Medicine, University Lucerne, Lucerne*

Background: Percutaneous sacroiliac screw placement is a challenging procedure in patients with pelvic fractures. To overcome these challenges, navigated techniques have emerged as an alternative to conventional 2D fluoroscopy for guiding screw placement. However, it remains to be seen whether navigated techniques truly have a beneficial effect on accuracy, radiation exposure and occurrence of complications.

Aims: We performed a meta-analysis to investigate whether navigated techniques are superior to conventional 2D fluoroscopy in percutaneous sacroiliac screw fixation.

Methods: The electronic databases were searched for both randomized clinical trials and observational studies comparing percutaneous sacroiliac screw fixation with 2D fluoroscopy to new navigated techniques (2D or 3D fluoroscopic navigation with a c-arm, computer assisted ultrasound navigation, O-Arm navigation, mobile CT navigation, robotic navigation). Effects were pooled and presented as odds ratio, mean difference, and standardized mean difference with corresponding 95% confidence interval.

Results: In total 18 studies were included. New navigated techniques had a higher accuracy (81% versus 91% with MD 10%, 95% CI 5-14%). The greatest benefit in accuracy was found in studies with more advanced navigated techniques (O-Arm, mobile CT or robotic navigation). Also, fluoroscopy time (MD 72.13 seconds, 95% CI 7.73;92.91) and fluoroscopy frequency (MD 17.22 images in total, 95% CI 7.73;26.70) were lower for new navigated techniques. Radiation dose was higher for new navigated techniques (SMD 0.50, 95% CI 0.01;0.99). Surgery duration showed no significant difference. Similar results were found among in vitro studies. Complications were rare in both groups.

Conclusion: This meta-analysis demonstrated a higher accuracy of screw positioning, lower fluoroscopic frequency and time for navigated percutaneous sacroiliac screw fixation compared to conventional 2D fluoroscopy. Complications are acceptably low for both groups. Future studies should focus on which of the navigated techniques is the best and whether the implementation costs of a new technique outweigh its benefits.

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Analysis of Eligibility of the S1 Corridor for the Trans-Sacral Screw Placement in Geriatric Patients

M. Polt[1], C. Zindel-Geisseler[1], C. Sommer[1], P. Stillhard[1], D. A. Müller[2], Y. P. Acklin[1], C. Michelitsch[1]
[1]*Surgery, Cantonal Hospital Graubünden, Chur*
[2]*Radiology, Cantonal Hospital Graubünden, Chur*

Background: Minimal-invasive placement of a trans-sacral screw represents an increasingly popular method of fixation for Fragility Fractures of the Pelvis (FFP), with variable upper sacral anatomy representing the main challenge. Little is known about the variability of sacral anatomy in the geriatric population and the potential effect of osteoporosis on the upper sacral anatomy and thus S1 corridor morphology.

Aims: To examine the eligibility (>12 mm) of the S1 corridor for the trans-sacral screw placement in a geriatric population and to analyse what pelvic dysmorphism signs might serve as predictors for an ineligible S1 corridor.

Methods: We analysed S1 corridor in pelvic CT scans of 107 geriatric patients without history of fracture or other pelvic pathology. First, the eligibility for the trans-sacral screw placement was determined by measuring the width and the height of the central portion of the S1 corridor. Then, pelvises were examined for signs of dysmorphism. The correlation of these signs with the ineligible S1 corridor was analysed.

Results: In our geriatric population with average age of 79,55 ± 8.79 years (male : female 0.88) 44% of S1 corridors were not eligible for a trans-sacral screw. In this ineligible group the height was shown to be a more significant limiting dimension (90,9%), compared to the width in 68,2% ($p<0.05$). Mamillary processes, not recessed sacrum and dysmorphic sacral foramina were present in 38,3%, 34,6%, and 26,2% respectively, with not recessed sacrum demonstrating a significant correlation with a too narrow S1 corridor ($p<0.05$).

Conclusion: The analysed geriatric population demonstrates a high prevalence of a too narrow S1 corridor, which makes a placement of a trans-sacral screw risky or even impossible. The height of the S1 corridor represents the main limiting factor with a dysmorphism sign of a not recessed sacrum being a significant predictor for the ineligible S1 corridor.

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Assessment of Safe Early Fixation Strategies in a Cohort Polytraumatized Patients – How is the Surgical Treatment Influenced by the Injury Pattern?

S. Halva[1], R. Pfeifer[1], F. K. L. Klingebiel[1], Y. Kalbas[1], T. Berk[1], V. Neuhaus[1], H. C. Pape[1]
[1]*Traumatology, University Hospital Zurich, Zurich*

Background: While the inital assessment and the intial treatment of potentially life-threatening injuries is well-described, the surgical treatment strategy following initial resuscitation remains controversial. Timepoint of surgery and type of surgery still reamin topic of discussions. Various, different strategies for optimal timing of fracture fixation in polytrauma patients exist.

Aims: This study tests the hypothesis that a concept of clearing patients for early definitive surgery that relies on anatomical and physiologic parameters is influenced by the injury distribution.

Methods: Polytrauma patients treated at a Level 1 trauma center (01.01.2016 - 31.12.2018). Inclusion: primary admission, injury severity score (ISS) ≥16points, requirement of surgical fixation of major extremity or a truncal injury. Exclusion: death <72h after admission, severe traumatic brain injury (TBI). Stratification according to surgical fixation concept: Early total care (ETC, all surgeries <24 h), safe definitive surgery (SDS, staged surgeries <72h), and damage control orthopaedics (DCO, definitive care after stabilization). Endpoints: mortality, complication rates. Parameters of interest: Injury severity and distribution (ISS/AIS), pathophysiologic parameters of hemorrhagic shock, coagulopathy, hypothermia, soft tissue trauma.

Results: 527 patients, mean age 54.8 SD19.9 years, mean ISS 26.9 SD9.0 points, mortality 20.5%. Group ETC (n=21, 3.9%), Group SDS (n = 284, 53.9%), Group DCO (n = 222, 42.1%). Abdominal and spinal injuries associated with ETC (AIS Abdomen; OR 2.1, 95%CI 1.1 to 4.0, $p = 0.026$: AIS Spine OR 2.0, 95%CI 1.2 to 3.4, $p = 0.007$). Extremity and pelvic injuries associated with SDS (OR 1.8, 95%CI 1.1 to 2.8, $p = 0.012$ and OR 1.3, 95%CI 1.0 to 1.7, $p = 0.036$), head injuries associated with DCO (OR1.5, 95%CI 1.3 to 1.8, $p < 0.001$). Head injuries were most relevant for mortality and were associated with patients undergoing DCO (29.7%) (ETC; 23.8%, SDS; 13.0%).

Conclusion: The concept of staged early fixation for major extremity and axial injuries (SDS) was successfully applied in the majority of patients. Predominant head and abdominal injuries were associated with ETC or DCO. The injury distribution influences decision making towards surgical management that is associated with a low complication rate.

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Association Between Documented Intraoperative and Postoperative Adverse Events: An Analysis of Over 100,000 Surgical Trauma Cases

A. Mittlmeier[1], C. Canal[2], S. Dell-Kuster[3,4], H. C. Pape[1], V. Neuhaus[1]
[1]Division of Trauma Surgery, University Hospital Zurich, University of Zurich, Zurich
[2]Department of Surgery, Cantonal Hospital Thurgau, Frauenfeld
[3]Clinic for Anaesthesia, Intermediate Care, Prehospital Emergency Medicine and Pain Therapy, University Hospital Basel, University of Basel, Basel
[4]Epidemiology, Biostatistics and Prevention Institute, University of Zurich, Zurich

Background: Intraoperative adverse events (iAEs) are common during surgical procedures. However, structured and comparable documentation often depends on the physician's subjective assessment of each iAE.
Aims: The aim of this study was to validate the hypothesis that iAEs during surgical interventions are clearly associated with further postoperative complications and prolonged hospital stays.
Methods: We performed a retrospective analysis comparing surgical patients with and without any iAEs regarding postoperative outcomes during the hospitalization. We analyzed more than 100,000 patients with surgically treated injuries between January 2012 and December 2022 from over 70 institutions across Switzerland. Outcome parameters were further compared using a 1:1 case-control matching method, while controlling for same age, gender, main diagnosis and procedure.
Results: Regarding outcomes, patients with iAEs had a significantly longer duration of surgery (131 vs. 77 minutes), a prolonged length of hospital stay (10 vs. 8 days), a significantly higher need for an intensive care unit (ICU) stay of more than one day (7% vs. 3%), and a significantly higher rate of postoperative and procedure-associated complications (28% vs. 7%) than those without iAEs. The prolonged duration of surgery, length of stay, and postoperative and procedure-associated complications in the iAE group were also confirmed in the matched-pair analysis to be associated with poorer patient outcomes while controlling for significant characteristics.
Conclusion: In line with the current literature, our data show a clear relevance of iAEs as crucial factors for patient outcomes, manifesting in significantly longer durations of surgery, prolonged lengths of stay, and more postoperative complications, in a broad spectrum of surgical trauma procedures. We propose the mandatory documentation of iAEs through a standardized classification system, such as ClassIntra, and in accordance with the Intraoperative Complications Assessment and Reporting with Universal Standards (ICARUS) guidelines for clinical practice and surgical research.

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Cement Augmentation for Proximal Humerus Fractures: A Meta-Analysis of Randomized Trials and Observational Studies

Y. Lecoultre[1,2], F. Beeres[1,2], B. van de Wall[1,2], B. C. Link[1], F. Tillmann[1], F. Pretz[1], R. Babst[1,2]
[1]Department of Orthopedic and Trauma Surgery, Cantonal Hospital Lucerne, Lucerne
[2]Faculty of Health Sciences and Medicine, University of Lucerne, Lucerne

Background: It is unclear if elderly patients treated with plate osteosynthesis for proximal humerus fractures benefit from cement augmentation.
Aims: This meta-analysis aims to compare cement augmentation to no augmentation regarding healing, complications, and functional results.
Methods: PubMed, Embase and Cochrane Central Register of Controlled Trials were searched for randomized clinical trials and observational studies. Effect estimates were pooled across studies using random effects models. The primary outcome is overall complication rate. Stratified analyses were performed for types of complication (implant related or systemic). Secondary outcomes include re-interventions, hospital stay, operation time, functional scores, and general quality of life.
Results: Five observational studies and one randomized controlled trial with a total of 541 patients were included. The overall complication rate was significantly lower in the augmented group (15.6% versus 25.4%, OR 0.54 (95%CI 0.33–0.87)). This was caused by a reduction of implant related complications (10.4% vs 19.9%, OR 0.49 (95%CI 0.28, 0.88)). No difference in humeral head necrosis was found. Data on re-intervention, hospital stay, and operation time was limited but did not show significant differences. No impact on functional scores and general quality of life was detected.
Conclusion: This meta-analysis shows that cement augmentation may reduce overall complications, mainly by preventing implant related complications. No difference was detected regarding need for reintervention, functional scores, general quality of life and hospital stay. This is the first meta-analysis on this topic. It remains to be seen whether conclusions will hold when more and better-quality data becomes available.

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New Generation Superior Single Plating versus Low-Profile Dual Mini-Fragment Plating of Diaphyseal Clavicle Fractures - A Biomechanical Study

T. Pastor[1], T. Pastor[2,3], I. Zderic[2], T. Berk[4], F. Souleiman[5], E. Vögelin[3], F. Beeres[1], B. Gueorguiev[2]
[1]Luzerner Kantonsspital, Orthopädie und Traumatologie, Lucerne
[2]AO Research Institute, Biomechanics, Davos
[3]Inselspital Bern, Handchirurgie, Bern
[4]Universitätsspital Zürich, Traumatologie, Zürich
[5]Traumatologie, Universitätsklinik Leipzig, Leipzig

Background: Recently, a new generation of superior clavicle plates was developed featuring the variable-angle locking technology for enhanced screw positioning and optimized plate-to-bone fit design. On the other hand, mini-fragment plates used in dual plating mode have demonstrated promising clinical results. However, these two bone-implant constructs have not been investigated biomechanically in a human cadaveric model.
Aims: To compare the biomechanical competence of single superior plating using the new generation plate versus dual plating with low-profile mini-fragment plates.
Methods: Sixteen paired human cadaveric clavicles were assigned pairwise to two groups for instrumentation with either a 2.7 mm Variable Angle Locking Compression Plate placed superiorly (Group 1), or with one 2.5 mm anterior plate combined with one 2.0 mm superior matrix mandible plate (Group 2). An unstable clavicle shaft fracture AO/OTA15.2C was simulated by means of a 5 mm osteotomy gap. All specimens were cyclically tested to failure under craniocaudal cantilever bending, superimposed with bidirectional torsion around the shaft axis and monitored via motion tracking.
Results: Initial stiffness was significantly higher in Group 2 (9.28±4.40 N/mm) compared to Group 1 (3.68±1.08 N/mm), p=0.003. The amplitudes of interfragmentary motions in terms of craniocaudal and shear displacement, fracture gap opening, and torsion were significantly bigger over the course of 12500 cycles in Group 1 compared to Group 2; p≤0.038. Cycles to 2 mm shear displacement were significantly lower in Group 1 (22792±4346) compared to Group 2 (27437±1877), p=0.047.
Conclusion: From a biomechanical perspective, low-profile 2.5/2.0 dual plates demonstrated significantly higher initial stiffness, less interfragmentary movements, and higher resistance to failure compared to 2.7 single superior variable-angle locking plates and can therefore be considered as a useful alternative for diaphyseal clavicle fracture fixation especially in unstable fracture configurations.

Upper Gastrointestinal Tract

Abstract citation ID: znae118.069

Overall Survival in Patients with Esophageal Cancer and Clinical Complete Response after Radio Chemotherapy: Should a Watchful Waiting Strategy be the new Standard of Care?

S. Gerber[1,2], M. Berger[3], H. Hemmatazad[4], D. Candinas[1], D. Kröll[1], T. Haltmeier[1], Y. Borbély[1]

[1]Department for Visceral Surgery and Medicine, Inselspital, Bern University Hospital, Bern
[2]Department for General and Visceral Surgery, Spital Interlaken, Interlaken
[3]Department of Oncology, Inselspital, Bern University Hospital, Bern
[4]Department for Radiation Oncology, Inselspital, Bern University Hospital, Bern

Background: The current standard of care for curative treatment of esophageal cancer (EC) consists of neoadjuvant radio chemotherapy (RCT) followed by resection. However, an organ-sparing approach with a watchful waiting (WW) strategy and resection only in case of cancer recurrence is gaining importance in patients with clinical complete response (cCR) after RCT. Nevertheless, data on overall survival, particularly in subgroups with and without tumor recurrence, is limited.

Aims: To compare overall survival (OS) rates in patients with cCR based on initial management and at time of recurrence.

Methods: We retrospectively analyzed data from all patients with EC and cCR to RCT between 01/2014 and 12/2021. OS- and disease-free survival was calculated using Kaplan-Meier survival analysis.

Results: Of 96 patients with cCR after RCT, 45 underwent resection (47%), and 51 (53%) a WW approach. There were no significant differences in baseline patient or tumor characteristics.

In the WW group, 28 patients (55%) had cancer recurrence. Of those, 11 patients (of 28, 39%) underwent either salvage esophagectomy or endoscopic submucosal dissection in curative intent.

No significant difference in OS could be detected in patients with WW and either no recurrence or recurrence treated in curative intention (p=0.716). Further, OS was significantly longer in those patients than in patients with primary resection (p=0.031) and WW patients with recurrence and palliative treatment (p<0.001). (Fig 1).

Conclusion: In a WW concept for patients with EC and cCR after RCT, patients with cancer recurrence can achieve the same OS as patients without recurrence if treated in curative intention. Moreover, OS in both those patient groups was superior to that of patients undergoing direct resection after RCT, supporting a WW approach as at least safe and applicable in clinical practice. Further prospective data are needed to determine the value of WW as standard of care for patients with cCR following neoadjuvant RCT.

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Pathological Complete Response after Radio Chemotherapy and Esophagectomy – false Sense of Security?

S. Gerber[1,2], H. Hemmatazad[3], M. Berger[4], D. Candinas[1], D. Kröll[1], T. Haltmeier[1], Y. Borbély[1]
[1]Department for Visceral Surgery and Medicine, Inselspital, Bern University Hospital, Bern
[2]Department for General and Visceral Surgery, Spital Interlaken, Interlaken
[3]Department for Radiation Oncology, Inselspital, Bern University Hospital, Bern
[4]Department for Oncology, Inselspital, Bern University Hospital, Bern

Background: Esophageal cancer (EC) is associated with a high morbidity and mortality, even in a curative treatment approach. The current standard of care for curative treatment of EC consists of neoadjuvant radio chemotherapy (RCT) followed by resection. Pathological response in the resected tissue is a well-known predictor of disease-free (DFS) and overall survival (OS). Yet, even in a pathological complete response (pCR), cancer recurrence is not infrequent.

Aims: To analyze DFS and OS in patients with pCR after trimodal therapy and identify risk factors for recurrence.

Methods: We retrospectively analyzed all patients with pathological complete response after RCT and esophagectomy treated for EC between 01/2014 and 12/2021. Clinical data such as demographic data, tumor characteristics at staging and restaging and postoperative follow-up, were extracted from electronic medical records.

Results: Of 28 patients, 10 (35.7%) developed cancer recurrence. There were no statistically significant differences in patient or tumor characteristics between patients with or without recurrence.

Recurrence occurred after a median 21 months (IQR 30). Median OS was 40.5 months (IQR 40) in patients with and 48.5 months (IQR 32) in patients without recurrence (p=0.121). Recurrence was mostly distant (n = 9, 90%). 4 (of 10, 40%) patients were then addressed in curative, 6 (60%) in palliative intention.

Predictive factors for cancer recurrence were persistent tumor in endosonography and/or computed tomography during restaging.

Conclusion: Even in patients with pCR after RCT and esophagectomy, around one third develops cancer recurrence. A tight follow-up with special attention to distant rather than local recurrence seems beneficial. Patients with an aspect of only partial response at restaging are at higher risk for recurrence and should be monitored even closer.

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Reconstruction Techniques and Associated Morbidity after Minimally Invasive Gastrectomy for Cancer – Insights from the GastroBenchmark and GASTRODATA databases

M. Schneider[1], J. Kim[2], F. Berlth[3], Y. Sugita[4], P. Grimminger[5], G. L. Baiocchi[6], G. de Manzoni[7], M. Bencivenga[7], S. Nunobe[4], T. G. Consortium[1], T. G. Consortium[7], H. K. Yang[2], C. A. Gutschow[1]
[1]Department of Surgery, University Hospital Zurich, Zurich
[2]Department of Surgery, Seoul National University Cancer Hospital, Seoul
[3]Department of Surgery, University Hospital Tuebingen, Tuebingen
[4]Department of Gastroenterological Surgery, Cancer Institute Hospital of the Japanese Foundation for Cancer Research, Tokyo
[5]Department of Surgery, University Hospital Mainz, Mainz
[6]Department of Surgery, University Hospital Brescia, Brescia
[7]Department of Surgery, University Hospital Verona, Verona

Background: Various anastomotic and reconstruction techniques are used to restore intestinal continuity after minimally invasive total (TG) and subtotal distal gastrectomy (DG).

Aims: Their effects on anastomotic leakage and postoperative morbidity have not been extensively studied.

Methods: Patients after minimally invasive TG and DG were selected from a cohort of 9356 oncological gastrectomies performed between 2017-2021 in 44 specialized centers.

Results: Three anastomotic techniques (circular stapled (CS, 3.7%); linear stapled (LS, 93.8%); hand sewn (HS, 2.5%)) and three types of bowel reconstruction (Roux (RX, 51.5%); Billroth I (BI, 23.1%); Billroth II (BII, 25.4%)) were identified after TG (n=878) and DG (n=3334). Postoperative morbidity was higher after TG compared to DG (AL 5.2% vs. 1.1%, p≤0.001; 90-day mortality 1.6% vs. 0.4%, p≤0.001; overall morbidity 28.6% vs. 16.3%, p≤0.001; major morbidity 15.4% vs. 8.0%, p≤0.001).

Anastomotic leakage rate in the TG cohort was higher after CS (13.1%) and HS (7.9%) than after LS anastomoses (1.9%, p<0.001). Similarly, overall (CS: 43.9%, HS: 28.6%, LS: 23.1%) and major complications rates (CS: 25.2%, HS: 11.1%, LS: 12.0%) as well as mortality (CS: 4.7%, HS: 2.2%, LS: 0.8%) were higher after CS. Multivariate analysis confirmed anastomotic technique as a predictive factor for anastomotic leakage (Fig. 1), but not for occurrence of mortality, overall and major complications.

In the DG cohort, most (98.7%), outcomes were similar for all types of bowel reconstruction: Anastomotic leakage (BI: 1.4%, BII 0.8%, RX 1.2%, p=0.440), 90-day mortality (BI: 0%, BII 0.1%, RY: 1.1%%, p=0.109), overall (BI: 14.5%, BII: 15.0%, RX: 18.7%, p=0.208) and major morbidity (BI: 7.9%, BII: 9.1%, RX: 7.2%, p=0.219).

Conclusion: In suitable situations, DG should be preferred to TG, as postoperative morbidity is significantly lower. In addition, LS should be the preferred method of anastomosis after TG. Conversely, the techniques for bowel reconstruction can be chosen according to the surgeon's preference.

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Small Cuts, Big Difference? The Impact of a Minimally Invasive Thoracic Phase during Ivor Lewis Esophagectomy on Long-Term Quality of Life of Esophageal Cancer Patients

K. Neuschütz[1], L. Fourie[1], N. Germann[1], A. Pieters[1], S. Däster[1], F. Angehrn[1], J. Klasen[1], B. Müller[1], D. Steinemann[1], M. Bolli[1]
[1]Clarunis University Digestive Health Care Center, Basel

Background: Due to improved survival of esophageal cancer patients, long-term quality of life (QoL) is increasingly gaining importance. We analyzed QoL of patients treated with open Ivor Lewis esophagectomy (Open-E) or a hybrid operation including laparotomy and a robot-assisted thoracic phase (hRob-E), as well as a standard group of healthy individuals.

Aims: The aim of this study is to evaluate the impact of a minimally invasive compared to an open approach during the thoracic phase of Ivor Lewis esophagectomies on quality of life.

Methods: With a median follow-up of 36 months after hRob-E (n=28) and 40 months after Open-E (n=43), patients' QoL was assessed using the European Organization for Research and Treatment of Cancer (EORTC) QoL Questionnaire Core 30 (QLQ-C30) and the EORTC Esophagus specific QoL questionnaire 18 (QLQ-OES18).

Results: Patients showed similar clinical-histological characteristics, yet hRob-E patients had significantly higher ASA scores at surgery (p<0.001). Patients and healthy controls reported similar global health status, emotional and cognitive functions. All of the surgically treated cancer patients reported reduced role and social functioning, fatigue, nausea and vomiting, dyspnea and diarrhea. However, physical functioning of Open-E patients was significantly reduced compared to healthy controls (p=0.019). In addition, a trend towards a better pain score after hRob-E compared to Open-E emerged (p=0.063). Regarding QLQ-OES18, hRob-E and Open-E treated patients similarly reported eating problems, reflux, and troubles swallowing saliva.

Conclusion: The general health status is not impaired after esophagectomy. Despite higher ASA scores, QoL of hRob-E patients is similar to that of patients operated with Open-E. Moreover, patients after hRob-E appear to have a better score regarding physical functioning and a better pain profile than patients after Open-E, indicating a benefit of a minimally invasive approach during the thoracic phase.

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Transgastric Laparoscopic Resection of Gastric Submucosal Tumors: An Alternative Approach in Anatomically Challenging Locations?

D. Kröll[1], J. Fischer[1], Y. Borbély[1], T. Haltmeier[1], D. Candinas[1], P. Aeschbacher[1]
[1]*Visceral Surgery and Medicine, Inselspital, University Hospital of Bern, Bern*

Background: Surgical resection remains the recommended method in treatment for patients with Gastrointestinal stromal tumors (GIST). However, resection in anatomically challenging locations, e.g., lesser curvature of the stomach or gastroesophageal (GE) junction, might be challenging.

Aims: We report the feasibility and the safety outcomes of a case series of patients who underwent trans gastric resection of gastric GISTs.

Methods: Patients with intraluminal GIST at the fundus, GE junction, lesser curvature, or pre-pyloric region resected with transgastral resection were included between 2023 and 2024 in a single-center institution. Data on the demographics, comorbidities, lesion parameters, operative findings, complications, and histopathology were collected.

Results: A total of 8 patients (47.5 % female; mean age 60.5 years) were identified. The average tumor size was 3.2 (range 2.7–4.1) cm. The average tumor size was 4.6 cm. No intra- or postoperative complications occurred.

Conclusion: The transgastric resection technique for GIST at anatomically challenging locations was feasible and safe and presented an alternative and additional armamentarium of resection techniques.

Vascular (Vessels)

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Bridging Stent-Graft Implantation in the Renal Artery During Complex Endovascular Aortic Procedures does not alter the Renal Sonographic Resistance Index

D. Reitnauer[1], T. H. W. Stadlbauer[1], A. Zimmermann[1]
[1]*Vascular Surgery, University Hospital Zurich, Zurich*

Background: Ultrasound examination of the resistance index (RI) of both kidneys can provide evidence of renal artery stenosis. The extent to which the RI is changed after bridging stent-graft implantation due to altered flow characteristics is not known.

Aims: The aim of the study was to investigate the influence of renal bridging stent-grafts on the RI of the kidneys after fenestrated endovascular aortic repair (FEVAR).

Methods: Ultrasound examinations of the kidneys were conducted using a GE LOGIQ S7 XDclear ultrasound system (GE Medical Systems AG, Glattburg, Switzerland). The evaluation was performed according to SGUM 2D standard criteria. The RI was determined in all consecutive patients on the day before and after renal bridging stent-graft implantation. For this purpose, the kidneys were divided into 3 areas according to the standard protocol and 2 RI values were recorded per area by evaluating intrarenal arterial Doppler signals. Mean values were calculated and compared for each kidney.

Results: For 64 kidneys in 32 consecutive patients (73.9±7.8 years, 4 female, 28 male) treated with FEVAR and renal bridging stent–graft implantation pre- and postinterventional examinations were carried out. Sono-morphologically, the kidneys examined were inconspicuous (pre: size at least 107.1x52.4 mm, parenchymal margin 18.3 mm versus post: size at least 107.9x52.9 mm, parenchymal margin 18.6 mm, p>0.4). The arborization of the renal perfusion was preserved pre and post implantation. The RI did not differ before and after implantation (0.66±0.06 versus 0.67±0.07; p=0.10). None of the patients experienced severe impairment of renal function.

Conclusion: After successful implantation of a bridging stent-graft in a non-stenosed renal artery, there is no relevant change in the RI of the kidney. The RI seems therefore to be suitable for assessing renal perfusion after complex endovascular aortic therapy.

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Endovascular Treatment of Complex Aortic Aneurysms Using Inner Branch Device (IBEVAR): A Single Center Experience

S. Déglise[1], J. Longchamp[1], P. Ricciardi[1], E. Côté[1], R. Trunfio[1], C. Deslarzes-Dubuis[1]
[1]*Vascular Surgery, CHUV, Lausanne*

Background: Due to advances in devices and techniques, the endovascular approach using fenestrated or branched endografts has emerged as a valid and safe alternative for patients with complex aortic aneurysms, especially if considered at high risk for surgery. The use of inner branch devices (iBEVAR) combining benefits of fenestrations and outer branches could offer an ideal configuration in this context.

Aims: The aim of our study was to report our monocentric experience with iBEVAR in the treatment of complex aortic aneurysms.

Methods: A retrospective analysis of prospective data retrieved from 1 center between January 2020 and January 2024 was done. Endpoints were immediate technical success, postoperative morbidity, rate of re-intervention and mortality.

Results: During this period, 72 patients with a mean age of 68.5 years (range 41-88) were identified. The maximum preoperative mean aortic diameter was 56 mm (44-71 mm). The majority of patients was asymptomatic. For diffuse thoraco-abdominal aortic aneurysms, a 2-steps procedure was used. There were 34 off-the-shelf E-nside (47%) and the remaining 38 patients were treated with a custom-made Extra-Design graft (53%). Despite successful endograft deployment in all patients and branch catheterization in 69/72 cases (96%), the technical success was 94% due to an additional open conversion for ilio-mesenteric bypass. The 30-days mortality was 5.5%.

During the post-operative period, 19% of patients presented complications with 1 case of mesenteric ischaemia requiring a visceral resection and 2 cases of paralytic ileus, treated conservatively. 5 cases (6.9) of spinal cord ischemia were observed. During the median follow-up, 22 patients (31%) had a re-intervention, for endoleaks, bridging-stent events or limbs problems. The overall target vessel patency was 94%.

Conclusion: The use of iBEVAR appears to be safe and effective for the treatment of complex aortic aneurysms with an acceptable rate of complications. Strict follow-up is mandatory and about one-third of patients required a re-intervention. Further patients and longer follow-up are needed.

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Endovascular Arch Repair of Anastomotic Aneurysm and Pseudoaneurysm in Patients after Open Repair of the Ascending Aorta and Aortic Arch: A Case Series

D. Becker[1,2], J. Stana[1], C. F. Prendes[1], N. Konstantinou[1], T. Öz[1], M. Pichlmaier[3], S. Peters[3], N. Tsilimparis[1]
[1]Vascular Surgery, Ludwig-Maximilian-University Munich, Munich
[2]Vascular Surgery, University Hospital Bern, Inselspital, Bern
[3]Cardiac Surgery, Ludwig-Maximilian-University Munich, Munich

Background: Endovascular techniques have provided new options in the treatment of arch pathologies. Multiple studies have reported good results after endovascular treatment of aortic arch aneurysms and it has developed to be a considerable approach, especially in patients who are unfit for open surgery. In treatment of progressing distal pathologies after open ascending aorta and/or aortic arch replacement, the endovascular arch repair has shown promising results.

Aims: Aim of study was to investigate the outcomes of endovascular arch repair (b-TEVAR) with a custom-made double or triple branched arch endograft in patients with distal anastomotic aneurysms after open repair of the ascending aorta or proximal arch replacement.

Methods: Retrospective analysis was conducted of all consecutive patients with anastomotic aneurysms after open surgical repair involving the ascending aorta and/or aortic arch treated with b-TEVAR. All patients were treated with a custom-made double or triple inner-branched arch endograft. Study endpoints were technical success, 30-day and follow up mortality/ morbidity and re-interventions.

Results: Between 2018 and 2022, ten patients were treated with custom-made double or triple branched TEVAR due to anastomotic aneurysms after open ascending aorta and/or proximal aortic arch replacement. Eight patients received a triple and two a double arch branched endograft. Eight cases were performed electively and two urgently for contained rupture. Technical success was achieved in nine cases (90%). All elective patients survived. Two patients treated due to contained ruptures expired. Within 30 postoperative days, one transient ischemic attack occurred. No early endograft-related re-interventions were necessary. Median follow-up was 20 months. One patient died two months after discharge due to sepsis caused by pneumonia. No further deaths or endograft-related re-interventions were observed.

Conclusion: Endovascular aortic arch repair with double or triple inner-branched arch endograft for anastomotic aneurysms after open ascending and/or proximal arch replacement is technically feasible and a promising alternative in a patient cohort unfit for surgery.

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Infective Native Aortic Aneurysm: a Delphi Consensus Document on Treatment, Follow Up, and Definition of Cure

M. Giardini[1], T. R. Wyss[1], K. Sörelius[1]
[1]Winterthur

Background: Evidence is lacking to guide the management of infective native aortic aneurysm (INAA).

Aims: The aim of this study was to establish expert consensus on surgical and antimicrobial treatment and follow up, and to define when an INAA is considered cured.

Methods: Delphi methodology was used. The principal investigators invited 47 international experts (specialists in infectious diseases, radiology, nuclear medicine, and vascular and cardiothoracic surgery) via email. Four Delphi rounds were performed, 3 weeks each, using an online questionnaire with initially 28 statements. The panelists rated the statements on a 5-point Likert scale. Comments on statements were analysed, statements were revised and added or deleted, and the results were presented in the iterative rounds. Consensus was defined as ≥ 75% of the panel rating a statement as strongly agree or agree on the Likert scale, and consensus on the final assessment was defined as Cronbach's $\alpha > 0.80$.

Results: All 49 panelists fulfilled all four rounds, resulting in 100% participation. One statement was added based on the results and comments of the panel, resulting in 29 final statements: $n = 3$ on need for consensus, $n = 20$ on treatment, $n = 5$ on follow up, and $n = 1$ on definition of cure. All 29 statements reached agreement of ≥ 86%. Cronbach's α increased for each consecutive round; round 1, 0.85; round 2, 0.90; round 3, 0.91; and round 4, 0.94. Thus, consensus was reached for all statements.

Conclusion: INAA is rare, and high-level evidence is lacking to guide optimal management. This consensus document was established with the aim of helping clinicians manage these challenging patients, as a supplement to current guidelines. The presented consensus will need future amendments in accordance with newly acquired knowledge.

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Infective Native Aortic Aneurysms: A Delphi Consensus Document on Terminology, Definition, Classification, Diagnosis, and Reporting Standards

T. Wyss[1], K. Sörelius[1]
[1]Winterthur

Background: There is no consensus regarding the terminology, definition, classification, diagnostic criteria, and algorithm, or reporting standards for the disease of infective native aortic aneurysm (INAA), previously known as mycotic aneurysm.

Aims: The aim of this study was to establish this by performing a consensus study.

Methods: The Delphi methodology was used. Thirty-seven international experts were invited via mail to participate. Four two-week Delphi rounds were performed, using an online questionnaire, initially with 22 statements and nine reporting items. The panellists rated the statements on a five-point Likert scale. Comments on statements were analysed, statements revised, and results presented in iterative rounds. Consensus was defined as ≥ 75% of the panel selecting "strongly agree" or "agree" on the Likert scale, and consensus on the final assessment was defined as Cronbach's alpha coefficient > .80.

Results: All 38 panellists completed all four rounds, resulting in 100% participation and agreement that this study was necessary, and the term INAA was agreed to be optimal. Three more statements were added based on the results and comments of the panel, resulting in a final 25 statements and nine reporting items. All 25 statements reached an agreement of ≥ 87%, and all nine reporting items reached an agreement of 100%. The Cronbach's alpha increased for each consecutive round (round 1 = .84, round 2 = .87, round 3 = .90, and round 4 = .92). Thus, consensus was reached for all statements and reporting items.

Conclusion: This Delphi study established the first consensus document on INAA regarding terminology, definition, classification, diagnostic criteria, and algorithm, as well as reporting standards. The results of this study create essential conditions for scientific research on this disease. The presented consensus will need future amendments in accordance with newly acquired knowledge.

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Mobile vs Fixed Fluoroscopy System for EVAR Image Quality and Radiation Doses for Patients and Professionnals: Mobile C-Arm vs Hybrid Room for EVAR

S. Déglise[1], M. Nowak[2], A. Labarbe[2], J. Caldas Rodrigues[3], E. Côté[1], R. Trunfio[1], J. Longchamp[1], C. Deslarzes-Dubuis[1]
[1]Vascular Surgery, CHUV, Lausanne
[2]Institute of Radiation Physics, CHUV, Lausanne
[3]Radiology, CHUV, Lausanne

Background: Allowing less invasive treatments, endovascular aortic repair (EVAR) has become the gold standard worldwide for the treatment of abdominal aortic aneurysms, leading to questions regarding staff and patients' exposure to radiation. Widely performed in our center, EVAR was initially carried out on mobile C-arm (Cios-alpha, Siemens). Since 2022, EVAR was then performed in a hybrid room (Artis-Pheno, Siemens).

Aims: The aim of this study is to compare image quality and patients and professionals' radiation exposure between both systems.

Methods: Image quality has been tested for fluoroscopy and fluorography mode on the moving system, with PMMA plates and

copper disc. A Radcal ionization chamber was used to measure patient skin dose. Dosimetric and clinical parameters (e.i. Kerma, fluoroscopy time, BMI…) were recorded for 79 and 43 patients, respectively, on mobile C-arm and hybrid room. Staff exposure was measured with thermoluminescent detectors, on an anthropomorphic phantom, representative of the physician. Scattered radiation was created by irradiating PMMA plates. Different radiation protection gears have been tested comparable to daily clinical use.

Results: We showed that using the fluoroscopy mode, Cios-alpha was more irradiating for similar image quality as compared to the Artis-Pheno. Moreover, using the fluorography mode, Artis-Pheno provided a comparable dose rate but significantly better image quality.

When comparing similar patient cohorts (BMI, sex), kerma was twice higher on Artis-Pheno due to fluorography, accounting for 27% of the total dose.

In terms of staff exposure, the dose rate decreased by 51% and 99% in fluoroscopy, and 22% and 99% in fluorography when using Artis-Pheno compared to Cios-alpha (respectively, without any and with radiation protection gear).

Conclusion: Our study highlights the advantage of a fixed system (hybrid room) in term of both image quality and staff exposure compared to mobile system. However, particular attention must be paid to optimize protocols of such a machine to guarantee the best possible radiation protection for the patient.

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Perioperative and Mid-Term Outcomes of Bovine Xenografts in Infected Aortic/Iliac Surgery

J. A. Celi de la Torre[1], M. Hakimi[1]
[1]*Vascular Surgery, Lucerne Cantonal Hospital, Lucerne*

Background: Various methods of open-surgical treatment of infected aortic and iliac pathologies are available. The use of surgeon-made bovine pericardium grafts in infected aortic/iliac context has been associated with a low re-infection rate as well as high feasibility. Prefabricated (factory pre-sewn) bovine pericardium prostheses have been available for a few years. Studies reporting clinical results are rare.

Aims: Present the perioperative and mid-term outcomes of a bifurcated and straight bovine pericardium prostheses (BioModiVasc®) in infected aortic and iliac pathologies.

Methods: Retrospective database analysis of all vascular surgery operations between 2021 and 2023 at our centre.

Results: 28 BioModiVasc® grafts were implanted in 27 patients due to INAA (40,7%), VGEI (51,9%), trauma (3,7%) or Leriche-Syndrome (3,7%). Patients were predominantly male (85,2%) and often presented arterial hypertension (88,9%). Significant risk factors were infection in a remote site (29,6%), emergency/urgent operations in the past 12 months (22,2%) and previous vascular procedures (44,4%). Elevated CRP (88,9%) and soreness at site (81,5%) were the most common findings at presentation. CT-scan showed infection-typical findings in 96,3%. Pathogen was isolated in 77,8% of the cases. Median operation time was 300 minutes. 88,9% of the operations were emergency/urgent ones. 96,3% of the reconstructions were orthotopic, access was mostly transperitoneal (59,3%). Median hospital/ICU days were 19 and 2 respectively. Infection a/o operation-associated 30-day mortality was 11,1%. 3-deaths occurred at follow-up (median 12 months), non-infection a/o operation related. 1 patient required a re-do due to a duodenal erosion caused by the prosthetic anastomosis.

Conclusion: Open surgical treatment of aortic/iliac septic pathologies with the BioModiVasc® prosthesis yields good results, which are similar to the reported results of the use of surgeon-made bovine pericardial reconstructions.