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## SCS – SWISS COLLEGE OF SURGEONS ANNUAL MEETING 2026

## THE SURGICAL COLLECTIVE: JOINING FORCES FOR PROGRESS

**10 - 12 June | KKL LUCERNE**

## ABSTRACTS

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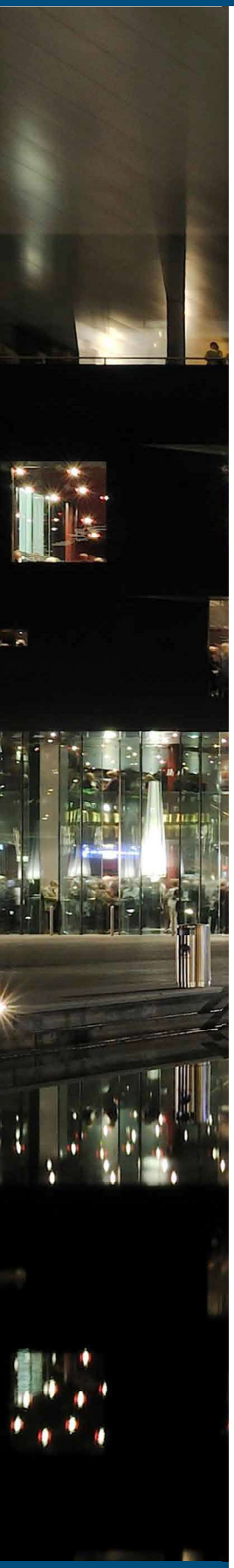

# SCS – SWISS COLLEGE OF SURGEONS ANNUAL MEETING 2026

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On behalf of the editorial board of SWISS KNIFE we wish you a highly active annual meeting of the Swiss College of Surgeons 2026 in Lucerne!

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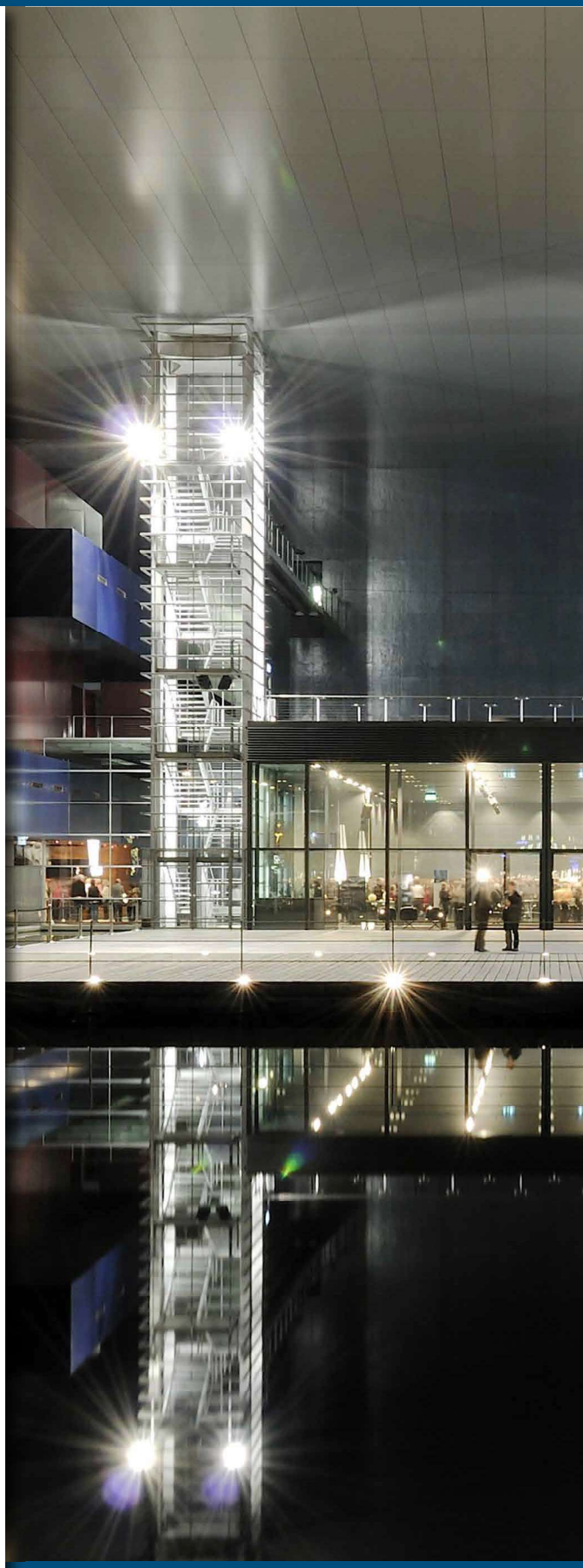

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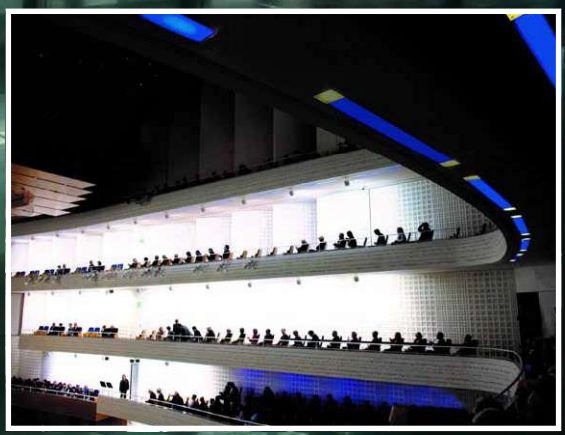

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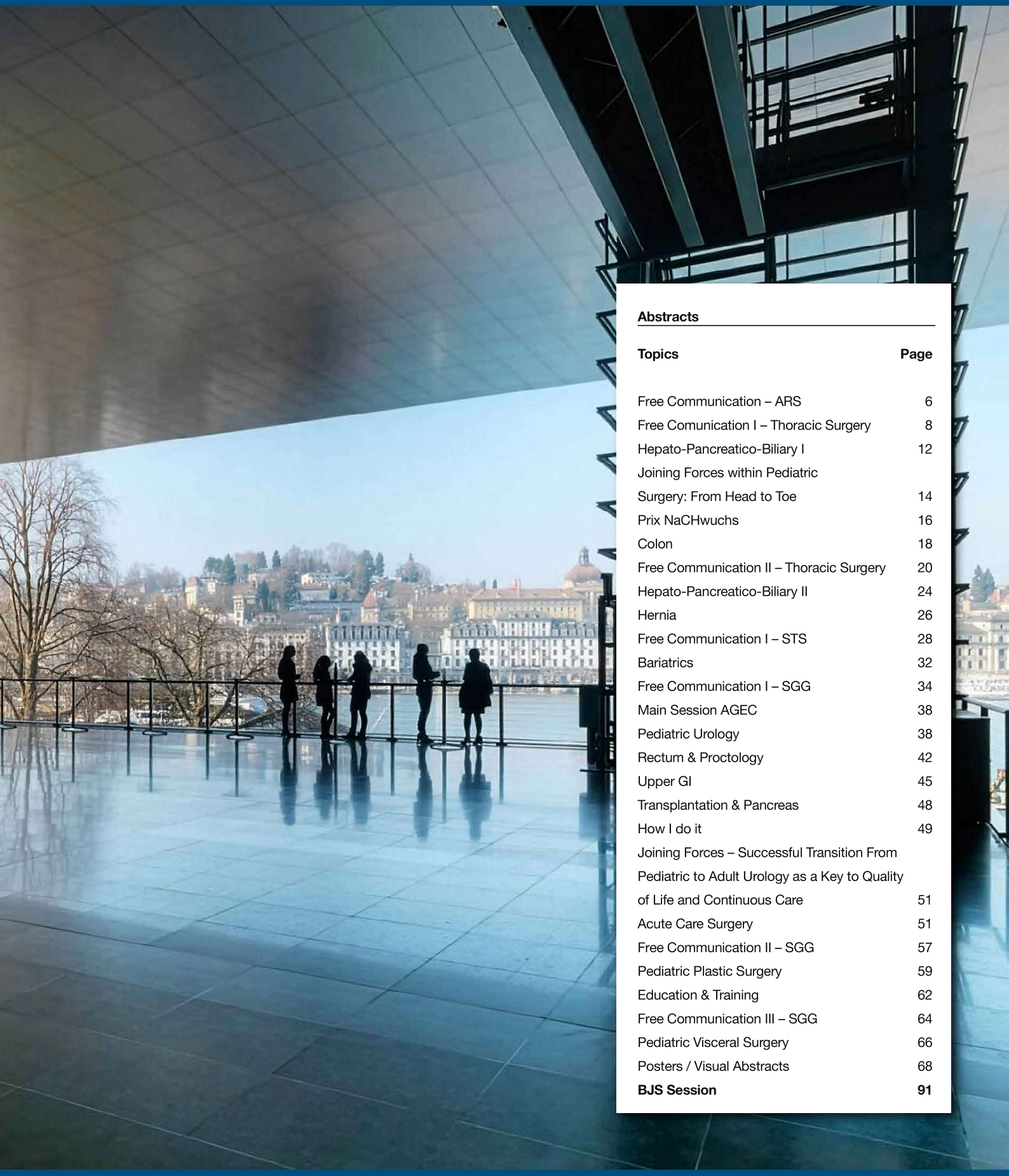

## Abstracts




Swiss College of Surgeons

Impressum

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## Free Communication – ARS

### Irreversible Electroporation & CD40 Agonism & TIGIT Blockade Improves Outcomes in Aggressive Orthotopic PDAC Model

H. L. Gros[1,2], H. Sonowal[1], M. Allsberry[1], L. S. Bohall[1], M. Abou Assali[1], R. White[1]
[1]Department of Surgery, University of California – San Diego, La Jolla; [2]Department of Visceral Surgery, Clarunis – University Digestive Health Care Center Basel, Basel

**Background:** Pancreatic ductal adenocarcinoma (PDAC) is an immunologically "cold" tumor with limited benefit from immune checkpoint inhibition. Irreversible electroporation (IRE) is a non-thermal local ablation therapy used in selected patients with advanced PDAC. In syngeneic orthotopic models, IRE plus intratumoral (IT) CD40 agonist antibody (CD40 Ab) showed anti-tumor immune effects and reduced liver metastases; this regimen is currently under clinical evaluation. TIGIT is an immune checkpoint that is highly co-expressed with PD-1 on infiltrating T cells in PDAC after IRE.
**Aims:** To evaluate whether systemic adjuvant TIGIT blockade (anti-TIGIT) improves outcomes after IRE+CD40 Ab in an aggressive orthotopic PDAC model.
**Methods:** Spontaneously metastasizing KPC46 PDAC organoids were implanted into the pancreatic tail of mice via laparotomy. When tumors reached approximately 7 mm, mice were randomized to sham laparotomy, IRE, IRE+CD40 Ab, sham+anti-TIGIT, IRE+anti-TIGIT, or IRE+CD40 Ab+anti-TIGIT (n=8-10/group). Immediately after IRE, CD40 Ab (50 µg) was administered IT once. Anti-TIGIT Ab (100 µg) was administered intraperitoneally every other day starting 48 hours post-IRE. Mice were euthanized on day 12 for assessment of tumor burden and immune profiling by flow cytometry. Survival cohorts included sham laparotomy, IRE, IRE+CD40 Ab, and IRE+CD40 Ab+anti-TIGIT.
**Results:** All IRE-treated groups showed smaller primary tumor volumes versus sham, with the greatest reduction after IRE+CD40 Ab+anti-TIGIT (Figure 1A). Flow cytometry demonstrated the largest reduction in regulatory T cells and the greatest increase in natural killer cells with triple therapy (not shown). These immune changes were associated with reduction in liver metastases on day 12 (Figure 1B). IRE+CD40 Ab+anti-TIGIT also improved survival over other groups with 22% complete responders (Figure 1C).
**Conclusion:** Adding systemic anti-TIGIT Ab to IRE+CD40 Ab improves local control, remodels the tumor immune microenvironment, reduces liver metastases, and prolongs survival. Ongoing experiments include rechallenging tumor-free surviving mice and comparison of anti-TIGIT to other immune checkpoint strategies.

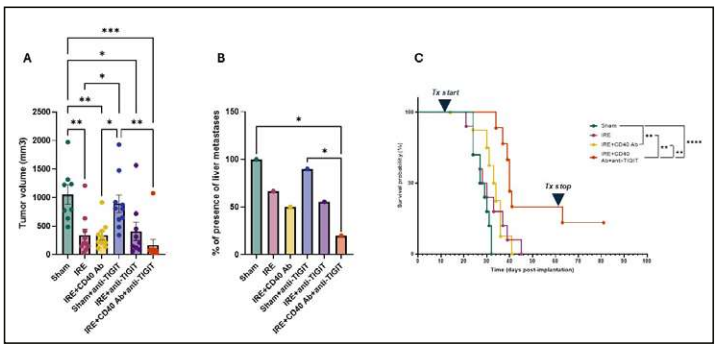


**Figure 1. (A) Tumor volumes measured 12 days after treatment begin. (B) Percentage of liver metastases. (C) Kaplan-Meier survival curves**

### Automating the Comprehensive Complication Index with Artificial Intelligence: Evaluation of Quality and Clinical Potential

P. Borgas[1], C. Nebiker[2], S. Staubli[3]
[1]Viszeralchirurgie, Clarunis – Universitäres Bauchzentrum, Basel; [2]Viszeralchirurgie, Kantonspital Aarau, Aarau; [3]HPB and Liver Transplant Services, Royal Free London NHS Foundation Trust, London

**Background:** The Comprehensive Complication Index (CCI) is a validated, clinically established, and sensitive measure of postoperative morbidity but is underutilised due to the labor-intensive and error-prone nature of manual complication extraction and grading. Large language models (LLMs) can analyse free-text surgical discharge summaries and accurately apply the Clavien-Dindo Classification (CDC). However, their ability to reliably compute the more complex CCI – requiring identification of multiple events, correct severity grading and weighted aggregation – remains unclear.
**Aims:** To evaluate the feasibility and accuracy of contemporary LLMs in extracting postoperative complications and computing the CCI from unstructured surgical discharge summaries.
**Methods:** Six LLMs (ChatGPT-5.2, Claude Sonnet 4.5, DeepSeek-V3.2, Mistral AI (2024), Gemini 3 Flash and Llama 4) were assessed using a tiered validation framework. After conceptual testing, each model analysed 20 de-identified real-world surgical discharge summaries. A three-layered prompting framework (preprocessing, complication extraction and computation, and consistency checking) was compared with naïve end-to-end analysis. Agreement with expert reference CCI values was assessed using intraclass correlation coefficients (ICC) and Bland-Altman analysis.
**Results:** All models correctly defined the CCI concept. Naïve analysis showed moderate agreement with reference CCI values (ICC(3,2) = 0.87), with the observed disagreement being driven by missed complications and incorrect aggregation. Structured prompting improved agreement to excellent (ICC(3,1)=0.93) with minimal systematic bias. ChatGPT and Claude achieved full agreement with reference CCI values across all cases. Discrepancies in other LLMs were attributable to ambiguity in clinical documentation or inherent interpretive boundaries of the CCI framework, rather than computational errors.
**Conclusion:** LLMs can accurately extract complications, assign CDC grades, and compute CCI from unstructured free-text surgical discharge summaries when guided by structured prompting. This demonstrates that AI can reliably perform complex morbidity aggregation and may reduce clinical workload while improving standardization of surgical outcome reporting. Further large-scale validation is warranted.

### Two Actionable Windows: Disentangling Early Mortality from Late Infection Risks Using Time-Resolved AI

K. L. Lucas[1], Y. M. Wintsch[1], T. Blatter[1], K. Triep[2], O. Endrich[2,3], H. A. Guillen-Ramirez[1], G. Beldi[1]
[1]Department of Visceral Surgery and Medicine, Inselspital, Bern University Hospital, University of Bern, Bern; [2]Medical Directorate, Medizincontrolling, Inselspital, University Hospital Bern, Insel Gruppe, Bern; [3]Department of Clinical Chemistry, Inselspital, Bern University Hospital, University of Bern, Bern

**Background:** Postoperative mortality and infection are frequently monitored using uniform clinical and laboratory strategies, despite likely arising from distinct pathophysiological mechanisms. Current one-size-fits-all monitoring may obscure actionable signals and limit the effectiveness of preventive interventions.
**Aims:** To disentangle the temporal and physiological drivers of early postoperative mortality and late postoperative infection using time-resolved, explainable machine-learning models, and to identify distinct postoperative risk windows to inform phase-specific clinical interventions.
**Methods:** We trained outcome-specific machine-learning models for 30-day mortality and postoperative infection using a retrospective cohort of 32,328 surgical episodes across seven specialties. Models integrated baseline patient characteristics with daily laboratory trajectories from postoperative days (POD) 0–7. Explainable AI techniques were used to quantify time-dependent feature importance, enabling differentiation between early "state"-driven risks and later "trajectory"-driven risks.
**Results:** Event rates were 4.6% (1,471/32,328) for mortality and 16.6% (5,374/32,328) for infection. Two distinct postoperative risk phases were identified. Rescue window (POD 0–2): Mortality risk was front-loaded, driven by baseline vulnerability and acute physiological derangements, particularly changes in haemoglobin (bleeding and transfusion) and creatinine (renal dysfunction), with maximal influence within the first 48 hours. Surveillance window (POD 3–7): Infection risk emerged later and was driven by evolving inflammatory trajectories rather than baseline state. Key predictors included CRP kinetics, platelet rebound patterns, and persistent dysglycaemia.
**Conclusion:** Postoperative mortality and infection exhibit distinct temporal and physiological signatures. A phase-specific care model is warranted, prioritizing hemodynamic stabilization and renal protection during the early rescue window (POD 0–2), followed by focused surveillance of inflammatory trajectories during the surveillance window (POD ≥3) to enable early infection detection. This framework supports a transition from generic postoperative monitoring to precision, time-adapted care.

### End-of-Surgery Prediction of Postoperative Infectious Complications Using Intraoperative Vital-Sign Dynamics

T. Blatter[1], Y. M. Wintsch[1], K. Triep[2], O. Endrich[2,3], H. A. Guillen-Ramirez[1], G. Beldi[1]
[1]Department of Visceral Surgery and Medicine, Inselspital, Bern University Hospital, University of Bern, Bern; [2]Medical Directorate, Medizincontrolling, Inselspital, University Hospital Bern, Insel Gruppe, Bern; [3]Department of Clinical Chemistry, Inselspital, Bern University Hospital, University of Bern, Bern

**Background:** Postoperative infections remain a leading cause of morbidity, yet risk stratification is often delayed until postoperative laboratory data becomes available. This leaves a critical decision window immediately after surgery unsupported by objective risk assessment.
**Aims:** To evaluate whether intraoperative physiological instability, captured through high-frequency vital-sign data, can predict postoperative infectious complications immediately at the end of surgery.
**Methods:** We developed a machine-learning framework using a retrospective cohort of 15,330 surgical procedures. The model integrated standard preoperative factors with intraoperative time-series data (heart rate, blood pressure, $SpO_2$, $EtCO_2$, and temperature). Beyond simple averages, we engineered interpretable dynamic features including trend stability, entropy, skewness, and kurtosis to capture higher-order physiological complexity. Model performance was evaluated using AUROC and calibrated across procedure clusters, with SHAP analysis used to identify key predictive drivers.
**Results:** Postoperative bacterial infection occurred in 515 (4.7%) procedures. While a model based solely on preoperative factors achieved an AUROC of 0.75, the inclusion of intraoperative vital-sign dynamics significantly improved discrimination to an AUROC of 0.86 (95% CI 0.85–0.89). Crucially, this end-of-surgery model approached the accuracy of models incorporating POD 2 laboratory data (AUROC 0.89) but provided risk stratification 48 hours earlier. Key physiological drivers included blood pressure instability (high kurtosis), baseline temperature deviations, and the cumulative burden of hypoxia.
**Conclusion:** Intraoperative vital-sign dynamics serve as a powerful digital biomarker, enabling

the prediction of infectious complications immediately at skin closure. This approach allows for targeted triage such as enhanced monitoring or early bundle activation in the recovery room, days before clinical symptoms or laboratory abnormalities appear.

### AI-Guided Postoperative Infection Surveillance: Lab Test Recommendations by Postoperative Day

Y. M. Wintsch[1], T. Blatter[1], K. Triep[2], O. Endrich[2,3], H. A. Guillen-Ramirez[1], G. Beldi[1]
[1]Department of Visceral Surgery and Medicine, Inselspital, Bern University Hospital, University of Bern, Bern; [2]Medical Directorate, Medizincontrolling, Inselspital, University Hospital Bern, Insel Gruppe, Bern; [3]Department of Clinical Chemistry, Inselspital, Bern University Hospital, University of Bern, Bern

**Background:** Early detection of postoperative bacterial infections is critical for improving surgical outcomes, yet current laboratory testing strategies are largely empirical and not procedure-specific. Leveraging large-scale electronic health record (EHR) data may enable evidence-based recommendations for optimized laboratory monitoring.
**Aims:** To derive and validate procedure-specific, data-driven recommendations for the selection, timing, and diagnostic thresholds of laboratory tests for early detection of postoperative bacterial infections.
**Methods:** This retrospective cohort study was conducted at an academic hospital and included surgical cases performed between May 2014 and September 2022. A consecutive sample of 91794 surgical procedures across 12 specialties was extracted from the EHR. Exclusion criteria were infection present on admission, missing diagnostic codes or unassignable to a procedure category, resulting in 32328 surgeries included in the final cohort. Each surgery was treated as an independent clinical episode. Parameters from the preoperative (age, sex, American Society of Anesthesiologists (ASA) score, comorbidities) and intraoperative (surgery duration, emergency status, ICU transfer, antibiotic administration) phases were used to define baseline characteristics. A total of 6 postoperative laboratory markers were selected in the predictive models according to imputation performance. The primary outcome was the occurrence of any postoperative bacterial infection. The predictive model was designed to determine which laboratory tests, including their optimal thresholds, should be performed on which specific postoperative day (POD), tailored to defined surgical procedure groups.
**Results:** The model achieved an AUROC of 0.79 on PODs 0-2 in the pooled cohort and recommended C-reactive protein for measurement across all procedure groups. Procedure-specific relevant markers included alkaline phosphatase, creatinine, platelets, and neutrophils. Clinicians' infection suspicion and testing practices can be observed from the use of C-reactive protein and neutrophils.
**Conclusion:** AI-guided analysis of routine EHR data, enables surgery-specific postoperative laboratory testing strategies. This approach allows to improve prediction of postoperative infection while optimizing resource utilization.

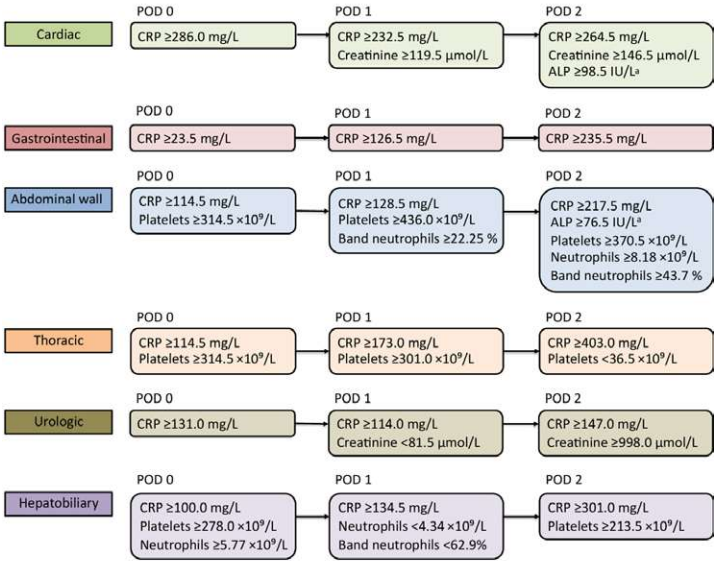


**Figure 1. Derivation of postoperative laboratory testing decision rules and thresholds**

### Systemic Translocation of Small Intestinal Microbiota as a Source of Surgical Site Infections

S. N. Zwicky[1], D. Spari[1], S. B. Jordi[1], G. Krutyke[2], D. Sanchez-Taltavull[1], S. Sundaralingam[1], L. Mordasini[1], E. Dohner[1], L. Bally[2], A. J. Macpherson[1], B. Yilmaz[1], G. Beldi[1]
[1]Department of Visceral Surgery and Medicine, Inselspital, Bern University Hospital, University of Bern, Bern; [2]Department of Diabetes, Endocrinology, Nutritional Medicine and Metabolism, Inselspital, Bern University Hospital, University of Bern, Bern

**Background:** Surgical site infections (SSIs) after abdominal surgery remain a leading cause of postoperative morbidity and mortality despite meticulous preoperative skin disinfection. The bacterial origin of SSIs and routes of dissemination remain unclear.
**Aims:** To determine the potential intestinal origin and dissemination routes of bacteria causing SSIs after abdominal surgery and to identify microbiota-associated intestinal risk signatures and modifiable preoperative nutritional factors that predispose patients to SSIs.
**Methods:** We performed metagenomic sequencing of small intestinal specimens and strain-resolved sequencing of matched bacterial isolates from the small intestine, mesenteric lymph nodes (MLNs), and infected surgical sites in patients undergoing pancreatic resection. Deep preoperative nutritional phenotyping was conducted to identify dietary patterns associated with intestinal microbiota states and SSI risk.
**Results:** This cross-compartment approach revealed clonal continuity of bacterial isolates from the small intestine through the MLNs to the postoperative infection site, demonstrating MLN-mediated bacterial translocation as a direct dissemination route. Metagenomic profiling of small intestinal contents at surgery further showed that reduced microbial diversity and Enterococcus dominance strongly predicted SSI risk. Preoperative dietary analysis identified high-fat intake as a key modifiable factor associated with this dysbiotic, infection-prone small intestinal state.
**Conclusion:** Together, our findings show an endogenous origin of SSIs in the small intestine and indicate translocation through MLNs as the route of infection. This endogenous source of SSIs opens the field for novel measures to prevent SSIs, including identification of patients at risk, dietary interventions and tailored antimicrobial prophylaxis.

### Quantification of Islet Cell Cluster Size Heterogeneity in the Juvenile Porcine Pancreas

D. Munoz Cruz, J. Frick, M. Adamina, L. Bühler, C. Gonelle-Gispert
Surgical Research Unit, MSS, University of Fribourg, Fribourg

**Background:** While whole-organ pancreas and islet allotransplantations offer effective alternatives for type 1 diabetes (T1D) treatment, their clinical use is limited by the shortage of human donors. Xenotransplantation is a potential solution to this challenge, with porcine pancreases emerging as an up-and-coming alternative source of islets. While neonatal or juvenile piglets are becoming increasingly favored for obtaining pancreatic islets, no optimal age for clinical application has been established. Debates continue regarding the islet size and function, which are mostly considered immature and are thus referred to as islet cell clusters (ICCs).
**Aims:** This study investigated the ICC size heterogeneity in tissue samples from six juvenile porcine pancreases, all 14 days of age.
**Methods:** The abundance of ICCs of different sizes (defined as small, intermediate, and large) was assessed in large images of pancreas sections. Automated workflows using NIS Elements software were developed to measure and cluster areas of immunofluorescent-stained beta- and alpha-cells, and to quantify the proportions of insulin- and glucagon-positive regions within the different-sized clusters.
**Results:** Small, well-developed islets (~100 µm) were consistently identified across all juvenile pancreases, with a density of 6.2 ± 2.5 clusters/mm² (Mean ± S.D.). Homogeneous numbers of intermediate-sized (14.3 ± 4.6 clusters/mm²) and small-sized (72.2 ± 12.6 clusters/mm²) clusters were also observed. Insulin staining predominated in small and intermediate clusters (4-fold higher than glucagon), while large clusters exhibited significantly more glucagon staining, consistent with characteristics of mature islets.
**Conclusion:** Although further studies are needed to confirm the clinical suitability of juvenile porcine ICCs, our findings suggest that 14-day-old piglets already possess significant amounts of small, mature islets. Optimizing islet isolation techniques, such as gradient centrifugation used in human islet isolation, may enable efficient purification of small islets from juvenile porcine pancreases for transplantation.

### Getting to the Root of the Problem: Surgical RCTs Are Poorly Designed Preventing Conclusive Decision Making

F. Abbassi[1,2,3], J. Rodrigues Ribeiro[1,2], P. A. Clavien[2,4,5,6], M. A. Puhan[1,2]
[1]Epidemiology, Biostatistics and Prevention Institute, University of Zurich, Zurich; [2]Hub for Translational Research and Liver/GI Health, FZ-Healthcare Foundation, Zurich; [3]Department of Visceral and Thoracic Surgery, Cantonal Hospital Winterthur, Winterthur; [4]Department of Surgery and Transplantation, University of Zurich, Zurich; [5]Wyss Zurich Translational Center, ETH Zurich and University of Zurich, Zurich; [6]Hepatobiliary surgery, Swiss Medical Network, Zurich

**Background:** Surgical randomized controlled trials (RCTs), although considered the gold standard for generating causal evidence, are often reported incompletely and inconsistently. We hypothesize that poor reporting may reflect a more fundamental problem, namely inadequate trial planning for informing clinical practice.
**Aims:** To examine the extent to which clinical relevance is considered in the aim and design, definition of primary and secondary endpoints, and interpretation in surgical RCTs.
**Methods:** We conducted a systematic literature search to identify all RCTs using the Comprehensive Complication Index® as an endpoint. From pre-trial documentation and final publications, we extracted information on study aims, design, endpoints, and sample size calculations. For trials with a statistically significant primary endpoints, we assessed whether results were interpreted in terms of clinical relevance.
**Results:** We identified 87 published RCTs. Pre-trial documents were available for 84(98%) trials; all defined a primary endpoint, but only 23(27%) reported the study design. Among the final publications, 20(23%) trials specified an aim to show superiority with a corresponding study design and 12(14%) a non-inferiority aim and design. The remaining 55 trials did not report a study aim but were basically designed and conducted as superiority trials. Sample size calculations were provided in 84(98%) trials, and 44(51%) achieved statistical significance for their primary endpoint. Of these, only 9(20%) interpreted their results from a clinical perspective.
**Conclusion:** Although endpoints and sample size calculations were usually reported, specific study aims and corresponding design as well as clinical interpretation were frequently lacking.

More than half of trials failed to demonstrate superiority and might have offered more meaningful guidance to clinical practice if designed as non-inferiority trials. These findings highlight limited awareness of study planning that clearly specifies appropriate aims-such as superiority or non-inferiority for different outcomes-to adequately assess the balance between beneficial and harmful effects when comparing surgical interventions.

| Characteristic | Protocol published N = 31 | Protocol unpublished[1] N = 8 | Registry record N = 45 |
|---|---|---|---|
| **Primary endpoint** | 31 (100%) | 8 (100%) | 45 (100%) |
| **Study design** | | | |
| Superiority trial | 10 (32%) | 4 (50%) | 2 (4%) |
| Non-inferiority trial | 6 (19%) | 0 (0%) | 1 (2%) |
| Equivalence trial | 0 (0%) | 0 (0%) | 0 (0%) |
| Not mentioned | 15 (48%) | 4 (50%) | 42 (93%) |
| **Sample size calculation** | 31 (100%) | 8 (100%) | 6 (13%) |

[1]Protocols described as unpublished are provided as supplementary material accompanying the final publication.

Discrete variables are expressed in number (percentage (%)).

**Table 1. Information reported in pre-trial documentation of published randomized controlled trials**

## Free Comunication I – Thoracic Surgery

### Primary Graft Dysfunction and Baseline Lung Allograft Dysfunction: Risk Factors and Associations With Outcomes After Lung Transplantation

A. Hasenauer[1], C. Soldini[1], E. Abdelnour-Berchtold[2], Z. Balmpouzis[3], R. Troxler[4], T. Schreder[5], K. Jahn[6], G. Berra[7], M. Gonzalez[1], J. Y. Perentes[1], M. Zellweger[1], L. Liaudet[8], A. Koutsokera[3], T. Krueger[1]

[1]Thoracic surgery, CHUV, Lausanne; [2]Thoracic Surgery, CHUV, Lausanne; [3]Pneumology, CHUV, Lausanne; [4]Radiology, CHUV, Lausanne; [5]Pneumology, Inselspital, Bern; [6]Pneumology, Unispital Basel, Basel; [7]Pneumology, HUG, Geneva; [8]Intensive care, CHUV, Lausanne

**Background:** Primary graft dysfunction (PGD) is the main cause of early morbidity and mortality after lung transplantation (LTx). Baseline lung allograft dysfunction (BLAD), indicating impaired graft function one year after LTx, is less well characterized, and its relationship with PGD remains uncertain.

**Aims:** We aimed to identify risk factors for PGD and assess its association with BLAD and outcomes.

**Methods:** All LTx recipients at Lausanne University Hospital (2008–2021) were retrospectively analyzed. Multivariate logistic regression identified risk factors for PGD and its association with BLAD and survival.

**Results:** Among 276 patients, 65 (23.6%) developed PGD III. Independent predictors were younger age (OR 0.98/y, p = 0.025), female sex (OR 2.45, p = 0.003), lower donor $PaO_2/FiO_2$ (OR 0.99 per 10 mmHg, p = 0.02), and higher transfusions (OR 3.3, p < 0.01). PGD III was associated with prolonged ventilation (57% vs 15%, p < 0.01), reoperation (32% vs 13%, p < 0.01), longer ICU (22 vs 5 days, p < 0.001), and hospital stay (38 vs 24 days, p < 0.001). BLAD occurred more often in PGD III (59% vs 38%, OR 2.4, p = 0.009) and in patients transplanted for fibrotic lung disease (36% vs 9%, OR 5.8, p < 0.001). BLAD correlated with higher transfusions, reoperation, and prolonged ventilation. Survival did not differ between PGD III and non-PGD (1-, 3-, 5-y: 83.5%, 74.2%, 66.0% vs 95.7%, 87.1%, 79.0%; p = 0.53) nor between BLAD and non-BLAD.

**Conclusion:** PGD III after LTx is associated with increased perioperative morbidity and a higher risk of BLAD. Both conditions correlate with transfusion requirements and ventilatory complications, emphasizing the need for targeted perioperative strategies to improve graft recovery and long-term function.

### Efficacy of Non-powered Stapler in Lung Volume Reduction Surgery of Severe Lung Emphysema: A Prospective Randomized Single-Blinded Monocentric Study

E. F. Macharia-Nimietz[1], M. Mallaev[1], P. Gecas[1], J. Vujic[1], A. Hojski[1], M. Tamm[2], D. Lardinois[1]

[1]Thoracic Surgery Department, University Hospital of Basel, Basel-City; [2]Faculty of Medicine, University Hospital of Basel, Basel-City

**Background:** Lung volume reduction surgery removes diseased emphysematous tissue but is often complicated by postoperative air leaks. Using staplers helps seal lung edges; manual staplers rely on surgeon force, while powered staplers aim to minimise tissue trauma and lower air-leak risk. Few studies compare both in LVRS.

**Aims:** This study aimed to assess whether the use of the non-powered AEONTM Endostapler during lung resection in patients with severe lung emphysema reduces the duration of postoperative air leak, as measured by the air leak volume over time, in comparison to the Echelon FlexTM Powered Plus Stapler in a prospective, randomised setting.

**Methods:** A total of 32 LVRS were performed on 19 patients, stratified by side of the operation. These procedures were randomly assigned to utilize either the non-powered or the powered stapler. Postoperative air leak was monitored using a digital recording system. The time to air leak closure, the incidence, and severity of air leaks, as well as the duration of chest tube placement were evaluated.

**Results:** Immediate postoperative air leaks were observed in 6 of 17 procedures (35.3%) using the non-powered and in 9 of 15 procedures (60%) performed with the powered stapler. The median time to closure of the air leak was considerably shorter in the non-powered procedures: 14.3 hours [6.7, 116] compared to 93.2 hours [2.1, 159] for the powered treatments (Figure 1). Cox regression analysis yielded a Hazard ratio of 1.6 (95% CI: 0.73-3.3) for a faster air leak closure with the non-powered stapler (P = 0.25) (Figure 2).

**Conclusion:** Both stapler systems are feasible for use in patients with severe lung emphysema. However, our results suggest a potential advantage of the non-powered stapler, as earlier air leak closure was achieved with it.

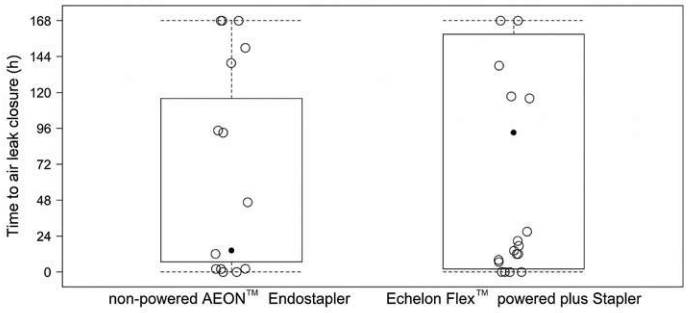


**Figure 1. Boxplot of time to air leak closure**

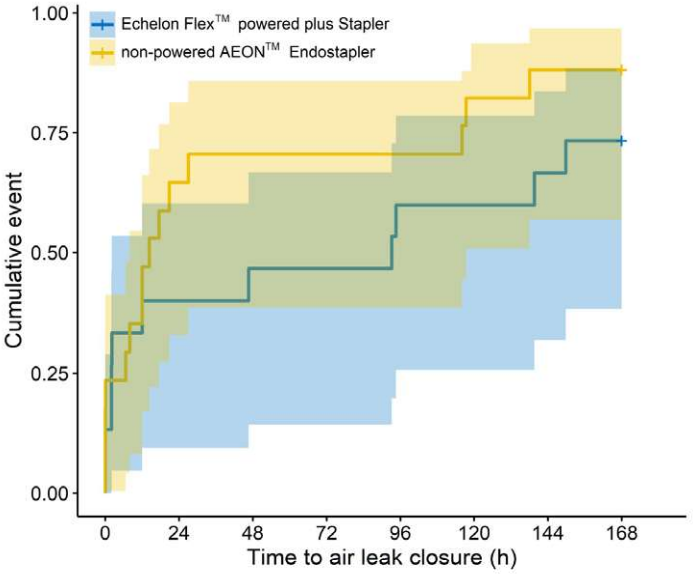


**Figure 2. Kaplan-Meier cumulative event curves for time to air leak closure**

### Continuous Paravertebral Catheter vs. Single-Shot Intercostal Block: Optimizing Postoperative Analgesia in Thoracic Surgery

E. Zanfrini[1], M. Gonzalez[1], L. Rosner[2]

[1]Thoracic Surgery, CHUV, Lausanne; [2]Anesthesiology, CHUV, Lausanne

**Background:** Effective regional analgesia plays a pivotal role in perioperative pain management by reducing opioid requirements and related complications, such as postoperative nausea, paralytic ileus, and impaired postoperative mobilization. Despite its importance, the optimal technique remains debated. This study compared the efficacy of continuous paravertebral catheter (KPV) versus single-shot intercostal block (BIC) in patients undergoing video-assisted (VATS) and robotic-assisted (RATS) lung resection.

**Aims:** To compare the efficacy of KPV against BIC in optimizing postoperative analgesia, reducing opioid consumption, and improving clinical recovery in thoracic surgery patients.

**Methods:** This prospective observational study (September 2024 - November 2025) compared intraoperative KPV against BIC within a standardized multimodal protocol. Primary outcomes included Visual Analogue Scale (VAS) pain scores and cumulative opioid consumption (MME). Secondary outcomes included complications and time to oral analgesia. A 1:1 propensity score-matched analysis adjusted for baseline imbalances.

**Results:** Of 229 patients undergoing lung resection (82 lobectomies, 119 segmentectomies, 24 wedge) via VATS or RATS, 118 received KPV and 111 BIC. KPV significantly reduced resting pain (POD 0-2) and opioid consumption (73.9 vs 188.4 mg MME, p < 0.001) over the first three days, differences persisting to day 5 (table1). In matched cohorts (61 patients/group, table 2), KPV provided superior resting analgesia (POD 0-3, P<0.001; P=0.013) and reduced pain on effort (POD 1, P=0.006). Cumulative opioid consumption (J0–J5) was significantly lower with KPV (93.2 vs 218.3 mg MME, P<0.001). KPV also facilitated earlier transition to oral analgesia (P=0.04) and was linked to fewer cardiac complications (P=0.042), despite 10.7% catheter dislocation.

**Conclusion:** Continuous paravertebral analgesia provides superior, sustained pain relief and

profound opioid sparing compared to intercostal block, supporting its prioritization in enhanced recovery pathways despite a learning curve for catheter placement.

| Patients | KPV (118) | BIC (111) | |
|---|---|---|---|
| Sex (male) | 57 (48%) | 50 (45%) | P=0.980 |
| Age | 67.18 ± 11.3 | 66.5±13.1 | P=0.203 |
| Lobectomy | 42 (35.6%) | 40 (36%) | P=0.940 |
| Segmentectomy | 62 (52.5%) | 57 (51%) | P=0.356 |
| Wedge | 15 (12.7%) | 9 (8%) | P=0.097 |
| Other | 3 (2.5%) | 5 (5%) | |
| VATS | 64 (54%) | 82 (73.8%) | P=0.314 |
| RATS | 54 (46%) | 22 (26.2%) | P=0.237 |
| Side (Right) | 80 (67.7%) | 54 (48.6%) | P=0.004 |
| Patients | KPV (118) | BIC (111) | |
| Operating time | 123.14 ± 46.34 | 120,8 ± 57.35 | P=0.452 |
| VAS J0 | 0.45 ± 0.8 | 1.26 ± 1.41 | P<0.001 |
| VASJ0 (effort) | 5.51 ± 2.71 | 6.26 ± 2.1 | P=0.012 |
| VAS J1 | 0.52 ± 0.8 | 1.51 ± 1.23 | P<0.001 |
| VASJ1 (effort) | 4.49 ± 1.92 | 5.02 ± 1.95 | P=0.065 |
| VAS J2 | 0.54 ± 0.8 | 1.33 ± 1.27 | P<0.001 |
| VASJ2 (effort) | 3.76 ± 2.14 | 4.28 ± 1.98 | P=0.109 |
| VAS J3 | 0.71 ± 1.09 | 1.01 ± 1.20 | P=0-135 |
| VASJ3 (effort) | 3.32 ± 1.66 | 3.58 ± 1.82 | P=0.472 |
| MME J0 (mg) | 26.97 ± 26.87 | 70.01 ± 60.31 | P<0.001 |
| MME J1 (mg) | 18.95 ± 22.76 | 44.51 ± 37.85 | P<0.001 |
| MME J2 (mg) | 19.38 ± 21.20 | 33.91 ± 32.39 | P=0.001 |
| MME J3 (mg) | 20.18 ± 23.46 | 35.27 ± 39.28 | P=0.009 |
| MME mg J0-J3 | 73.94 ± 70.64 | 188.4 ± 107 | P<0.001 |
| MME mg J0-J5 | 102.32 ± 96.69 | 214.28 ± 175.9 | P<0.001 |
| Drainage (days) | 2 (IQR 1-5) | 3 (1-5.75) | P=0.990 |
| Catheter (days) | 2 (IQR 1-4) | N/A | |
| Days until pain control on oral analgesic | 3.61 | 4.96 | P=0.040 |
| Hospitalisation (days) | 6 (4-9) | 6 (4-9) | P=0.066 |
| Mobilisation post op 0 | 02 :08 ± 01 :02 | 02 :11 ± 00 :57 | P=0.853 |
| Mobilisation post op 1 | 06 :35 ± 03 :26 | 06 :16 ± 02 :51 | P=0.608 |
| Mobilisation post op 2 | 06 :55 ± 03 :26 | 06 :34 ± 02 :55 | P=0.594 |
| Mobilisation post op 3 | 06 :57 ± 03 :56 | 06 :09 ± 02 :46 | P=0.319 |
| PONVJ0 | 8 | 6 | P=0.950 |
| PONVJ1 | 8 | 9 | P=0.793 |
| PONVJ2 | 5 | 10 | P=0.080 |
| PONVJ3 | 1 | 7 | P=0.034 |
| Respiratory complications | 12 (10%) | 19 (17%) | P=0.286 |
| Atelectasis | 1 (0.8%) | 4 (3.6%) | P=0.15 |
| Pneumonie | 10 (8.4%) | 14 (12.61%) | P=0.331 |
| Cardiac complications | 2 (1.6%) | 8 (7.2%) | P=0.042 |
| ICU transfer | 2 (1.6%) | 5 (4.5%) | P=0.21 |

Table 1

| Patients | KPV (61) | BIC (61) | |
|---|---|---|---|
| VAS J0 | 0.49 ± 0.82 | 1.31 ± 1.44 | P<0.001 |
| VASJ0 (effort) | 5.71 ± 1.93 | 6.3 ± 2.06 | P=0.086 |
| VAS J1 | 0.54 ± 0.84 | 1.53 ± 1.24 | P<0.001 |
| VASJ1 (effort) | 4.08 ± 1.80 | 4.99 ± 1.94 | P=0.006 |
| VAS J2 | 0.42 ± 0.73 | 1.34 ± 1.26 | P<0.001 |
| VASJ2 (effort) | 3.64 ± 2.13 | 4.19 ± 1.96 | P=0.164 |
| VAS J3 | 0.44 ± 0.61 | 1.02 ± 1.23 | P=0.013 |
| VASJ3 (effort) | 3.23 ± 2.10 | 3.38 ± 1.72 | P=0.721 |
| MME J0 (mg) | 26.01 ± 27.45 | 70.6 ± 61.59 | P<0.001 |
| MME J1 (mg) | 18.7 ± 23.91 | 44.41 ± 38.701 | P<0.001 |
| MME J2 (mg) | 17.82 ± 19.67 | 35.04± 33.49 | P=0.002 |
| MME J3 (mg) | 17.29 ± 23 | 35.71 ± 40.91 | P=0.018 |
| MME J4 (mg) | 20.06 ± 17.3 | 37.34 ± 38.88 | P=0.036 |
| MME J0-J3 (mg) | 70.88 ± 65.10 | 186.44 ± 110.58 | P<0.001 |
| MME J0-J5 (mg) | 93.24 ± 89.85 | 218.26 ± 181.55 | P<0.001 |
| Drainage (days) | 2 (IQR 1-6) | 3 (IQR 1-5) | P=0.641 |

Table 2

## First Swiss Case of Controlled DCD Multi-Organ Procurement Using Abdominal Normothermic Regional Perfusion and OCS-Heart Preservation

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**Background:** Controlled donation after circulatory death (cDCD) has been increasingly adopted across Europe to expand the donor pool. Abdominal normothermic regional perfusion (A-NRP) restores oxygenated blood flow to abdominal organs after circulatory arrest, allowing functional assessment and mitigation of warm ischemic injury. In parallel, ex-situ normothermic heart preservation using the Organ Care System (OCS-Heart) has enabled heart transplantation following cDCD. However, the combination of abdominal NRP with ex-situ heart preservation during a single, fully coordinated multi-organ procurement remains uncommon and has not previously been reported in Switzerland.

**Conclusion:** This case demonstrates the feasibility of a complex, fully coordinated cDCD multi-organ procurement strategy combining abdominal normothermic regional perfusion with ex-situ heart preservation using OCS. To our knowledge, this represents the first Swiss case of multi-organ recovery, including heart, lungs, liver, and kidneys, from a cDCD donor using this combined approach, supporting further national development of advanced cDCD programs.

**Case presentation:** We report the case of a 45-year-old male donor who underwent controlled DCD (Maastricht III) following withdrawal of life-sustaining therapy for aneurysmal subarachnoid hemorrhage. The agonal phase lasted 23 minutes, followed by a 5-minute no-touch period. Abdominal NRP was initiated 13 minutes after circulatory arrest and maintained for 2 hours and 24 minutes. Hemodynamic stability and metabolic parameters progressively improved during A-NRP, with decreasing lactate levels and preserved urine output. One liter of oxygenated blood from the NRP circuit was used to prime the OCS-Heart system for ex-situ heart perfusion. The heart, lungs, liver, and both kidneys were successfully retrieved and transplanted.

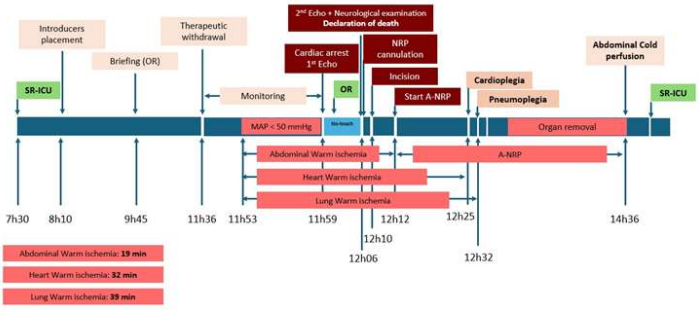


Table 1. Précision techniques, ischémie chaude et CRN


Figure 1. OCS organ care system

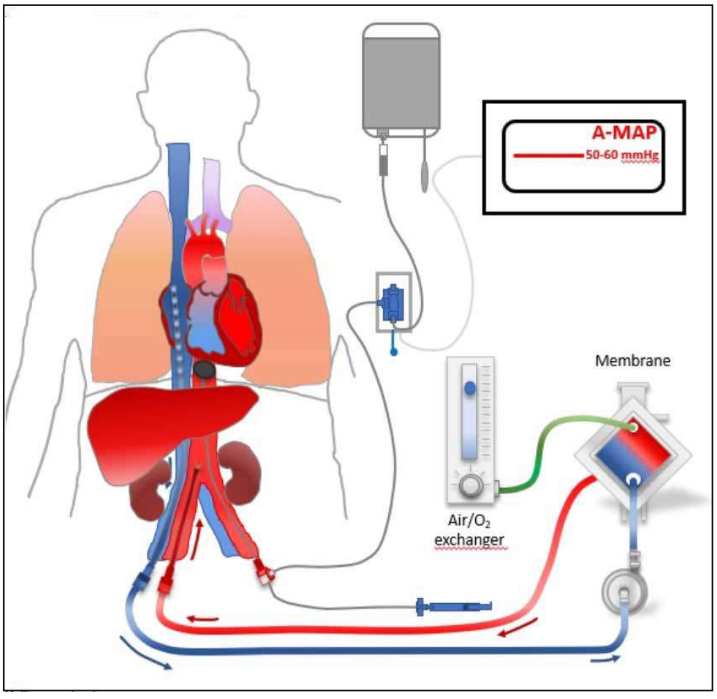


Figure 2. Circulation régionale normothermique CRN

**Development of a Preoperative Risk Score to Predict Prolonged Air Leak after Uniportal VATS Segmentectomy**

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**Background:** Air leak (PAL) is the most common complication after segmentectomy and prolongs drainage and hospital stay. No bedside risk tool exists specifically for uniportal segmentectomy.
**Aims:** We developed point-based PAL risk scores derived from our primary analysis and evaluated both full and preoperative-only performance
**Methods:** We conducted a retrospective single-centre cohort study of consecutive uniportal VATS segmentectomies performed between 2015 and 2023. PAL was defined as an air leak lasting >5 days. Predictors were analyzed using logistic regression supported by elastic net modeling. Weighted and parsimonious point-based scores were derived including variants to preoperative variables. Smoking was modeled as pack-years or smoking status. Performance was assessed using AUC (bootstrap 95% CI), paired AUC comparisons, and calibration across risk strata.
**Results:** A total of 575 uniportal segmentectomies were included. Multivariable analysis identified upper lobe location, reduced diffusion capacity (lower DLCO%), low BMI, hypertension, liver disease, long surgery time, and additional wedge resection from another segment as independent predictors of PAL. Elastic net modeling confirmed these variables as the most informative, achieving ~70% classification accuracy and supporting translation into point-based scores. Using smoking status instead of pack-years, the weighted full score showed good discriminatory power (AUC 0.794). The parsimonious bedside score (0–2 points/item) achieved an AUC of 0.755. (Tab. 1 and 2) Modeling smoking as pack-years provided only minimal improvement (ΔAUC ≈ +0.01). Restricting prediction to preoperative variables led to a modest reduction in performance (complete preoperative AUC 0.764; parsimonious preoperative AUC 0.730) approximately 0.03 AUC lower than the corresponding full models. (Fig. 1) Observed PAL rates increased stepwise across risk categories, with good calibration and no major miscalibration in the intermediate-risk range.
**Conclusion:** We developed two clinically useful PAL risk scores for uniportal VATS segmentectomy with good discrimination (AUC ~0.73–0.80) and minimal sensitivity to smoking definition. Preoperative-only versions were prioritized for clinical decision-making. Prospective external validation and impact analysis are recommended.

| Predictor | Criteria | Points |
|---|---|---|
| DLCO % | <60% / 60–79% / ≥80% | 12 / 8 / 0 |
| BMI (kg/m²) | <18.5 / 18.5–19.9 / 20–24.9 / ≥25 | 10 / 8 / 4 / 0 |
| Planned surgical site | Upper lobe / Lower lobe | 5 / 0 |
| Liver disease | Yes / No | 10 / 0 |
| Hypertension | Yes / No | 5 / 0 |
| Smoking status | Active / Ex■smoker / Never | 8 / 5 / 0 |

**Total score:** Sum points (range **0–50**). Higher scores indicate higher PAL risk.

| Total points | Risk category | Observed PAL risk bands* |
|---|---|---|
| 0–15 | Low | <10% |
| 16–28 | Intermediate | 10–25% |
| 29–33 | High | 25–40% |
| ≥34 | Very high | >40% |

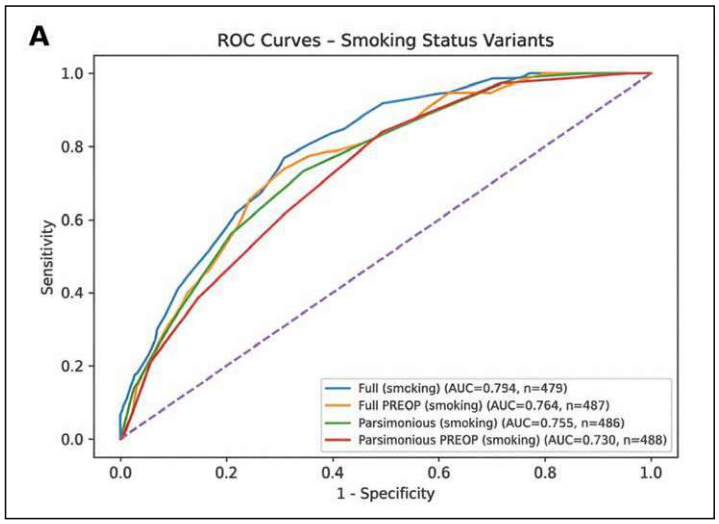
Table 1. PAL risk score full

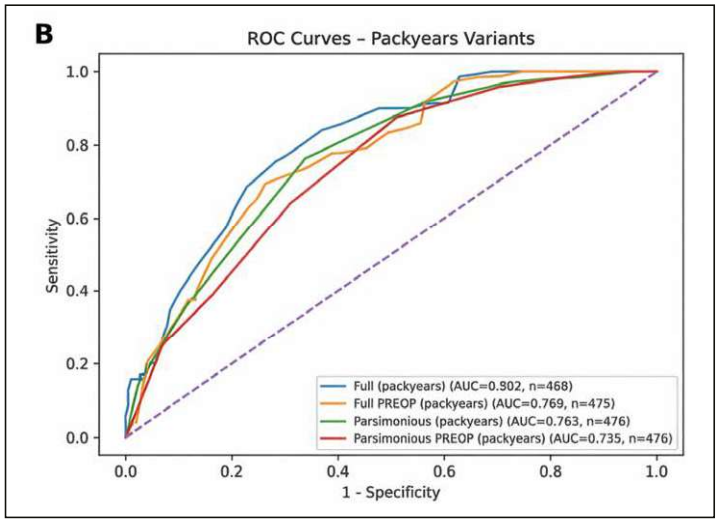
| Predictor | Criteria | Points |
|---|---|---|
| DLCO % | ≥80 / 60–79 / <60 | 0 / 1 / 2 |
| BMI (kg/m²) | ≥25 / 20–24.9 / <20 | 0 / 1 / 2 |
| Planned surgical site | Lower / Upper | 0 / 2 |
| Smoking status | Never / Ex■smoker / Active | 0 / 1 / 2 |

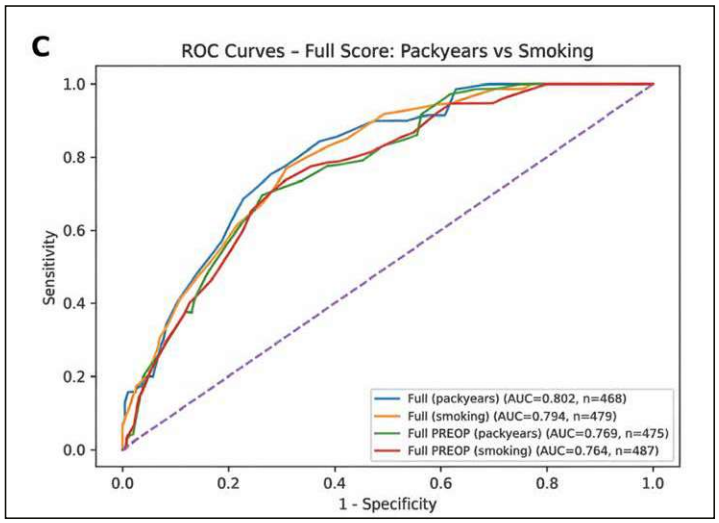
**Total score:** Sum points (range **0–8**). Higher scores indicate higher PAL risk.

| Total score | Risk category |
|---|---|
| 0–2 | Low |
| 3–4 | Intermediate |
| 5–6 | High |
| 7–8 | Very high |

Table 2. PAL risk score parsimonious



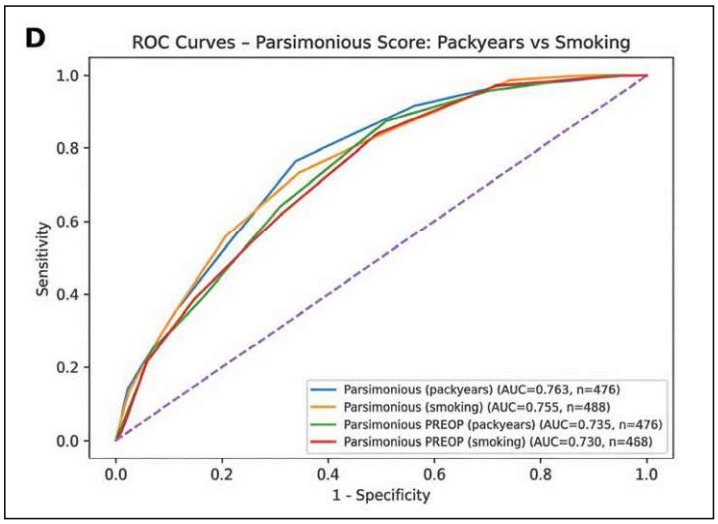



Figure 1-4. ROC Multipanel ABCD

**Abandoning Routine Chest X-Rays After Chest Tube Removal and Non-Anatomical Lung Resection? A Retropersepctive Cohort Study**

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**Background:** Chest X-rays (CXR) after chest tube removal remain common after lung surgery, despite unclear clinical benefit and increased workload and can lead to unnecessary follow-up examinations. Previous studies show that routine CXRs rarely change management.
**Aims:** We evaluated the utility of post-removal CXR after minimally invasive wedge resection and predictors of clinically relevant pneumothorax.
**Methods:** We conducted a retrospective, single-centre cohort study of consecutive patients undergoing minimally invasive wedge resection between January 2019 and December 2022. The primary endpoint was post-removal complications requiring intervention. Secondary endpoints included radiological findings, symptoms, and treatment changes after chest tube removal.
**Results:** A total of 189 patients were included; all underwent post-removal CXR. The cohort was predominantly male (66.1%), with high comorbidity (ASA 3-4: 82%); 20.1% had COPD, and 40.7% were active smokers. Median time to chest tube removal was 1 day [1–2] and median length of stay was 2 days [2–3]. Post-removal CXR was abnormal in 55.7% of the cohort, most commonly showing pleural effusion (41.3%) or pneumothorax (30.7%); Among patients with pneumothorax (n=59), median size was 0.7 cm [0.5–1.2]; 25.9% of which were > 1 cm and 12.1% >2 cm. Symptoms occurred in 4.2% and were more frequent with pneumothorax (8.6% vs 2.3%; p=0.059). Treatment changes were necessary in 13.8%, mainly oxygen supplementation 11.6% of the whole cohort and were strongly linked to abnormal CXR (23.1% vs 1.2%) and pneumothorax (31.0% vs 6.1%). Invasive interventions were rare (1.6%) and re-admission rate was 3.7% Treatment changes were more frequent with abnormal CXR findings 23.1% vs 1.2% (p <0.05) and pneumothorax (p<0.05). Adhesiolysis (OR 2.98, 95% CI 1.45–6.14) and lower BMI (OR 0.93/kg/m², 95% CI 0.88–1.00) independently predicted pneumothorax.
**Conclusion:** Although post-removal CXR abnormalities were common, clinically relevant interventions were rare and limited to symptomatic patient. Selective imaging based on symptoms may safely replace routine CXR after wedge resection, particularly in low-risk patients.

**Early Detection of Treatment Relevant Coronary Arteriosclerosis Within the Lung Cancer Screening Program**

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**Background:** Smoking is a major cause of preventable morbidity and mortality worldwide and contributes to lung cancer, COPD, stroke, and coronary heart disease. Lung cancer remains the most lethal malignancy, with smoking as its principal etiologic factor, and early detection with low-dose computed tomography (LDCT) reduces mortality. Since 2019, a feasibility study on LDCT-based lung cancer screening (LCS) has been conducted at the University Hospital Zurich.
**Aims:** Because smoking is also a key risk factor for coronary atherosclerosis, this study aimed to evaluate the prevalence, severity, and clinical relevance of incidental coronary artery calcification (CAC) in LCS participants and to assess its associations with age and cumulative smoking exposure.
**Methods:** We retrospectively evaluated 201 current or former heavy smokers from the Swiss LCS feasibility study. CAC was visually scored using the SHEMESH method across four coronary arteries (0–3 per artery; total 0–12). Relationships between CAC, age, and pack-years were analyzed using a generalized linear mixed model. Participants with CAC >4 were referred for stress testing and followed for four years.
**Results:** CAC was detected in 55.7% (112/201): 30.8% mild, 15.9% moderate, and 8.9% severe. CAC correlated with both age (p=0.032, r=0.098) and pack-years (p=0.011, r=0.037). Among 50 participants with CAC >4, one was lost to follow-up, two excluded, 28 had negative stress tests, 8 remain under evaluation, eight (19.5%) had prior cardiac events, and three (6.3%) underwent coronary angioplasty with stent placement. Most calcifications involved the Left Anterior Descending artery and the Right Coronary artery. Nine participants reported exertional dyspnea or atypical chest pain.
**Conclusion:** Incidental CAC was prevalent and linked to age and cumulative smoking exposure. Identifying treatment relevant coronary arteriosclerosis requiring stenting in 6.3% of cases transforms LCS from passive risk stratification into a proactive intervention for myocardial infarction prevention.

**Tumor Board vs. AI: Evaluating Concordance in Lung Cancer Treatment Decisions**

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[1]Thoracic Surgery, University Hospital Zurich (USZ), Zurich; [2]Thoracic Surgery, University Hospital of Zurich, Zurich; [3]Medical Oncology and Hematology, University Hospital of Zurich, Zurich; [4]Pneumology, University Hospital of Zurich, Zurich

**Background:** Artificial intelligence (AI) is playing an increasingly relevant role in clinical decision-making, with the potential to support tumor board decisions in the future. However, the system is still in its developmental stages, and a practical understanding in lung cancer treatment decision-making is needed.
**Aims:** This study aims to provide an overview of how AI can assist in tumor board (TUB) decisions in lung cancer treatment.
**Methods:** The study considered patients diagnosed with non-small cell lung cancer during the first six months of 2025 at our lung cancer centre. Data was collected from TUB meetings prior to therapy start and after treatment initiation. Structured, pseudonymized clinical case summaries were provided as input, and AI outputs were compared with institutional TUB decisions. AI-generated treatment recommendations were obtained using ChatGPT (OpenAI, San Francisco, CA, USA), a commercially available generative AI model (GPT-4.1). The model was used without task-specific fine-tuning or retrieval-augmented generation.
**Results:** In this cohort of 64 patients with non-small cell lung cancer, all patients provided informed consent for further data processing. 30 were female (46.9%). Clinical tumor staging was as follows: 50 patients were staged I and II, 10 patients staged III and IV and 4 with multiple synchronous lung cancers. Surgical procedures included 34 lobectomies/bilobectomy, 24 segmentectomies, and 5 atypical resections. The concordance (and partial concordance) between TUB decisions and AI-generated recommendations was 92.6% (Stage I and II and synchronous). However, this was only the case for 60% in the advanced stages.
**Conclusion:** In this study, we observed that the concordance between TUB decisions and AI-generated recommendations was stage-dependent. This highlights the critical role of human expertise, where clinical judgment and the consideration of individual patient factors are dominant. To improve the system, we will further evaluate this approach in a larger cohort and, in a second step, incorporating deep machine learning techniques to refine and enhance the system's decision-making.

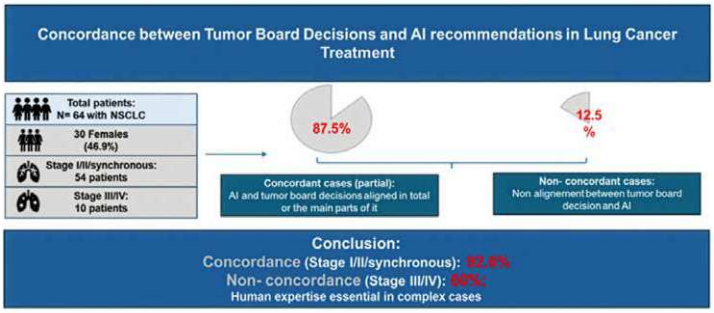


Table 1

**Vacuum Bell Therapy as a Non-Surgical Alternative for Pectus Excavatum: Real-World Experience**

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**Background:** Pectus excavatum (PE) is the most common congenital anterior chest wall deformity and can lead to functional limitations and psychosocial distress. While surgical correction is standard for moderate to severe cases, vacuum bell therapy (VBT) has established itself as a non-invasive, alternative.
**Aims:** Despite the increasing use of VBT, high-quality evidence regarding its effectiveness, and predictors of success remains limited. This study aims to evaluate the outcomes, predictors of response, and safety profile.
**Methods:** We conducted a retrospective cohort study of patients with PE treated with VBT between January 2017 and August 2025. Longitudinal changes in PE depth were assessed using rod-scale measurements. Treatment success was defined as complete correction at the last follow-up (residual depth ≤0.5cm and >25% depth reduction). Predictors were assessed using multivariable regression; adverse events and adherence measures were recorded.
**Results:** The cohort included 118 patients (mean age 16.8 years), predominantly male. Mean pectus depth decreased from 2.02 to 1.52 cm, mean improvement of 23.3%. Complete correction was achieved in 7.6%, while 50.8% and 16.1% achieved improvements of >25% and 50% respectively. Treatment response was heterogeneous and frequently non-linear over time. Longer treatment duration independently predicted a >25% improvement (OR 1.66 per doubling; p=0.003, 95% CI, 1.19-2.31); higher suction pressure was also associated with improved outcomes (OR 1.55 per +0.05mbar; p=0.047, 95% CI,1.01-2.39). Adverse events occurred in 22% of patients and were predominantly skin complications.

**Conclusion:** In this real-world cohort, VBT resulted in clinically significant improvement in approximately half of treated patients. Treatment response was heterogenous and strongly influenced by treatment duration, with chest wall morphology and suction pressure also contributing to outcomes. VBT was generally safe, with mostly mild adverse events. These findings support VBT as a reasonable conservative treatment option for motivated patients with mild-to-moderate PE, provided that realistic expectations, prolonged therapy, and adherence are incorporated into shared decision-making.

**Quality of Life: An Analysis of Treatments for Chronic Thromboembolic Pulmonary Hypertension**

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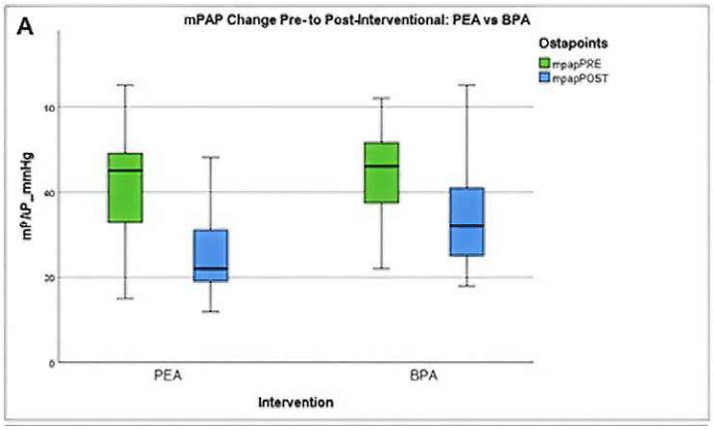
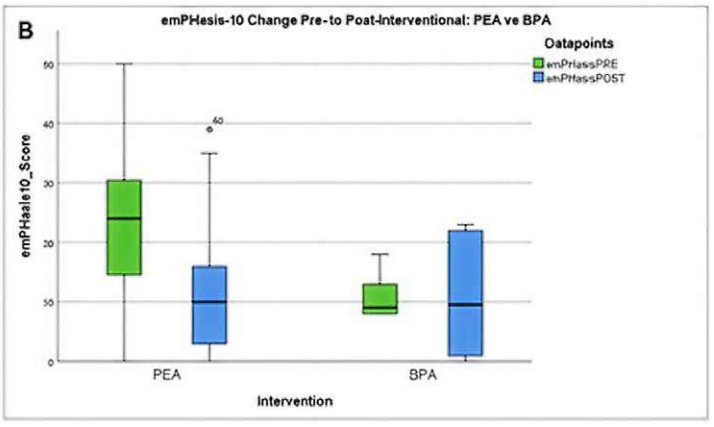
**Background:** Chronic thromboembolic pulmonary hypertension (CTEPH) can lead to drastically reduced quality of life (QoL). Pulmonary Endarterectomy (PEA) is the gold standard therapy for accessible lesions. For inoperable patients Balloon Pulmonary Angioplasty (BPA) serves as second line treatment. Efficacy of both treatments has been shown, yet data on the impact on QoL is widely missing.
**Aims:** We investigated changes in QoL for patients undergoing PEA or BPA.
**Methods:** CTEPH patients undergoing PEA or BPA in our institution between 2020-2025 were retrospectively analyzed. A validated QoL questionnaire (emPHasis-10) was used to assess health-related QoL before and one year after treatment. QoL data was compared with hemodynamic and clinical parameters such as reduction in mean pulmonary artery pressure (mPAP) and improvement of NYHA-class.
**Results:** 62 patients receiving either PEA or BPA were analyzed. In the PEA group, mPAP improved by 20mmHg and emPHasis-10 by 13 points. In the BPA group (median of 3 BPA-sessions) mPAP improved by 10.5mmHg and emPHasis-10 by 3 points. NYHA improved by 1 class for PEA and stayed unchanged for BPA. At baseline both the PEA and BPA group had a median NYHA-class of 3. Paired Wilcoxon test showed an improvement in QoL for PEA patients ($p<0.001$). We report a reduction in mPAP in both PEA ($p=0.001$) and BPA ($p=0.019$) patients. Intergroup comparison showed larger hemodynamical improvement in PEA than BPA ($p=0.009$) and a significant change of QoL between the two groups ($p=0.030$). Pooling analysis for PEA and BPA patients showed concordant changes, hence bigger mPAP reductions correlate with bigger improvements in QoL.
**Conclusion:** Both PEA and BPA were associated with improvements in NYHA functional class and mPAP, with a greater reduction in mPAP observed after PEA. Improvements in quality of life were significantly higher in patients undergoing PEA. Overall, hemodynamic improvements were consistent with patients' perceived gains in quality of life.



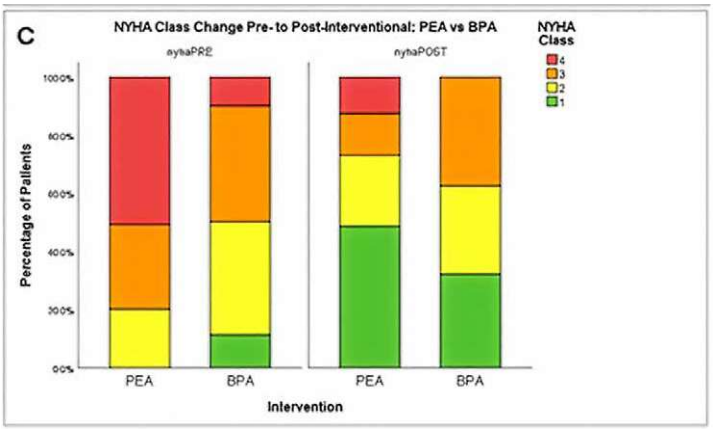




**Figure 1-3. PEA vs BPA – Changes before and after intervention in mPAP in mmHg (A), emPHasis-10; a reduction in the emPHasis-10 score signifies an improvement in QoL (B) and NYHA-Classification (C)**

## Hepato-Pancreatico-Biliary I

**Circulating Tumor DNA and Neoadjuvant Therapy in Localized Pancreatic Ductal Adenocarcinoma – A Systematic Review and Meta-Analysis**

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**Background:** ctDNA is increasingly investigated as a biomarker in pancreatic ductal adenocarcinoma (PDAC), but its role in guiding treatment decisions before, during, and after neoadjuvant treatment (NAT) remains unclear.
**Aims:** This study aims to synthesize the current evidence on the predictive value of ctDNA in localized pancreatic ductal adenocarcinoma PDAC, with a particular focus on its potential to guide clinical decision-making before, during, and after NAT.
**Methods:** A systematic review and meta-analysis (Prospero: CRD420251013013) of studies evaluating ctDNA in patients with localized PDAC treated with NAT was conducted. Meta-analyses were performed for OS and PFS when ≥2 studies reported outcomes.
**Results:** 15 studies, representing 926 patients, met the inclusion criteria. Five studies measured ctDNA using a PCR-only assay, five using only NGS, and four studies used both methods. All studies targeted KRAS mutations for ctDNA assessment, with substantial heterogeneity in assay platforms, thresholds, and sampling timing. Baseline ctDNA detection ranged from 11-73% across resectability categories. Baseline ctDNA positivity was associated with worse PFS (2 studies, pooled HR 2.34, 95% CI 1.21-4.54), but association with OS could not be demonstrated (3 studies, pooled HR 1.50, 95% CI 0.96-2.37). An association between post-NAT ctDNA status and PFS or OS could not be quantitatively investigated. Postoperative ctDNA positivity was associated with inferior OS (2 studies, pooled HR 6.39, 95% CI 1.94-21.01).
**Conclusion:** Evidence supporting ctDNA as a biomarker to guide NAT in localized PDAC is limited and inconsistent. Postoperative ctDNA was strongly associated with poor OS, whereas larger studies are needed to assess baseline and post-NAT ctDNA.

**The Validation of a Non-Invasive Genetic Biomarker Signature of Prospective Survival in Patients After Pancreatic Cancer Resection**

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**Background:** Pancreatic ductal adenocarcinoma (PDA) is associated with poor prognosis despite surgical resection. Reliable, non-invasive biomarkers to predict tumour biology and postoperative survival are lacking. Germline single nucleotide polymorphisms (SNPs) in the CD44 and CHI3L2 genes have previously been proposed as predictive biomarkers but require independent validation.
**Aims:** Validation of prognostic value of CD44 rs353630 and CHI3L2 rs684559 SNPs for tumour-related survival after pancreatic resection in an independent cohort.
**Methods:** This retrospective validation study used prospectively collected clinical and genomic data from the International Cancer Genome Consortium Accelerating Research in Genomic Oncology (ARGO) Pancreatic Cancer-Canada cohort. Patients with resected PDA, complete survival and genotype data were included. Survival analyses were performed using Kaplan-Meier estimates and Cox proportional hazards models adjusted for American Joint Committee on Cancer (AJCC) stage.
**Results:** A total of 235 patients were analysed. Carriers of the major G allele at CHI3L2 rs684559 had a significantly lower risk of tumour-related death compared to A/A homozygotes (hazard ratio [HR] 0.44, 95% confidence interval [CI] 0.25–0.78; p = 0.005). For CD44

rs353630, heterozygous carriers showed a reduced mortality risk compared to A/A homozygotes (HR 0.41, 95% CI 0.17–0.98; p = 0.044). A combined risk model demonstrated that patients carrying risk-indicating genotypes of either SNP had more than a twofold increased risk of tumour-related death (HR 2.21, 95% CI 1.38–3.55; p = 0.001).
**Conclusion:** This study independently validates a germline SNP-based biomarker signature as a predictor of survival after pancreatic cancer resection. These findings support the clinical potential of non-invasive genetic markers for patient stratification and personalised surgical decision-making.

**Impact of Vascular Encasement on Survival Outcomes in Patients with Arterial Contact ≥ 90°**
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**Background:** Pancreatic cancer is primarily staged by the extent of tumor vessel involvement. Despite the central role of resectability classifications in clinical decision-making, these criteria have not been conclusively validated, and variation exists across classification systems.
**Aims:** This study investigated whether increasing degrees of baseline arterial tumor contact are associated with overall survival (OS) among patients with ≥ 90° arterial vessel contact.
**Methods:** Patients in the Netherlands between 2012 and 2017 classified as locally advanced pancreatic cancer according to the Dutch Pancreatic Cancer Group (DPCG) criteria with ≥90° arterial contact were included after central radiologic review of baseline CT scans. Patients were stratified by arterial encasement (90-180°, 180°-270°, and 270-360°). OS was analyzed using uni- and multivariable Cox proportional hazard models, adjusting for venous involvement and clinical covariates.
**Results:** Among 481 patients, 153 (31.8%) had 90-180°, 51 (10.6%) had 180-270°, and 277 (57.6%) had 270-360° arterial encasement. Resection was performed in 33 patients (6.9%): 16 (10.5%) for 90-180°, 4 (25.5%) for 180-270°, and 13 (4.7%) for >270° arterial contact. The median OS was 9.63 months for all patients and similar across groups: 9.43, 8.97, and 10.45 months (p=0.34). In univariable analysis, the extent of arterial contact was not associated with worse OS (180–270° vs. 90–180°: HR 1.25, 95% CI 0.91–1.73; 270–360° vs. 90–180°: HR 1.02, 95% CI 0.83–1.24). Increasing venous involvement rather than arterial involvement was an independent poor prognostic factor for OS (180–270° vs. <90°: HR 1.72, 95% CI 1.03–2.87).
**Conclusion:** Among patients with pancreatic cancer and ≥90° arterial tumor contact, increasing degrees of arterial encasement were not associated with worse OS. These findings suggest that, beyond 90 degrees of arterial involvement, anatomical extent alone poorly reflects prognosis and support integrating biological and patient-specific factors to guide treatment decisions for LAPC.

**Perioperative Real Time Glucose Assessment as a Predictive Tool for Complications After Pancreatic Resection in Non-Diabetic Patients- A Prospective Single Center Pilot Study**
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**Background:** Postoperative hyperglycaemia has been described as an early marker of complications after pancreatic resection. However, evidence is based on retrospective assessment of arbitrary serum glucose measurements. In contrast, continuous glucose monitoring (CGM) systems allow real-time monitoring of glucose fluctuations.
**Aims:** The aim of this study is to investigate continuous perioperative glucose changes after pancreatic resection and the impact on postoperative complications.
**Methods:** Twenty (n=20) consecutive patients undergoing pancreatic resection were prospectively enrolled. In addition, n=10 patients undergoing other major abdominal surgery served as control group. Dexcom G6 CGM system was used. Time in euglycemic range (TIR) and peak glucose levels were analyzed. Routine serum glucose measurements and daily C-reactive protein (CRP) levels were also assessed. Comprehensive Complication Index (CCI) was used to quantify postoperative complications.
**Results:** No adverse events related to CGM devices were observed. Glucose levels increased significantly from a median of 7mmol/l (IQR 6-8mmol/l) to 9 mmol/l (IQR 8-1mmol/l, P=0.026) after pancreatic resection. Correspondingly, the TIR decreased from 86.5% (IQR 85-96%) to 78.1% (IQR 34-89%, p=0.042). Perioperative glucose levels (p=0.623) and TIR (p=0.408) remained unchanged in the control group. Linear regression showed a significant correlation between peak glucose levels on day 1, measured by CGM (R=0.738, p=0.004, Figure 1A), and CRP levels on day 2 (R=0.528, p=0.034, Figure 1B) with CCI. In contrast, routine serum glucose levels did not predict complications.
**Conclusion:** In this pilot study, peak glucose levels on day 1 after pancreatic resection were associated with adverse events. CGM may be a valuable tool to identify patients at risk of complications.

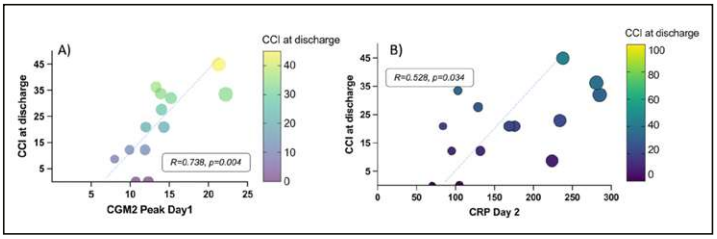


**Figure 1. CGM Correlation of glucose measurement and complications. Linear Regression revealed a linear correlation of CGM peak levels on day 1 (A), p=0.004) and CRP on day 2 (B, p=0.034) with complications, displayed as CCI**

**Hepatico-Jejunostomy During Pancreatic Surgery Is a Safe Teaching Procedure for Young Trainees: A Multivariable Analysis**
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**Background:** The reconstructive phase of pancreatic surgery may be suitable for teaching young general surgery trainees in performing hepatico-jejunostomy (HJ).
**Aims:** Describe the technique, and the results of HJ in a teaching hospital.
**Methods:** Retrospective analysis of consecutive pancreatoduodenectomy (PD) and total pancreatectomy (TP) from 01/2016 to 10/2025. The primary outcome was a composite-endpoint of HJ-related morbidity (primary biliary leak, cholangitis/sepsis or abscess, HJ stenosis) in HJ performed by seniors vs. trainees. Cox regression analysis was used to assess the predictors of HJ-related complications including teaching among covariates.
**Results:** During 150 pancreatic resections (PD=145; TP=5), 115 HJ (76.7%) were taught to a total of 22 trainees of postgraduate year≥4 (mean HJ number=5.2 per trainee). Patient baseline and bile ducts characteristics were similar for seniors vs. trainees. A single-layer HJ with 5-0 or 6-0 absorbable monofilament was performed in all cases, using interrupted sutures in 86%. After a median follow-up of 20.3 months (IQR 8.4-39.5), HJ-related morbidity rate was 10.0% (cholangitis 8.7%, biliary leak, abscess and stenosis 0.67% each). HJ-related morbidity was 11.4% vs. 9.6% for the seniors vs. the trainees respectively (p=0.751), without differences in biliary leaks, cholangitis, abscesses, nor stenosis (all p>0.05). Percutaneous biliary drainage was needed in 2 cases (1.3%), and surgical reintervention in 2 (1.3%). For redo-surgery, 1 was due to primary biliary leak successfully managed using a trans-anastomotic T-tube, the other was conversion of HJ to a Roux-en-Y loop due to persistent biliary reflux and recurrent cholangitis 1-year after PD. In both cases HJ was performed by a senior surgeon. Overall, HJ-related reinterventions were similar for seniors vs. trainees (5.7% vs 1.7%; p=0.232). Redo-HJ was never necessary. Cox regression analysis showed that the cumulative-risk of HJ-related morbidity was not impacted by teaching.
**Conclusion:** Respecting the technical principles of HJ ensures the feasibility and safety of teaching bilioenteric reconstruction during pancreatic surgery.

**Update on Post-Recurrence Survival After Pancreatic Cancer Resection: A Comprehensive Systematic Review**
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**Background:** The burden of recurrence after resection of pancreatic-ductal-adenocarcinoma (PDAC) remains very high, leading to a dismal prognosis. Post-recurrence survival (PRS) and its determinants have been less studied compared to traditional outcomes like overall and recurrence-free survival.
**Aims:** To provide an update on PRS after PDAC resection and identify its prognostic determinants.
**Methods:** A PRISMA-compliant systematic literature review was performed, searching studies published in the period January 01/2010-12/2025 (PubMed/Scopus/Web of Science). The population, intervention, comparator, outcome (PICO) strategy was used to formulate study questions and select studies: Population/Intervention) original studies including patients who had resection of non-metastatic PDAC and specifically reporting PRS; Comparator) timing/pattern/treatment of recurrence; Outcomes) PRS defined as survival after PDAC recurrence, site- and treatment-specific PRS, predictors of PRS.
**Results:** Forty-five eligible studies were identified. Median PRS range was 2.6-44.0 months. Local recurrence (remnant pancreas or locoregional lymph nodes) and lung-limited recurrence had longer PRS (range, 5.0-20.0 months and 8.5-32.5 months respectively) compared to liver recurrence (range, 5.1-8.5 months). Peritoneal or multisite recurrence had the shortest PRS. Whenever oncologically/technically feasible, completion pancreatectomy (i.e., isolated local recurrence), and resection of limited recurrence in the lungs or regional/retroperitoneal lymph nodes were associated with longer PRS, compared to systemic treatment alone. Combined local and systemic treatment had a positive effect on PRS, compared to systemic chemotherapy alone. Prolonged PRS was associated with asymptomatic recurrence or low performance status, routine/active follow-up, longer recurrence-free survival after first pancreatectomy, lung-only/isolated local recurrence, resectable recurrence, young age, serum albumin and Ca19-9 levels at recurrence, adjuvant chemotherapy after index pancreatectomy.
**Conclusion:** PRS varies widely based on pattern/timing/treatment of recurrences. Systemic

control of the disease is pivotal. Patients eligible for radical treatments (i.e., completion pancreatectomy) or showing favorable tumor biology (isolated lung recurrence), may achieve very long PRS. The impact of neoadjuvant therapy (before index pancreatectomy) on PRS is still unexplored.

### In-Depth Analysis of Post-Recurrence Survival in Resected Pancreatic Ductal Adenocarcinoma: A cohort Study

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**Background:** Recurrence after curative-intent resection of pancreatic ductal adenocarcinoma (PDAC) is frequent, however post-recurrence survival (PRS) may vary widely.
**Aims:** To analyze in depth PRS and identify the prognostic factors associated with it.
**Methods:** Retrospective cohort study including patients with PDAC recurrence after pancreatectomy. PRS was estimated with the Kaplan Meier method in the whole cohort and in subgroups based on performance status (ECOG-PS) at recurrence, timing, pattern, treatment of recurrence. Prognostic factors of PRS were evaluated through a Cox regression model.
**Results:** Seventy patients who underwent pancreatic resection (pancreatoduodenectomy, n=49; distal pancreatectomy, n=19; total pancreatectomy, n=2), and experienced PDAC recurrence, were included. R0, pN+ and perineural invasion rates were 72.9%, 67.1% and 94.3% respectively. Neoadjuvant and adjuvant chemotherapy were administered in 34.3% and 70% respectively. Recurrences were in multiple sites (51.4%), peritoneal-only (18.6%), hepatic-only (7.1%), isolated local (11.4%), pulmonary-only (1.4%). Early recurrence (<1 year after pancreatectomy) occurred in 41 cases (58.6%). Mean recurrence-free survival was 14.0 months; mean PRS was 13.0 months in the whole cohort. In subgroup analyses, patients with low ECOG-PS (0-1) had longer PRS than those with high ECOG-PS (>1) (log-rank=42.1; p>0.001). Conversely, PRS was similar in patients in early vs. late recurrences (log-rank=1.110; p=0.292) and by site of recurrence (log-rank=2.39; p=0.664). Recurrence treatment with chemotherapy, radical surgery or both was associated with longer PRS compared to radiotherapy, palliative surgery or best supportive care (log-rank=35.7; p<0.001). Cox regression analysis found R0 resection after index pancreatectomy (HR=0.44), low ECOG-PS at recurrence (HR=0.18) and treatment of recurrence by chemotherapy, surgery or both (HR=0.34), to be independently associated with a lower cumulative risk of death after recurrence. Borderline/locally-advanced PDAC and multisite recurrences tended toward worse PRS.
**Conclusion:** PRS seems influenced by patients' conditions at recurrence and the feasibility of effective treatments (including surgery), rather than only by surrogates of biology of the disease (initial resectability status, timing/pattern of recurrence).

### Benefit of Adjuvant Chemotherapy for Resected Pancreatic Cancer Following Neoadjuvant FOLFIRINOX or Gemcitabine-Nab-Paclitaxel: A Multinational Analysis

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**Background:** Neoadjuvant therapy (NAT) has become the standard of care for borderline resectable (BRPC) and locally advanced pancreatic cancer (LAPC). However, the survival benefit of adjuvant therapy (AT) following curative resection in this setting remains controversial, particularly regarding the optimal regimen selection.
**Aims:** To investigate the association between AT and overall survival (OS) in patients with resected BRPC and LAPC, specifically stratified by the type of NAT regimen received (FOLFIRINOX vs. Gemcitabine/Nab-paclitaxel).
**Methods:** This multinational, 19-center retrospective cohort study included patients with resected BRPC or LAPC who completed NAT with either FOLFIRINOX or Gemcitabine/Nab-paclitaxel (Gem/Nab). Propensity score matching (PSM) was utilized to minimize selection bias between patients receiving AT versus observation. The primary outcome was OS.
**Results:** The study included 834 patients (605 NAT FOLFIRINOX; 229 NAT Gem/Nab). In the NAT FOLFIRINOX cohort, the administration of adjuvant FOLFIRINOX was associated with significantly longer OS in the matched analysis (Median OS: 42.0 vs 25.8 months; Hazard Ratio [HR]: 0.58; 95% CI, 0.43-0.79; p<0.001). Notably, this survival benefit was observed regardless of nodal status, extending to node-negative (pN0) patients. Conversely, switching to adjuvant Gem/Nab after neoadjuvant FOLFIRINOX provided no survival benefit (HR 0.84; p=0.27). In the NAT Gem/Nab cohort, the addition of adjuvant chemotherapy (either Gem/Nab or other regimens) was not associated with improved OS (HR 0.92; p=0.69).
**Conclusion:** The survival benefit of adjuvant chemotherapy in resected BRPC and LAPC appears to be regimen-dependent. Continuation of FOLFIRINOX in the adjuvant setting is associated with improved survival for patients successfully inducted with FOLFIRINOX, independent of pathological nodal status. However, de-escalation to gemcitabine-based regimens after neoadjuvant FOLFIRINOX or administering adjuvant therapy following NAT Gem/Nab does not appear to confer a significant survival advantage.

## Joining Forces within Pediatric Surgery: From Head to Toe

### Postoperative Outcomes of Endoscopic Third Ventriculostomy in Pediatric Patients

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**Background:** Endoscopic third ventriculostomy is an established surgical treatment for pediatric hydrocephalus, particularly in obstructive cases. However, reported success rates vary widely, and the influence of patient age at the time of surgery remains controversial.
**Aims:** This study aimed to evaluate postoperative outcomes of endoscopic third ventriculostomy in children, with a particular focus on treatment failure over time and the impact of age at surgery.
**Methods:** A retrospective cohort study was conducted including all pediatric patients who underwent endoscopic third ventriculostomy between January 2017 and October 2023 at a single tertiary pediatric center. Demographic data, perinatal characteristics, operative details, and postoperative outcomes were collected from electronic medical records and analyzed pseudonymously. Endoscopic third ventriculostomy was considered successful if patency was maintained during follow-up or restored by revision; irreversible failure or subsequent shunt placement was defined as treatment failure. Survival analysis was performed using Kaplan-Meier curves, and groups were compared using log-rank testing.
**Results:** Twenty-eight patients were included, of whom 64.3% were male. Median age at surgery was 4.5 months, with 71.4% of patients operated on before one year of age. During follow-up, 17.9% of endoscopic third ventriculostomies remained patent. Primary treatment failure occurred in 25.0% of patients, while secondary failure was observed in 57.1%. Median time to failure of 50% of procedures was 91 days, and after 360 days, 25.0% of patients remained shunt-free. Patients operated on after the first year of life showed a tendency toward improved endoscopic third ventriculostomy survival compared with younger patients; however, this difference did not reach statistical significance (hazard ratio 0.88, p = 0.80).
**Conclusion:** Endoscopic third ventriculostomy represents an important treatment option for pediatric hydrocephalus but is associated with considerable failure rates during long-term follow-up. Patient age at surgery appears to influence postoperative outcomes, with a trend toward better results in older children. Careful patient selection is essential, and further prospective studies are needed to refine indications and optimize outcomes.

### Extended Minimal Invasive Craniectomy in Sagittal Synostosis – Is it Worth it?

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**Background:** Since 2017, we have been performing endoscopy assisted craniectomy for craniosynostosis, with approximately half of the 100 treated patients presenting with sagittal synostosis. Initially, only a narrow bone strip between the coronal and lambdoid sutures was removed. In 2022, we modified our approach by extending the craniectomy into the occiput, similar to our open technique.
**Aims:** The aim of this study was to evaluate the effect of this modification on perioperative and postoperative outcomes.
**Methods:** We analyzed all patients who underwent endoscopy assisted surgery for sagittal synostosis between 2017 and 2024, dividing them in two groups, according to surgical technique. We compared age and skull index at surgery, duration of surgery and hospital stay, blood loss and transfusion rate, as well as skull index at the and of the helmet therapy and one year later and duration of helmet therapy.
**Results:** Between 2017 and 2024, 50 children with sagittal synostosis underwent endoscopy assisted craniectomy. 45 had complete data for analysis. By mid-2022, 25 children underwent the previous technique, since then 20 patients the extended procedure. Age and initial skull index in the two groups did not differ significantly. At the end of the helmet therapy, the skull index was 2 points higher in the extended technique group and even 3 points higher 1 year later. The extension of the craniectomy increased the duration of surgery by 10 minutes, while there was no adverse effect on the duration of hospitalization, blood loss or need for transfusion.
**Conclusion:** Expanding the craniectomy improves the outcome after minimal invasive craniectomy in sagittal synostosis and should be considered at least in more severe cases, although a slightly longer duration of surgery has to be accepted.

### Current Management of Isolated Pediatric Radial Neck Fractures: Results of a Multinational Survey

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**Background:** The management of isolated radial neck fractures in children relies on age-dependent remodelling potential and clinical judgement. However, contemporary treatment strategies across regions, healthcare systems, and surgical specialties remain insufficiently described.
**Aims:** The aim of this study was to evaluate current clinical practice patterns regarding indication thresholds, operative techniques, and aftercare of isolated paediatric radial neck fractures and to identify factors influencing decision-making.

**Methods:** An online survey was conducted among paediatric surgeons, paediatric orthopaedic surgeons, and trauma surgeons in Germany, Austria and Switzerland. Collected data included professional experience, angulation thresholds for reduction, operative techniques, aftercare, and awareness of institutional treatment thresholds. 111/116 responses provided at least one evaluable response and were included in the analysis.
**Results:** Median tolerated angulation thresholds decreased significantly with increasing patient age, from 45° in children younger than 6 years to 20° in children aged 12 years or older (Figure 1), while substantial inter-individual variability persisted across all age groups. Angulation thresholds did not differ significantly by country, surgical specialty, professional experience, hierarchical position, institutional level of care, or annual case volume. In contrast, awareness of institutional angulation thresholds was strongly associated with professional experience (Figure 2) and position, ranging from 33.3% in physicians with less than 5 years of experience to 95.2% in those with more than 20 years of experience ($p < 0.01$). Physicians aware of institutional thresholds more frequently performed radiographic follow-up and opted for shorter or no immobilisation following both operative and non-operative treatment. In cases of failed closed reduction, elastic stable intramedullary nailing (Metaizeau technique) was the preferred operative method (81% of respondents).
**Conclusion:** The management of isolated paediatric radial neck fractures demonstrates consistent age-dependent decision-making across regions and specialties but considerable individual variability, particularly in aftercare. Treatment differences appear to be driven more by professional experience and institutional knowledge than by regional or specialty-specific factors, underscoring the need for structured, age-adapted treatment recommendations and improved dissemination of institutional standards.

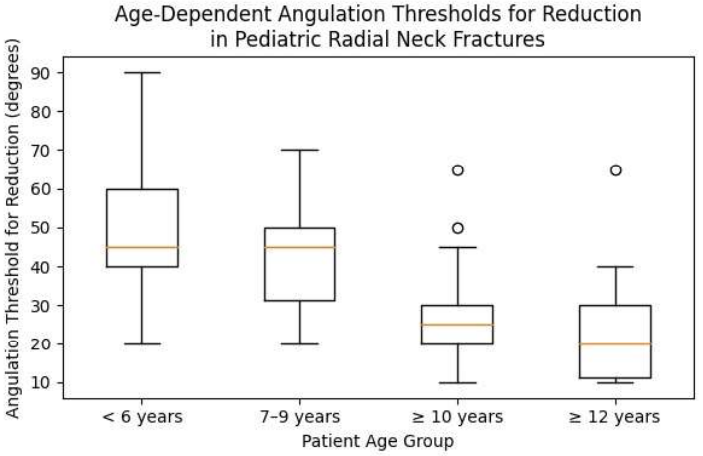


**Figure 1. Current Management of Isolated Pediatric Radial Neck Fractures: Results of a Multinational Survey**

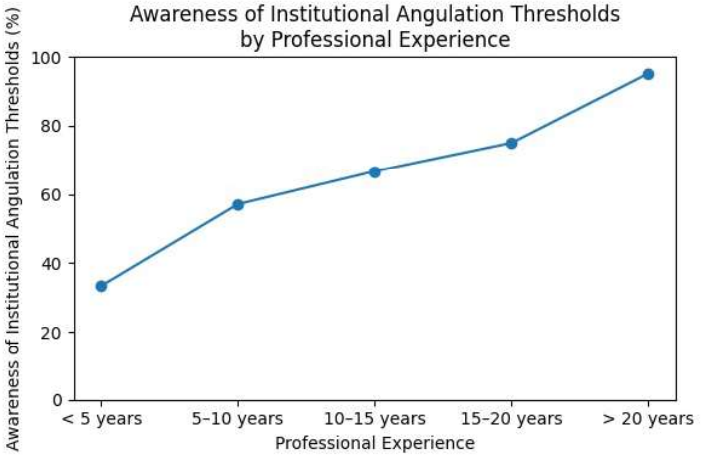


**Figure 2. Awareness of Institutional Angulation Thresholds by Professional Experience**

**Optimizing Fracture Care in Children Using Biodegradable Magnesium Screws: Healing and Complications During Fixation With Magnesium Screws – A Retrospective Pilot Study**
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**Background:** Fractures in childhood are quite common. Approximately 15-45% of children experience a fracture during their growth phase. Fortunately, only a few require osteosynthesis. This typically represents a stressful situation for the family, as surgery and especially removal of osteosynthesis material is associated with complications and high costs. Therefore, resorbable osteosynthesis materials are gaining increasing attention. Due to their beneficial material properties, magnesium screws (ZX00) are increasingly used in the pediatric population.
**Aims:** The aim of this study was to evaluate fracture healing and complications in fractures treated with magnesium screws and to compare them with those treated using conventional screws.
**Methods:** Retrospective analysis of fractures treated with magnesium screws versus conventional osteosynthesis in a 1:2 matched-pairs design. For this purpose, the RemeOs screw (Bioretec) was used to treat epi-metaphyseal fractures of the long bones as well as fractures of one or more bones of the hand or foot. Radiological consolidation, range of motion (ROM), and complications were evaluated over the same follow-up period as patients treated with conventional screws.
**Results:** To date, seven patients have been treated with magnesium screws. All patients show timely consolidation and symmetrical mobility compared to the control group. No complications have occurred so far. At present, the available data are insufficient for a representative analysis. However, the preliminary results are encouraging.
**Conclusion:** This pilot study shows that magnesium screws could optimize pediatric fracture treatment. Initial results are promising, as radiological and clinical fracture consolidation was observed in all patients. Therefore, hardware removal is no longer necessary. However, the effects of these screws on cartilage and the growing skeleton in different fracture types (e.g. radial condyle fractures) require careful evaluation in long-term follow-up studies.

**A Low-Cost Rubber Plunger Simulator for Pediatric Minimally Invasive Surgery**
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**Background:** In neonatal minimally invasive surgery (MIS), as well as in pediatric retroperitoneoscopic procedures, the working volume is highly restricted.
**Aims:** The objective was to design and validate a new, low-cost, and reproducible dry lab model that realistically reproduces not only the limited workspace but also the characteristics of the abdominal wall including the curvature of its surface and its mechanical behaviour for neonatal MIS skills training.
**Methods:** The model consists of a rubber plunger with a base diameter of 11 cm and an internal height of 6 cm, corresponding to an internal volume of slightly less than 500 ml. Selected laparoscopic exercises were performed inside the plunger using 3 mm short pediatric instruments (Karl Storz) and a 5 mm 30° laparoscope. Validation of the model was performed during a national pediatric surgery congress course in June 2025. Data were collected from participants using a 5-point Likert scale questionnaire based on the Michigan Standard Simulation Experience Scale (MiSSES) and subsequently analyzed.
**Results:** Twelve course participants were recruited (9 females: 3 males). Seven (58%) had experience with <20 MIS cases, while 5 (42%) had more extensive experience. The mean perceived degree of realism was 4.17 ± 0.58 and for environment 4.58 ± 0.51. The educational value of camera manipulation was 3.42 ± 0.67, instrument manipulation in small space 4.83 ± 0.39, and intracorporeal suturing and knot tying 4.83 ± 0.39. Overall satisfaction with the rubber plunger model was 5.0 ± 0.0 and no significant difference in scoring was found according to experience (4.31 ± 0.92 vs 4.33 ± 0.94, p=0.87).
**Conclusion:** The novel rubber plunger dry lab model for neonatal MIS training was successfully validated. Assessment demonstrated that this simulator is realistic and effective, particularly for practicing instrument handling and intracorporeal suturing in confined spaces. This provides a practical and ethical alternative to wet lab models.

**Perioperative Support for Children Using Medical Clown Interventions: A Prospective Observational Survey of Healthcare Professionals**
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**Background:** Preoperative anxiety affects a substantial proportion of children undergoing ambulatory surgery and may negatively influence perioperative cooperation and workflow. Non-pharmacological interventions, such as medical clowning, have been proposed to reduce anxiety; however, their integration into perioperative routines and interprofessional collaboration remains insufficiently explored from the perspective of healthcare professionals.
**Aims:** The aim of this study was to evaluate the quality of collaboration between medical clowns and hospital staff in the perioperative setting. Specifically, we sought to describe perceived effects, collaboration, and synergy associated with medical clown involvement, assessed qualitatively through satisfaction surveys filled by anesthesia team, recovery room nurses, and medical clowns.
**Methods:** A prospective monocentric observational study was conducted between February 2023 and October 2024. Pediatric patients aged 3–18 years scheduled for ambulatory surgery under general anesthesia were eligible. Medical clown interventions were delivered by trained professionals affiliated with a non-profit organisation. Satisfaction surveys were completed by operating room physicians and nurses, recovery room nurses, and medical clowns. Data were collected using a secure electronic data capture system and analysed descriptively, with a focus on collaboration and perceived impact on the patient and the perioperative healthcare professionals.
**Results:** A total of 139 consecutive pediatric patients were included. High satisfaction levels were reported across all professional groups. Medical clowns perceived a reduction in patient stress in 88–92% of cases and reported good integration without disruption of clinical care. Operating room and recovery room staff observed positive effects on patient mood in 82–85% of responses and reported smooth workflow integration. Interprofessional collaboration was consistently rated positively, supporting the feasibility of the intervention within routine perioperative practice.
**Conclusion:** Medical clown interventions were feasible and well accepted in the perioperative setting. Healthcare professionals reported positive collaboration and perceived benefits on

patient mood without interference with clinical workflows. These findings support the potential role of medical clowning as a non-pharmacological adjunct to perioperative pediatric care.

**The Impostor Phenomenon in Pediatric Surgeons in Switzerland**

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**Background:** Impostor Phenomenon (IP) is characterized by persistent self-doubt and the externalization of achievements despite objective evidence of competence. IP occurs more frequently among physicians, and it appears to be particularly prevalent among female surgeons. It is associated with an increased risk of burnout, as well as anxiety and job dissatisfaction. Pediatric surgery is a subspecialty with a significant number of female surgeons.
**Aims:** Our objective was to characterize IP within the Swiss pediatric surgery community.
**Methods:** In December of 2025, an electronic survey was distributed to all surgeons affiliated with the Swiss Pediatric Surgical Association and sent to all swiss pediatric surgery departments. The survey instrument incorporated two validated scales: the Clance IP Scale (CIPS) and the Copenhagen Burnout Inventory (CBI), and demographic data.
**Results:** 75 people completed the questionnaire. 62,3% were female, 33% were between 40 and 49 years old. 20% were residents, 80% were trained pediatric surgeons. The median CIPS was 61 (IQR 45 to 73) indicating frequent IP signs. 24% stated that they are affected by IP, 88% of those were women. The CBI score indicates a low risk of burn out (score <50): personal CBI with mean 46 (IQR 33 to 64), work related 43 (IQR 29 to 54) and lowest in the patient related part with mean 16 (IQR 29 to 54). Female and younger respondents were more likely to suffer from higher IP ($p<0.001$) and burn out scores ($P<0.05$). There was a mild correlation between the CIPS and CBI (Pearson-Korrelation, $p<0.001$).
**Conclusion:** IP is a relevant Phenomenon among Swiss pediatric surgeons and is commonly associated with a risk for burn out. In our cohort, women had a higher risk for burn out and higher IP scores. The implementation of personal and system-level interventions are necessary to potentially mitigate the adverse effects of IP.

**Introducing A Coordinating Physician in a Pediatric Surgery Unit: Impact on Workflow and Care Coordination**

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**Background:** Pediatric surgery units face clinical complexity, high turnover of junior doctors, and growing administrative burden, all of which may negatively affect continuity of care, patient/family satisfaction and efficiency. While physician-assistants/nurse-practitioners have shown to improve clinical continuity and workflow in adult surgical wards, their impact is less explored in pediatric surgical settings.
**Aims:** This study aimed to evaluate the perceived impact of introducing a coordinating physician (CP) in a pediatric surgery team on workflow metrics, care coordination and team functioning, from the perspective of interns and nurses.
**Methods:** A cross-sectional survey study was conducted in a tertiary pediatric surgery unit following the introduction of a CP. Two anonymous, self-administered questionnaires were distributed to two rotations of pediatric surgery interns (before/after CP-introduction) and to nursing staff. Items assessed administrative workload, continuity of care, efficiency and overall team functioning using Likert-scale responses. Descriptive analyses were performed.
**Results:** Among interns (n=12), the most frequently reported administrative challenges without a CP were scheduling patient appointments (75%) and follow-up/results retrieval (75%), followed by discharge paperwork (58%). Daily administrative time without a CP was estimated >3 hours in 63%, 2–3 hours in 18%, and 1–2 hours in 18%. With a CP, time decreased to 1–2 hours in 45%, <1 hour in 36%, 2–3 hours in 9%, and >3 hours in 9% ($p=0.02$). Perceived benefits included improved unit functioning (83% strongly agree), quality of work life (67% strongly agree), and patient pathway (75% strongly agree). System-wide implementation was supported by 83%. Nursing staff responses (n=21) remained strongly positive (100% agreement for integration/benefit/patient flow; 81% earlier discharges)
**Conclusion:** In this pediatric surgery setting, introducing a CP was associated with clearly perceived reductions in physicians' administrative burden and improved discharge hours, strengthening the ward/team functioning and supporting a more patient-centered model of care delivery.

**Intracerebral Empyema as a Rare Complication of Pediatric Sinusitis: A Case Report**

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**Background:** Sinusitis is a common condition in the pediatric population and is usually benign; however, in rare cases, it can lead to severe intracranial complications. This case report describes a rare presentation of complicated sinusitis with intracerebral empyema and highlights key diagnostic and therapeutic considerations to prevent this outcome.
**Conclusion:** This case highlights that intracerebral empyema is a rare but life-threatening complication of pediatric sinusitis, where timely recognition, prompt neuroimaging, and rapid interdisciplinary intervention are crucial for a favorable outcome.
**Case presentation:** We report on a previously healthy school-aged child admitted with fever, photophobia, and meningeal signs following chronic rhinosinusitis. Laboratory studies showed markedly elevated inflammatory markers. Contrast-enhanced MRI revealed pansinusitis with contiguous intracranial spread from the right frontal sinus, resulting in an intracerebral empyema. Emergency endoscopic sinus surgery and empirical broad-spectrum antibiotics were initiated and later tailored to microbiological results. Due to postoperative progression of the empyema, neurosurgical evacuation via osteoclastic craniectomy became necessary. Despite transient neurological complications, including seizures, the patient's condition improved steadily under combined surgical and antibiotic therapy. He was discharged in good health, with no residual deficits, and follow-up imaging confirmed complete resolution.

**Multidimensional Distal Radius Lengthening Osteotomy Following Posttraumatic Physeal Arrest in an Adolescent: A Case Report**

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**Background:** Distal radius fractures account for nearly 40% of pediatric fractures, making them the most common fracture in childhood. Approximately 15–30% of these fractures involve the distal radial physis and may result in partial or complete growth arrest, potentially causing limb length discrepancies, angular deformities and functional impairment.
**Conclusion:** Although distal radius fractures are very common, posttraumatic physeal arrest in this region is rare but may result in clinically significant deformity, including ulnar-positive variance and wrist dysfunction. Multidimensional distal radius lengthening osteotomy combined with ulnar epiphysiodesis is an effective treatment option. Meticulous preoperative planning and patient-specific implants may further improve surgical accuracy and clinical outcomes.
**Case presentation:** A 13-year-old female athlete presented with progressive bony prominence of the ulnar styloid and load-dependent wrist pain. Clinical examination revealed protrusion of the ulnar styloid and moderate distal radioulnar joint instability with symmetrical ROM (range of motion). Approximately one year prior, she sustained a distal radius fracture with suspected involvement of the distal radial physis, treated conservatively at an external clinic. Radiographs showed an incomplete posttraumatic physeal arrest, progressive multidimensional radial growth disturbance, and secondary ulnar-positive variance. Bilateral forearm CT revealed a 20 mm longitudinal discrepancy. After meticulous virtual planning, a multidimensional distal radius lengthening osteotomy was performed using a custom-made palmar radius plate, corticocancellous iliac crest bone graft and permanent distal ulnar epiphysiodesis. Initial transient functional impairment and dysesthesia of all fingers were attributed to the achieved 16 mm radial lengthening. Immobilization in a forearm splint was maintained for six weeks, with load-free occupational hand therapy initiated after two weeks. Serial clinical and radiographic follow-ups demonstrated complete consolidation, regression of dysesthesia, and restoration of symmetrical wrist and finger ROM with full return to sports by five months postoperatively.

## Prix NaCHwuchs

**Adapting a Clinical-Grade Decellularized Esophagus for Pediatric Applications: Pre-Clinical Evaluation in a Minipig Model**

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**Background:** The surgical management of Long-Gap Esophageal Atresia (LGEA) and esophageal strictures refractory to dilatation remains a major challenge, often requiring organ interposition (stomach, colon) associated with significant long-term morbidity. Tissue engineering offers a promising alternative to organ replacement. Recently, Saint-Louis Hospital (Paris) has successfully developed a clinical-grade decellularized esophageal scaffold, approved for adult trials (ESOGRAFT NCT06662370).
**Aims:** This preclinical study aims to assess the safety and efficacy of circumferential esophageal replacement using a decellularized adult porcine esophagus, remodeled for pediatric indications, in a minipig model.
**Methods:** Adult porcine esophagus are decellularized using the protocol established by the Cell Therapy Unit at St-Louis Hospital. To address pediatric anatomical constraints, adult scaffolds are remodeled ex-vivo to reduce their caliber (diameter: 10mm; length: 4cm) to match the pediatric esophagus. The study design involves 8 Yucatan minipigs aged of 2 months. The protocol consists of circumferential esophageal replacement protected by an omental wrap and a removable stent (maintained for 3 months). Animals are monitored for 6 months to assess clinical tolerance, nutritional autonomy, and weight gain. Post-mortem analysis focuses on structural remodeling, epithelialization (histology H&E), muscular regeneration, vascularization and neural pathways (immunohistochemistry).
**Results:** In-vivo evaluation is currently ongoing to assess long-term tissue remodeling at 6 months.

**Conclusion:** This study represents a critical translational step, trying to bridge the gap between adult clinical achievements and pediatric needs. By validating the downsizing of a clinical-grade scaffold in a relevant animal model, we aim to provide a safe solution for children with complex esophageal defects, avoiding the morbidity of autologous replacements.

### Epidemiology of Necrotizing Enterocolitis in Multiple Birth Preterm Infants in Switzerland

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**Background:** Necrotizing enterocolitis (NEC) is a major cause of morbidity and mortality in preterm infants. Data comparing NEC incidence and outcomes between multiple birth and singleton preterm infants remains limited.
**Aims:** To report the incidence and mortality of NEC in preterm multiple-birth infants in Switzerland and to determine whether multiplicity independently contributes to NEC risk.
**Methods:** This is a retrospective cohort study analyzing data from the Swiss Neonatal Network collected between 2000 and 2021. A total of 16,411 preterm infants born at <32 weeks of gestational age were included, representing more than 95% of all Swiss preterm infants in this gestational age group (Tab. 1). Proven NEC cases, defined as Bell stage II or higher, were analyzed. NEC incidence and NEC-related mortality were compared between singleton and multiple birth preterm infants.
**Results:** 32.5% of the population consisted of infants from multiple births (5,330/16,411) (Figure 1). The overall NEC incidence was low (2.7%). NEC incidence was comparable between singleton and multiple birth infants (2.8% vs. 2.6%). NEC-related mortality did not differ significantly between groups, (39.3%) in multiple births compared to (33.7%) in singletons (Figure II). In twin pairs, the risk of NEC in the second twin was sixfold higher if the first twin was affected (OR 6.1 (CI 95% 2.4 - 16.2)).
**Conclusion:** The overall incidence of NEC in Swiss preterm infants is comparatively low. No relevant differences in NEC incidence or mortality were observed between multiple birth and singleton preterm infants. However, there is an increased risk of NEC in the second twin following an affected first twin. This suggests shared environmental or biological risk factors within twin pairs and highlights the need for vigilant monitoring of co-twins following NEC diagnosis in one sibling.

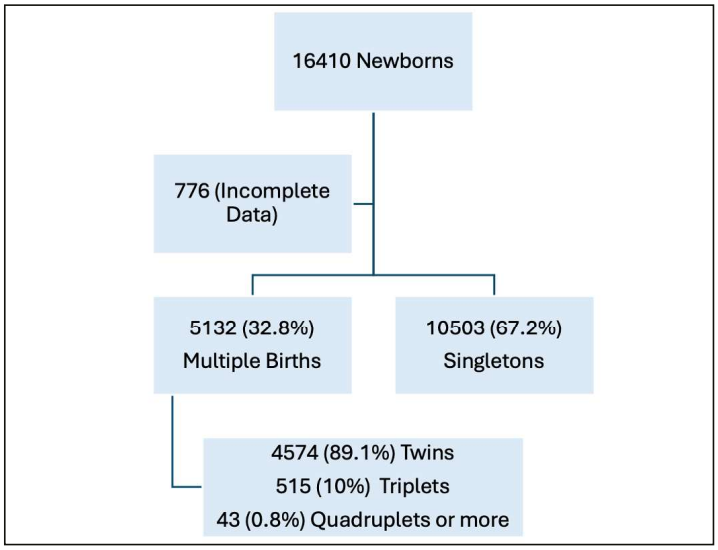


Table 1

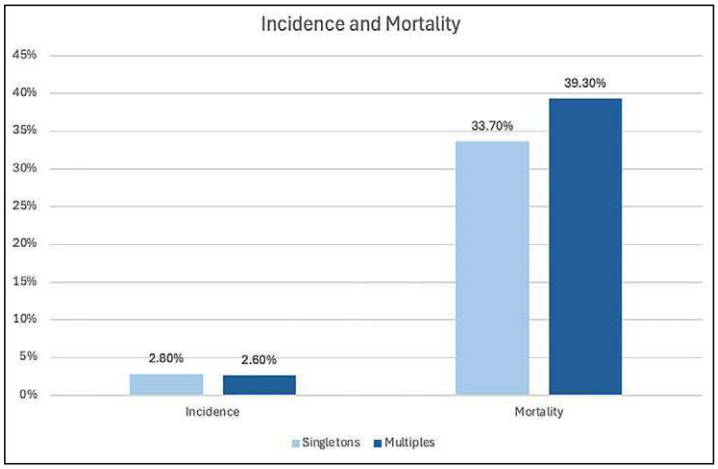


Figure 1

### Multidimensional Long-Term Outcomes After Pediatric Esophageal Replacement Following Caustic Injuries: A Comparative Study of Two Techniques

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**Background:** Accidental ingestion of caustic substances is a significant pediatric health concern, potentially causing severe long-term gastrointestinal, nutritional, and psychosocial consequences.
**Aims:** This study aims to compare multidimensional long-term outcomes between children who underwent colonic pedicled flap versus gastric tube esophageal replacement in the mediastinum after caustic injuries.
**Methods:** This cross-sectional observational study was conducted during 2023-2024 in Benin and Togo through a Swiss-African surgical collaboration. Patients were operated on during their childhood between 1989 and 2022. They completed a comprehensive assessment using validated tools: Pediatric Quality of Life Inventory™ Gastrointestinal Symptoms Scale (PedsQL GI), KIDSCREEN-52 for psychosocial dimensions, SF-36 for general health perceptions, the International Dysphagia Diet Standardization Initiative (IDDSI) scale for dietary adaptation, and the Six-Minute Walk Test (6MWT) with the modified Borg scale for physical capacity.
**Results:** 26 patients (aged 6–22 years, mean 14 years) were included. Among them, 17 had a colonic pedicled flap and nine a gastric tube. The mean operation-to-questionnaire interval was 8 years. No significant differences were observed between both groups in PedsQL GI, SF-36, or 6MWT outcomes. Mean PedsQL GI scores indicated mild-to-moderate gastrointestinal symptoms (lowest scores in 'Trouble swallowing': colonic 71 vs. gastric 69; 'Heartburn and reflux': colonic 75 vs. gastric 63). Significant psychosocial disparities emerged in KIDSCREEN-52, notably higher scores in Psychological Well-being ($p<0.05$) for colonic patients. Dietary texture modifications were needed in 38% of patients (IDDSI levels 5 and 6), equally distributed between groups.
**Conclusion:** Both colonic and gastric esophageal replacements provide satisfactory long-term functional outcomes with subtle psychosocial differences. Persistent dietary adaptations and gastrointestinal symptoms underline the necessity of tailored, multidisciplinary, and culturally sensitive follow-up.

### Outcomes After Liver Transplantation in Sarcopenic Children: A Retrospective Analysis

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**Background:** Data on the impact of sarcopenia are limited in pediatric liver transplantation (LT). In contrast, sarcopenia has been extensively studied in adult LT recipients and has been shown to be associated with increased postoperative morbidity and mortality.
**Aims:** To evaluate the incidence and postoperative impact of sarcopenia in children having undergone LT.
**Methods:** This retrospective review included children (0-16 years) with LT, from 2004-2023. They were divided into two groups: sarcopenic vs non-sarcopenic patients, according to the Total Skeletal Muscle Index (TSMI)-score calculated on preoperative CT (with median TSMI-score in the second quintile as cut-off). Children with multi-organ transplants were excluded. Preoperative variables and postoperative complications during the first year post-LT were compared between the two groups.
**Results:** One hundred eleven patients were included, 78/111 (70%) were sarcopenic, 33/111 (30%) were not. Median TSMI-score was 2244 $mm^2/m^2$ (IQR 1984-2464). At LT, 75/111 patients (68%) received nutritional support, including 24/33 (73%) sarcopenic patients. Lower weight z-scores ($p=0.03$) and lower BMI ($p<0.001$) significantly correlated with sarcopenia. ICU length of stay was significantly longer in sarcopenic patients ($p=0.035$), whereas postoperative intubation time and overall hospital-stay did not differ between groups. Vascular, intestinal, biliary, infectious, neurological postoperative complications, and rate of reoperations were not significantly different between groups. In contrast, graft rejection during the first year post-LT was significantly associated with sarcopenia ($p=0.003$). Patient and graft survival did not differ between groups.
**Conclusion:** In this cohort of liver-transplanted children, sarcopenia was associated with prolonged ICU-stay and increased graft rejection within the first year post-LT. Interestingly and in contrast to adult series, surgical and infectious postoperative complications did not differ between groups. Further studies are needed to determine whether preoperative nutritional optimization, physiological resilience, or enhanced postoperative care might mitigate the clinical impact of sarcopenia in pediatric LT recipients.

## Colon

### Gut Microbiota and Anastomotic Leakage in Colorectal Surgery: A Systematic Review

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**Background:** Anastomotic leakage (AL) is a serious and potentially life-threatening complication following colorectal surgery, associated with increased morbidity, mortality, and impaired oncologic outcomes. Growing evidence suggests that the gut microbiome influences anastomotic healing and may represent a modifiable risk factor for AL. However, existing studies report inconsistent results, and no systematic review has yet comprehensively evaluated the association between gut microbiota and AL in clinical and experimental settings.
**Aims:** This study aims to systematically review the existing literature on the relationship between gut microbiota composition and the incidence of colorectal anastomotic leakage. Primary outcome was the incidence of anastomotic leakage. Secondary outcomes included microbial diversity, taxonomic signatures, histological or molecular markers of healing, and effects of microbiota-targeted interventions.
**Methods:** A systematic search of Medline, Embase, Web of Science, and the Cochrane Library was performed by three reviewers from inception to July 2025 following PRISMA 2020 guidelines. Randomized trials, cohort, and case-control studies assessing associations between AL and gut microbiota were included. Risk of bias was evaluated using ROBINS-I for non-randomized clinical studies and SYRCLE for preclinical studies.
**Results:** Twelve studies were included. AL was consistently associated with reduced microbial diversity and enrichment of pro-inflammatory or collagen-degrading taxa. In contrast, protective commensal bacteria were reduced. Several studies identified perioperative microbial signatures predictive of anastomotic healing or leakage. The C-seal device appeared to reduce microbiota differences between AL and non-AL patients.
**Conclusion:** Alterations in the gut microbiome are associated with impaired colorectal anastomotic healing. These findings support the role of microbiome-based risk stratification and perioperative interventions to reduce AL. A better understanding of microbial contributions may prompt a re-evaluation of current perioperative protocols, balancing infection prevention with preservation of beneficial commensal bacteria. Ultimately, microbiome-targeted therapies could emerge as adjuncts to enhance anastomotic integrity and reduce postoperative morbidity.

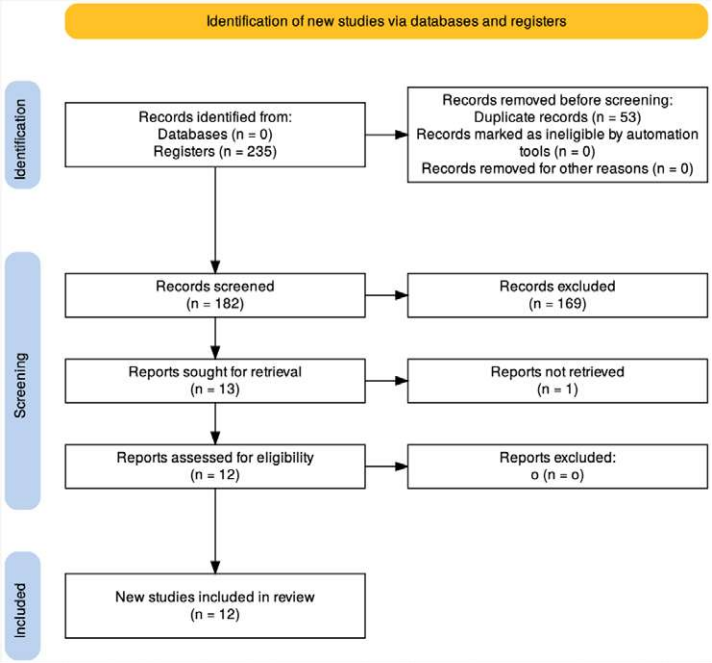


Table 1

### Is the Requirement to Remove Only 12 Lymph Nodes in Colon Cancer Surgery Still Justifiable?

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**Background:** Current guidelines consider the removal of ≥ 12 lymph nodes (LN) sufficient for accurate staging in colon cancer (CC). While the number of removed LN (RLN) severely depends on the quality of complete mesocolic excision and the pathological processing techniques, most European studies show a noticeably higher amount of RLN. Some recent studies have shown better survival in patients with ≥ 20 RLN, while others argue against due to higher complication rates.
**Aims:** We aimed to evaluate the prognostic impact of the number of RLN in CC and correlate the occurrence of postoperative complications.
**Methods:** This is a unicentre retrospective cohort study. We included all patients undergoing surgical resection for CC between 2014 and 2022 in a specialised centre in Switzerland. We defined four groups of RLN (<20, 20-25, 25-30 and >30) to analyse survival and complication rates. Survival rates according to the number of RLN were analysed using uni- and multivariate Cox regression.
**Results:** 335 patients were included. The median number of RLN was 32. The four LN groups did not show any difference regarding UICC stage (p = 0.190). 5-year overall survival (OS) was significantly better in the groups with ≥ 20 RLN with 70% versus 45% in < 20 RLN (p = 0.044). In total, 8/335 patients showed anastomotic leakage (2.3%). Overall postoperative complications according to Clavien Dindo did not occur more frequently with increasing number of RLN (p = 0.88). Equally, specific complications like anastomotic leakage (p= 0.28), postoperative ileus (p = 0.47) and abdominal wound dehiscence (p = 0.89) did not show significant differences.
**Conclusion:** Our results demonstrate significantly better OS if ≥ 20 LN are removed in CC patients without higher complications rates regarding the number of RLN. Therefore, international guidelines should recommend the removal of ≥ 20 LN.

### Laparoscopic Versus Robotic Right Colectomy: A Two-Year Comparative Outcome Analysis From a Single High-Volume Center

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**Background:** Minimally invasive approaches have become standard in colorectal surgery, with laparoscopic and robotic-assisted techniques associated with reduced postoperative pain, accelerated recovery, and shorter hospitalization. Laparoscopy has been established for several decades, whereas robotic surgery is increasingly adopted due to enhanced instrument articulation, improved ergonomics, and three-dimensional visualization. This study aimed to compare perioperative and postoperative outcomes of robotic (rRC) versus laparoscopic (lapRC) right colectomy.
**Aims:** A single-center cohort analysis of a prospectively maintained database was performed, including all patients undergoing elective right colectomy for malignant disease between January 2023 and January 2025. Patients were stratified according to operative approach (lapRC vs. rRC). Continuous variables were evaluated using independent t-tests and categorical variables using Fisher's exact test. Statistical significance was defined as $p<0.05$.
**Methods:** A single-center cohort analysis of a prospectively maintained database was performed, including all patients undergoing elective right colectomy for malignant disease between January 2023 and January 2025. Patients were stratified according to operative approach (lapRC vs. rRC). Continuous variables were evaluated using independent t-tests and categorical variables using Fisher's exact test. Statistical significance was defined as $p<0.05$.
**Results:** In total, 159 patients met inclusion criteria (lapRC n=89; rRC n=70). Mean operative duration was significantly longer in the rRC group (298 min; SD 103.82) compared with lapRC (218 min; SD 72.42; $p<0.001$). Conversely, conversion to open surgery was markedly lower following rRC (1.4% vs. 18%; $p<0.001$). Length of stay was shorter in the rRC cohort (7.6 vs. 11.6 days), although this difference did not reach statistical significance (p=0.303). Postoperative morbidity, quantified using the Comprehensive Complication Index, demonstrated no significant differences (rRC 7.8 vs. lapRC 9.1; p=0.5813), and anastomotic leak rates were comparable (2.9% vs. 4.5%; p=0.695).
**Conclusion:** Robotic right colectomy appears to reduce conversion to open surgery relative to conventional laparoscopy but is associated with prolonged operative time. Postoperative recovery profiles and complication rates were similar, suggesting that robotic-assisted right colectomy is a safe and viable minimally invasive alternative. These findings support the expanding integration of robotic platforms in colorectal surgery. However, randomized controlled trials are needed to validate oncologic equivalence, assess long-term functional outcomes, and determine cost-effectiveness.

### Benchmarking-Based Audits As a Quality Improvement Tool in Minimal-Invasive Right Hemicolectomies – Experience From a Single-Centre Analysis

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**Background:** Benchmarking enables objective comparison of institutional outcomes with reference benchmarks, derived from high-volume expert centers. Although benchmark values exist for multiple procedures and establishment used a standardized process, a structured methodological framework for comparing institutional data with benchmarks and for initiating quality improvement cycles has only recently been published but has not yet been evaluated for minimally-invasive right hemicolectomy (mis-RHC).
**Aims:** To assess the feasibility and value of a benchmark-based audit framework for mis- RHC and to identify potential areas for quality improvement.
**Methods:** All patients who underwent elective mis-RHC for adenocarcinoma between 2020-2024 at our institution were retrospectively analyzed. Inclusion and exclusion criteria followed the published benchmark study. Patients were classified as ideal or non-ideal. Evaluated parameters included operative time, conversion rate, length of hospital stay, lymph node yield,

anastomotic leakage, severe complications (Clavien–Dindo ≥ IIIa), and readmission rate. Outcomes were analyzed in overlapping 18-month periods with 6-month intervals and compared with benchmark thresholds.
**Results:** Sixty-one patients met the inclusion criteria (ideal n=10, non-ideal n=51). In ideal patients, all resections were R0, lymph node yield exceeded benchmark values, and no conversions occurred. Operative time consistently exceeded benchmark limits, likely reflecting the teaching environment of a university hospital. Non-ideal patients were also compared against benchmarks defined for ideal patients; while this requires cautious interpretation, it revealed optimization potential mainly in postoperative processes and discharge management while oncological quality, reflected by R0 resection rate and lymph node yield, remained consistently above benchmark levels.
**Conclusion:** Benchmarking of mis-RHC provided meaningful insights into institutional performance. Deviations from benchmarks were thoroughly discussed in the team and attributable to patient characteristics or the academic training setting rather than structural quality deficits. This study demonstrates the applicability of benchmark-based audits for RHC and highlights their potential as a tool for continuous surgical quality improvement.

### Safety and Feasibility of Ambulatory and Early Discharge Colectomy: A Systematic Review and Meta-analysis

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**Background:** Ambulatory and early discharge pathways after colectomy are gaining interest for resource optimization, although evidence regarding safety, feasibility, and outcomes is heterogeneous.
**Aims:** The aim of this study was to assess the safety of ambulatory and early discharge colectomy and optimal feasibility pathway.
**Methods:** A systematic review and meta-analysis was conducted following PRISMA guidelines. A comprehensive search of major bibliographic databases identified studies evaluating ambulatory or short stay colectomy. The primary outcome was 30-day hospital readmission. Secondary outcomes included postoperative complications, reoperation, mortality, length of hospital stay (LOS), and healthcare costs. Comparative analyses were performed between early discharge and inpatient cohorts when data were available.
**Results:** A total of 41 studies were included in the qualitative synthesis, and 37 studies comprising 191,898 patients were included in the quantitative analysis. Successful early discharge was achieved in 1,290 of 3,006 patients (42.9%). Overall readmission occurred in 7,308 of 140,139 patients (5.24%). Readmission rates were comparable between patients discharged within 24 hours and inpatients (4.62% vs 5.21%; OR 0.83, 95% CI 0.63–1.09), with no clinically relevant increase associated with early discharge. Postoperative mortality was low (0.1%) and did not differ between groups. Reoperation (1.2%), surgical site infection (2.2%), and postoperative ileus (2.1%) rates were infrequently reported but remained low overall. LOS was significantly shorter in the early discharge group (0.8 ± 0.4 vs 3.8 ± 2.7 days). Economic analyses consistently demonstrated lower costs associated with early discharge pathways, with a crude weighted saving of USD 5,809 per patient.
**Conclusion:** In carefully selected patients, ambulatory and early discharge colectomy appears safe and feasible, with readmission, reoperation, and mortality rates comparable to standard inpatient management, alongside a marked reduction in LOS and substantial cost savings. These findings support the implementation of structured early discharge pathways in selected populations, while emphasizing the importance of patient selection and postoperative surveillance.

### Elective Ileostomy Reversal in Switzerland: A Nationwide Survey of Surgical and Perioperative Practices

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**Background:** Elective loop ileostomy reversal is a common procedure, yet perioperative management remains poorly standardized and national data are lacking.
**Aims:** We aimed to describe current Swiss practices regarding preoperative assessment, operative technique, and postoperative management of elective ileostomy closure.
**Methods:** We conducted a nationwide, cross-sectional, web-based survey with one invitation and one reminder among members of the Swiss Society of Surgery between July and September 2025. Board-certified surgeons practicing in Switzerland who completed the full questionnaire were included. The survey addressed surgeon characteristics, preoperative work-up, technical aspects and postoperative care. Results are reported descriptively as numbers and percentages.
**Results:** 102 board-certified surgeons were included. Most respondents practiced predominantly in the German-speaking region of Switzerland (76%). Most respondents were male (80%) and worked primarily in cantonal hospitals (34%). Annual experience with ileostomy reversal was limited: 57% reported performing 1–10 procedures per year. Preoperative assessment of the distal anastomosis was heterogeneous: 49% of surgeons routinely performed endoscopic evaluation and 44% used water-soluble contrast studies. Antibiotic prophylaxis was administered by 87% of respondents. The preferred anastomotic technique was hand-sewn end-to-end (55%), followed by latero-lateral configurations (hand-sewn or double-stapled). Mesh reinforcement was rarely used (1%). Skin closure was evenly distributed between linear closure (50%) and purse-string techniques (44%). Postoperatively, 71% recommended an unrestricted diet and 19% prescribed routine medications to stimulate bowel function. Discharge decisions were predominantly based on clinical recovery, most commonly passage of stool or flatus (33%) and tolerance of oral intake (33%).
**Conclusion:** This nationwide survey demonstrates substantial variability in the perioperative management of elective ileostomy reversal in Switzerland. While antibiotic prophylaxis and clinically driven discharge criteria are widely adopted, considerable heterogeneity persists regarding preoperative assessment and technical aspects of reconstruction. These findings highlight the need for evidence-based recommendations and provide a foundation for future consensus.

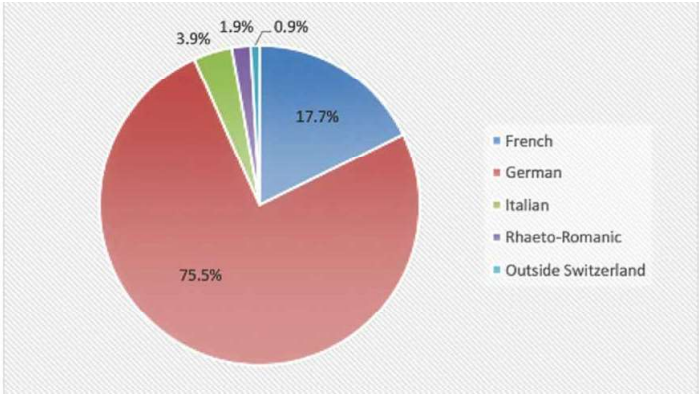

Figure 1. Regional distribution of surgeons

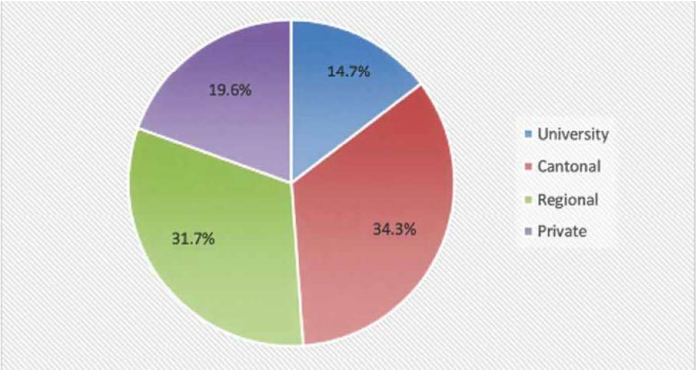

Figure 2. Institution distribution by type

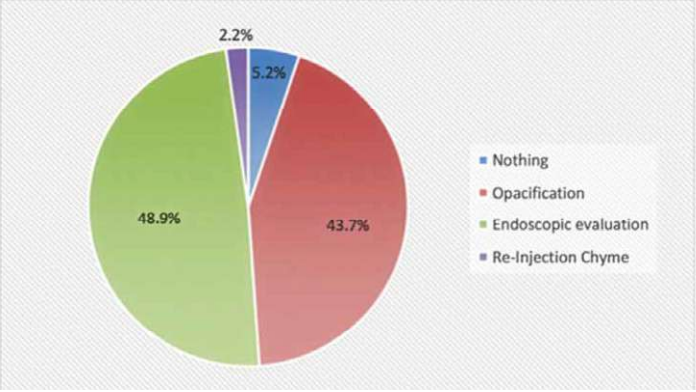

Figure 3. Preoperative interventions

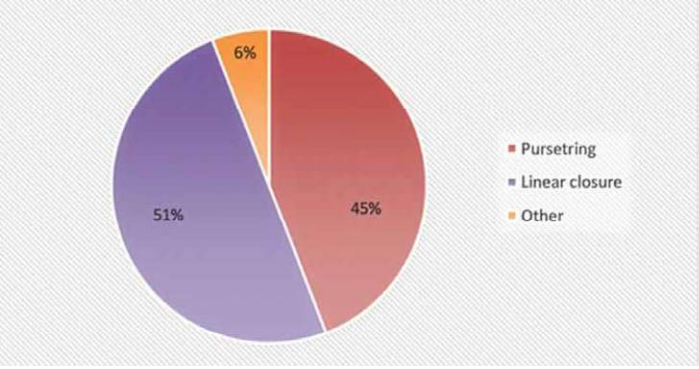

Figure 4. Skin closure technique

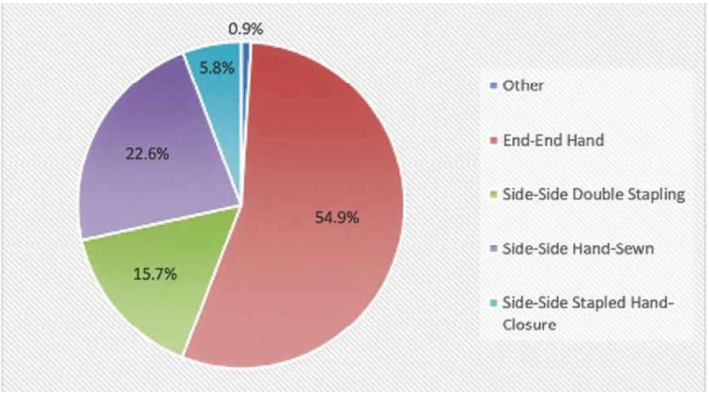


**Figure 5. Anastomotic techniques used for elective ileostomy reversal**

### A Decade of Technical Progress in The Surgical Treatment of Ulcerative Colitis

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**Background:** Despite an increasing number of medical options for the conservative treatment of ulcerative colitis (UC), surgery remains a cornerstone of therapy.
**Aims:** The aim of this study was to analyse temporal trends in colorectal surgery for ulcerative colitis, with particular focus on surgical indications, operative procedures, and perioperative outcomes.
**Methods:** Retrospective study including all patients with UC who underwent colorectal surgery at a tertiary referral centre between 2014-2024. Demographic data, surgical indications, operative procedures, and perioperative outcomes were analysed to assess temporal trends, with a focus on minimally invasive and robotic approaches.
**Results:** Fifty-nine patients were operated for UC. Colectomies as first surgery in a three-step procedure were performed in 42 patients (median age 35.6 (IQR 26.1; 46.6)) after a median of 5.9 years (IQR 2.7; 12.4) after diagnosis. Dysplasia was the indication for surgery in 3 patients, while 4 had colon cancer. 95% of colectomies were performed laparoscopically. Proctectomy and ileum pouch anal anastomosis (IPAA) was performed in 47 patients during the study period, a median of 210 days (IQR 184; 254) after colectomy. The proportion of robotic procedures increased substantially from 2017 onward, reaching 83.3% in 2024, without any detectable decline in quality during the implementation phase; notably, the last laparoscopic completion proctectomy/IPAA was performed in 2018. An elective two-stage procedure was performed in 12 patients mainly for dysplasia or rectal cancer (n=3) (median age 54.9 years (IQR 48.2; 59.2)) and a median of 20.6 years (IQR 15.7; 32.8). Additionally, five patients were treated a median of 14 years after mostly ileorectal anastomosis for UC-associated rectal cancer and one rectal cuff cancer with poor prognosis and difficulty in preoperative diagnosis and staging.
**Conclusion:** Surgical management of ulcerative colitis at a tertiary referral centre has shifted toward predominantly minimally invasive and robotic approaches, with clear differentiation between acute disease-driven staged procedures and elective oncologic resections reflecting long-term disease burden.

### Robotic-Assisted CRS and HIPEC in Pseudomyxoma Peritonei: Case Report and Video Demonstration

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**Background:** Pseudomyxoma peritonei (PMP) is a rare malignancy characterized by mucinous ascites, often originating from perforated low-grade appendiceal mucinous neoplasms (LAMN). Disease progression causes abdominal distension, intestinal obstruction, and potentially fatal outcomes. Cytoreductive surgery (CRS) combined with hyperthermic intraperitoneal chemotherapy (HIPEC) represents the current standard treatment, offering potential long-term survival. However, these procedures are technically demanding, associated with substantial perioperative morbidity, requiring considerable expertise. Interest in minimally invasive, including robotic-assisted, approaches for selected patients with a low peritoneal cancer index (PCI) is growing, although robotic-assisted CRS/HIPEC remains rare in routine clinical practice.
**Conclusion:** Robotic-assisted CRS/HIPEC can be safe in carefully selected patients and accelerate postoperative recovery.
**Case presentation:** A 37-year-old patient was referred to gynecology for further investigation of an ovarian cyst. During resection, the large cyst originating from the left ovary ruptured. Histological analysis revealed a mucinous epithelial tumor with immunohistochemical intestinal differentiation of unknown origin. Further investigations (PET-CT, gastroscopy, colonoscopy, appendectomy) found a LAMN, pT4a, R0 with PCI 5. Following multidisciplinary tumor board discussion (MDT), we performed a robotic-assisted CRS/HIPEC as follows using the da Vinci Xi® (video sequences):
(1) Incisions: horizontal line at the umbilicus (for double docking technique)
(2) Diagnostic laparoscopy: PCI 8
(3) Mobilization of liver, stripping of liver capsule, splenectomy
(4) Peritonectomy of right upper quadrant and diaphragm
(5) Peritonectomy of left diaphragm, omentectomy,
(6) Redocking of da Vinci, targeting for lower abdomen
(7) Bilateral adnexectomy
(8) Rectal-sparing pelvic peritonectomy
(9) Specimen retrieval via Pfannenstiel incision, CCR-0
(10) Placing of tubes, HIPEC: Mitomycin C (35 mg/m²), 41–43 °C, 90 minutes
(11) Abdominal rinsing (saline) and closing of incisions
Uneventful postoperative course with discharge on day 6 after surgery. Histology confirmed acellular mucin deposits across all resected peritoneal surfaces, splenic involvement, and infiltration of both ovaries. Postoperative MDT recommended regular abdominal imaging for follow-up.

## Free Communication II – Thoracic Surgery

### Endothelial-to-Mesenchymal Transition in Fibrotic Lesion Formation in CTEPH

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**Background:** Chronic thromboembolic pulmonary hypertension (CTEPH) is a rare, progressive form of pulmonary hypertension caused by persistent obstruction of the pulmonary arteries (PAs) following unresolved pulmonary embolism (PE). Only a subset of PE patients develop CTEPH, suggesting underlying endothelial vulnerability. We hypothesize that pulmonary artery endothelial cell (PAEC) dysfunction contributes to CTEPH pathogenesis by promoting vascular remodeling and fibrosis through endothelial-to-mesenchymal transition (EndMT).
**Aims:** Determine how endothelial dysfunction predisposes pulmonary artery endothelial cells to EndMT in CTEPH compared with control pulmonary arteries.
**Methods:** Intimal and fibrotic tissues obtained from pulmonary endarterectomy (PEA) specimens and pulmonary artery tissue collected during lung transplantation (LTP) in 2025 were used to isolate PAECs. Cell proliferation and barrier function were assessed using the MTT assay and electric cell-substrate impedance sensing (ECIS) technology, respectively. To evaluate the potential for EndMT, PAECs were exposed to an artificial clot generated by thrombin-induced plasma coagulation, mimicking the post-embolic environment.
**Results:** We established a robust protocol for culturing PAECs from intimal material removed during PEA in CTEPH patients and from pulmonary artery tissue obtained during LTP as controls. Endothelial identity was confirmed by cobblestone morphology, positive staining for CD31 (PECAM-1) and von Willebrand factor (vWF), and absence of α-smooth muscle actin (α-SMA), excluding contamination by myofibroblasts. Functional assays demonstrated that CTEPH-derived PAECs exhibit hyperproliferation and reduced barrier integrity compared to control cells. Upon exposure to the artificial clot, CTEPH PAECs showed morphological changes consistent with EndMT and impaired clot degradation, suggesting altered endothelial function and matrix interaction.
**Conclusion:** Our findings demonstrate, for the first time, that CTEPH PAECs are predisposed to EndMT and impaired thrombus resolution, potentially driving vascular remodeling. Ongoing work will employ bulk and spatial transcriptomics to define molecular pathways and cell-cell interactions underlying endothelial plasticity in CTEPH.

### Exosomal RNA Profiling Identifies Long Noncoding RNAs and Protein Coding Genes as Potential Circulating Diagnostic Biomarkers for Pleural Mesothelioma

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**Background:** RNAs secreted by tumor cells via exosomes that are detectable in biological fluid such as plasma, have emerged as promising biomarkers for non-invasive cancer diagnosis.
**Aims:** This study aimed to compare the RNA cargo of exosomes secreted by primary Pleural Mesothelioma (PM) cells with those from non-PM cells, to identify circulating biomarkers that potentially could be used as non-invasive diagnostic biomarkers for PM.
**Methods:** Primary cell cultures were established from pleural effusions of 12 PM and 7 non-PM patients. Exosomes were isolated from cell culture supernatants using iZON qEV columns, followed by total RNA extraction using the mirVana PARIS kit and RNA sequencing. Sequencing reads were mapped to the human reference genome (GRCh38), and differential expression analysis was performed using DESeq2 to identify RNAs enriched in PM-derived exosomes. Candidate RNAs were validated in exosomes from cell cultures using RT-qPCR.
**Results:** We identified 2,089 RNAs upregulated in PM-derived exosomes with the majority comprising long noncoding RNAs (lncRNAs) (34%), pseudogenes (30%), and protein-coding genes (27%). Among the lncRNAs, GAS5 - a gene that we previously characterized functionally in PM - emerged as a particularly promising candidate for PM diagnosis. RT-qPCR validation of

cell culture exosomes confirmed significantly higher GAS5 expression in exosomes from PM compared to non-PM samples. Next, we performed a one step multiplex probe assay using digital PCR to simultaneously detect three gene targets and two loading controls in clinical samples from three patients. We successfully identified two candidate genes (CACYBP and RSL1D1) in total plasma. We detected one candidate gene, CACYBP, in pleural effusion-derived exosomes, interestingly, at higher levels compared to matched plasma samples. Notably, the levels of all the five genes remained below the detection limit in plasma-derived exosomes.
**Conclusion:** Our findings emphasize the potential utility of the PM exosomes for PM detection and highlight GAS5, CACYBP and RSL1D1 as potential diagnostic biomarker candidates. Further large-scale analysis is needed to establish their clinical utility.

### Minimally Invasive Porcine in Vivo Model for Chronic Thromboembolic Pulmonary Hypertension

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**Background:** Chronic thromboembolic pulmonary hypertension (CTEPH) is often associated with preceding pulmonary embolisms developing bilateral fibrotic obstructions of the pulmonary arteries (PA) and microvascular changes. To understand the complex underlying pathophysiology, research relies on in vivo models. A large animal model has been developed to mimic characteristics of CTEPH using invasive techniques such as ligation of the PA via sternotomy.
**Aims:** Considering animal welfare and 3R principles, we aim to refine and develop a minimally invasive CTEPH model.
**Methods:** We studied five female large white pigs (50kg, 3-4 months). Under general anesthesia and hemodynamic monitoring, an intravascular plug was inserted into the left PA. The right lower lobe artery was embolized with non-resolving n-butyl-2-cyanoacrylate glue. Glue-embolization was repeated weekly for 5 weeks. MRI assessment was performed at each intervention. At week 5 macro- and microscopic lung assessment and plasma molecular analysis were performed.
**Results:** Implantation of the intravascular plug in the left PA was successful in all animals, without any residual perfusion seen in MRI angiography. The mPAP increased from 15.6mmHg (SD 3.5) at baseline to 35mmHg (SD 7.7) ($p = 0.005$) at week 5. Functional cardiovascular MRI showed an increase in right ventricle dimension. Macroscopically, the left lung showed areas of ischemia with hypertrophy of bronchial arteries and overperfusion in the right upper lobe. Histologically, microvascular wall thickness was increased in both the hyperperfused (right upper lobe) and ischemic territory (left lung). Plasma molecular analysis revealed elevated circulating endothelin-1 and reduced nitric oxide metabolites associated with CTEPH development.
**Conclusion:** We established a minimally invasive approach for a previously described CTEPH model, including representative hemodynamic, morphological and molecular CTEPH features. The model increases safety and welfare for experimental animals.

### Hyperthermic Intrathoracic Cisplatin Promotes Immunogenic Cell Death in Malignant Pleural Mesothelioma

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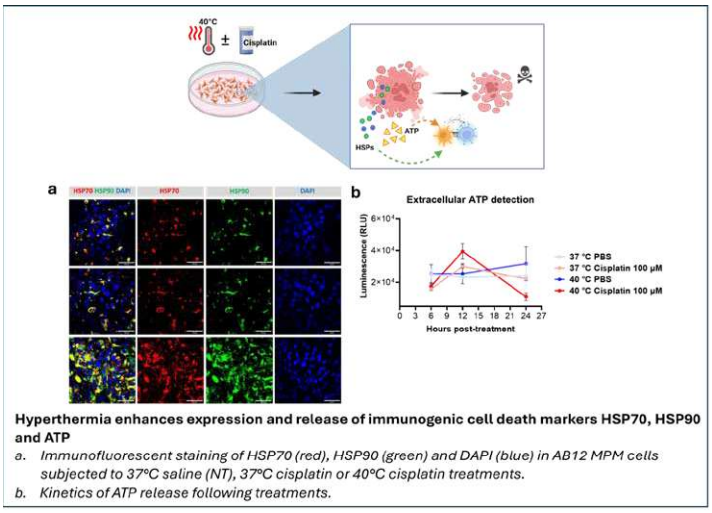
[1]Thoracic surgery, Centre Hospitalier Universitaire Vaudois (CHUV), Lausanne; [2]Ludwig Institute for Cancer Research, University of Lausanne, 1005; [3]Oncologie clinique, Centre Hospitalier Universitaire Vaudois (CHUV), Lausanne

**Background:** Malignant pleural mesothelioma (MPM) remains a major therapeutic challenge, with conventional treatments providing limited benefit. Prior studies in patients with MPM have shown that hyperthermic intrathoracic chemotherapy (HITOC) could improve patient survival. Recently, in a preclinical murine model of MPM, we demonstrated that HITOC enhanced intratumoral CD8⊠ T-cell infiltration and synergized with dual PD-1/CTLA-4 blockade improving cancer control. However, the initial mechanisms induced by HITOC causing microenvironment immunomodulation remain unclear.
**Aims:** In this study, we examined the potential of HITOC to induce immunogenic cell death (ICD) in MPM, promoting the release of damage-associated molecular patterns (DAMPs) and subsequent immune activation.
**Methods:** AB12 MPM cells were exposed to vehicle or cisplatin (100 µM) under normothermic (37 °C) or hyperthermic (40 °C) conditions for 60 minutes to mimic intraoperative HITOC conditions. At several time points after treatment, multiple measurements were made including: (1) monitoring of cell viability using MTS and lactate dehydrogenase (LDH) assays; (2) quantification of global proteomic changes by liquid chromatography-tandem mass spectrometry; (3) evaluation of ICD-associated DAMPs HSP70, HSP90 and ATP by immunofluorescence, western blotting and bioluminescence.
**Results:** AB12 cell viability was reduced by normothermic and further reduced by hyperthermic cisplatin at 24 hours (n=6). Proteomic profiling at 24 hours revealed marked alterations in cisplatin-treated cells but not in response to hyperthermia (n=3). At early timepoints however, heat adjunct to cisplatin increased HSP70 and HSP90 expression 6 hours post-treatment, with HSP90 upregulation sustained up to 24 hours compared to normothermic cisplatin. Hyperthermic cisplatin caused increased levels of extracellular ATP (peak at 12 hours, n=3) which returned to baseline levels at 24 hours, consistent with early DAMPs release characteristic of ICD.
**Conclusion:** Hyperthermic cisplatin induces tumor cell death with immunogenic features in MPM cells. These results provide the initial mechanistic steps of HITOC-induced immune activation. Further studies are required to confirm these data in vivo.




**Hyperthermia enhances expression and release of immunogenic cell death markers HSP70, HSP90 and ATP**
*a. Immunofluorescent staining of HSP70 (red), HSP90 (green) and DAPI (blue) in AB12 MPM cells subjected to 37°C saline (NT), 37°C cisplatin or 40°C cisplatin treatments.*
*b. Kinetics of ATP release following treatments.*

### Clonal Evolution and Intratumoral Heterogeneity in Metachronous Oligometastatic Non-Small Cell Lung Cancer: The Role of Surgery for Multiregional Tissue Analysis

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**Background:** In oligometastatic non-small cell lung cancer (NSCLC), the combination of systemic therapy and local ablative treatment (LAT) including surgery and radiotherapy has been shown to provide a substantial survival improvement. However, patient selection for LAT remains a central challenge – mostly because the biology and molecular characteristics of "true" oligometastatic disease (OMD) is still poorly understood.
**Aims:** Here we aimed to perform a comprehensive next-generation sequencing (NGS) of sequentially resected tissue specimens from metachronous OMD.
**Methods:** Patients with metachronous oligorecurrent NSCLC (≤5 metastases in ≤3 organs) and representative sequential tissue specimens were identified from a prospectively maintained RedCap Database. Primary tumor resection was performed between 01/2016 and 12/2024 at a single institution. NGS was performed using the Oncomine Comprehensive Assay Plus. Clonal hierarchies were reconstructed for each tumor based on variant allele frequencies (VAF) of somatic alterations.
**Results:** NGS was successfully performed on 19 cancer specimens (primary tumors and metastases) from 6 patients. Adenocarcinoma was present in five patients and squamous-cell carcinoma in one patient. Initial UICC stages were IA3 (n=1), IIIA (n=3) and IVB (OMD; n=2). Oligorecurrence occurred after a median (IQR) of 16.5 (9.2-47.6) months. Analysis of clonal hierarchy revealed KRAS, TP53, EGFR, and NRAS as truncal mutations in three, two, one and one patients, respectively. Subclonal somatic changes were common and included low-level genetic alterations in known therapy relevant genes such as STK11 and KEAP1.
Among three patients with consecutive brain metastases, genetic profiles of the resected tissue specimens showed a high clonality in evolution with maintained mutational profiles in all paired specimens. Conversely, extracranial metastases demonstrated a more divergent evolution where only the truncal mutations were maintained in metastases.
**Conclusion:** Surgical resection of primary tumors and distant metastases not only offers LAT, but also allows a multiregional tissue analysis to understand clonal evolution in OMD. Subclonal alterations may eventually occur but the complexity of clonal evolution appears to be highly variable among patients with OMD.

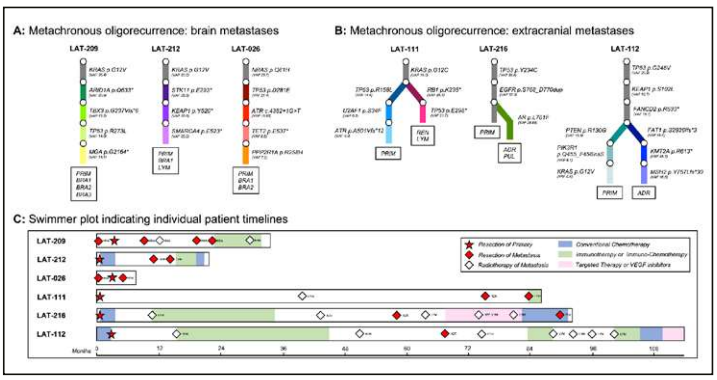


**Figure 1. A and B: genetic evolution among patients with metachronous oligometastatic NSCLC and brain metastases (A) or extracranial metastases (B). C: Swimmer plot indicating individual patient timeines**

**Pushing the Limits of Robotic-Assisted Thoracic Surgery: Outcomes of Anatomical Lung Resection After Neoadjuvant Immune Checkpoint Inhibitor Treatment for Advanced Non-Small Cell Lung Cancer**

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**Background:** Induction treatment with immune checkpoint inhibitors (ICI) improves survival and pathological response in locally advanced and oligometastatic non-small cell lung cancer (NSCLC). However, neoadjuvant ICI treatment may increase surgical complexity due to hilar fibrosis and higher conversion rates have been reported.
**Aims:** We therefore aimed to assess perioperative outcomes of robotic-assisted thoracic surgery (RATS) after neoadjuvant immunotherapy or chemo-immunotherapy.
**Methods:** From a prospectively maintained database, we identified patients with histologically confirmed UICC stage II-IV NSCLC who were treated with ICI or chemo-ICI prior to RATS anatomical lung resection between June 2019 and August 2025. Patients included in ongoing clinical trials were excluded. Surgical complexity was assessed by review of operative reports according to the proposed scoring system by Rusch et al. (JTCVS 2023).
**Results:** 24 patients who received RATS anatomical lung resection were analyzed, including 8 stage IIB, 8 stage IIIA, 1 stage IIIB, 5 stage IVA and 2 stage IVB patients. Resections included 22 lobectomies, 1 segmentectomy and 1 extended pneumonectomy. The overall conversion rate to thoracotomy was 12.5% (3 out of 24 patients), due to extensive hilar fibrosis. R0-resection was achieved in all patients. Postoperative complications included pneumothorax requiring chest tube placement (Clavien-Dindo grade 3) in 3 patients. No postoperative complications of grade 4 or higher occured. Higher surgical complexity was associated with increased operative time, although not statistically significant (p=0.063). Increased surgical complexity did not affect the length of hospital stay (p=0.77). Nodal downstaging to pN0 was seen in 83.3% of patients with cN1 disease (n=5/6), 71.4% of patients with cN2 disease (n=5/7) and 100% of patients with cN3 disease (n=2/2).
**Conclusion:** In this single-center cohort, the RATS approach enables a safe anatomical resection of locally advanced and oligometastatic NSCLC after ICI treatment with low conversion rates despite high surgical complexity. Postoperative complications were low-grade and well manageable.

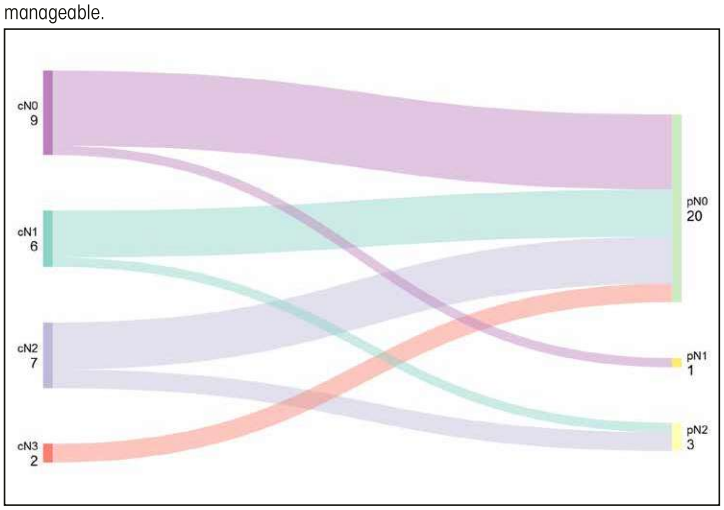


**Figure 1. Nodal downstaging after induction chemo-immunotherapy for locally advanced or metastatic NSCLC**

**"One-Stop Shop" From Diagnosis to Resection for Suspicious Pulmonary Lesions: Early Outcomes From a Stage-Matched Comparative Study**

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**Background:** Since the first implementation of a CT-guided robotic navigation bronchoscopy program in Europe in our centre in July 2024, we have established a One-Stop Shop (OSS) concept for patients with suspicious pulmonary nodules, consisting of: Robotic-assisted navigation-bronchoscopy (ION) with integrated cone-beam CT, biopsy, marking of the nodule with fiducial and ICG, fresh-frozen examination and direct oncological resection in one general anaesthesia.
**Aims:** The idea behind the concept was to shorten patient pathways and reduce psychological burden during waiting times, which is proven to affect overall survival in NSCLC patients (1, 2).
**Methods:** Comparison of the first 37 patients undergoing our OSS concept to UICC-stage-matched (1:1) control group (n=37), in which patients had preoperative transbronchial biopsy or wedge-resection for diagnostic purposes. Time period was compared from first CT-scan with suspicious lesion to treatment.
**Results:** There was no relevant difference regarding median age (69.5 vs. 70 years; p=0.955) and gender (p=0.67) between the two groups. 43.2% percent of the patients had an UICC-Stage IA1, 32.4% IA2, 8.1% a pulmonary metastasis and 8.1% a benign finding (Figure 1A). In both groups, all surgeries were performed by a minimal-invasive approach (VATS/RATS). Time from first CT-scan with suspicious lesion to treatment was shorter in the OSS cohort (45 days vs. 58 days respectively, p=0.032). In a subgroup analysis of NSCLC patients, this effect was even more pronounced compared to the control group (45 days vs. 65 days, p=0.025) (Figure 1B). There was no difference in hospitalisation after resection between the groups (median 3 days for both, p=0.81) (Figure 1C).
**Conclusion:** Our OSS approach enables rapid diagnosis and treatment of potentially malignant pulmonary lesions in patients eligible for primary resection, minimizing delays in care. Furthermore, the OSS has the potential to reduce psychological stress in patients, which can positively impact survival rates. In this regard, an RCT is currently planned.

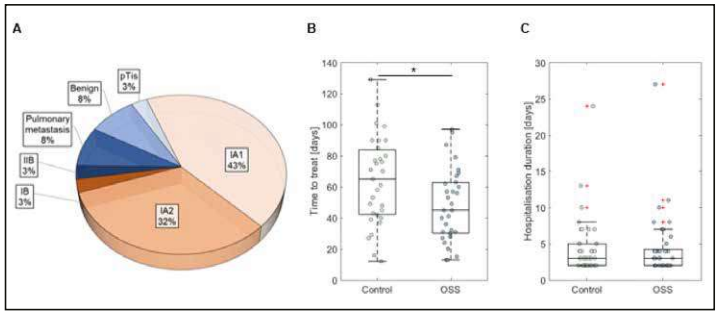


**Figure 1. A: Pie chart displaying the stage operated in the One-Stop Shop (OSS) concept, the same stages also apply to the control group; B: Boxplots demonstrating time to treat between the control group and the OSS cohort in days (p=0.032); C: Boxplos demonstrating hospitalisation after resection between the control group and the OSS cohort in days (P=0.81)**

**Salvage Surgery for NSCLC: Another Chance or a Risky Try? A Retrospective Study**

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[1]Thoracic Surgery Unit, HFR Cantonal Hospital of Fribourg, Fribourg; [2]Faculty of Medicine, University of Fribourg, Fribourg

**Background:** Non-small cell lung cancer (NSCLC) remains the leading cause of cancer-related mortality worldwide. Although advanced disease has traditionally been treated with palliative intent, modern systemic therapies – immunotherapy, targeted agents, chemotherapy, and radiotherapy – have enabled improved tumor control in selected patients. This evolution has reopened discussion on the role of surgery within multimodal strategies for advanced stages. While planned surgery following neoadjuvant therapy is well established, value of salvage surgery for residual, persistent, or recurrent disease after systemic treatment remains poorly defined.
**Aims:** This cohort study aimed to assess the feasibility, safety, and oncological outcomes of salvage surgery, using surgery after neoadjuvant treatment as the most comparable clinical reference.
**Methods:** We performed a retrospective single-center analysis of patients with advanced NSCLC who underwent pulmonary resection between March 2021 and July 2024. Patients were divided into two groups: salvage surgery for residual or recurrent disease following systemic therapy and/or radiotherapy (n=11), and planned surgery after neoadjuvant treatment with curative intent (n=20). Surgical procedures, pathological outcomes, and postoperative morbidity were analyzed. Complications graded according to the Clavien–Dindo classification. Disease-free survival (DFS) and overall survival (OS) estimated using the Kaplan-Meier method.
**Results:** Patients undergoing salvage surgery presented with more advanced initial disease, including a higher proportion of metastatic stages. Lobectomy was the most frequent procedure in both groups. Complete resection (R0) was achieved in 90.9% of salvage surgeries and 100% of planned surgeries. Postoperative morbidity (Clavien–Dindo ≥2) was comparable (63.6% vs. 60%), with no 90-day mortality. At 24 months, DFS was approximately 50% in salvage group and 70% in other group. OS was 55–60% and 75%, respectively.
**Conclusion:** In carefully selected patients, salvage surgery for advanced NSCLC is feasible and safe, achieving high rates of complete resection with acceptable morbidity despite extensive pretreatment. Within experienced thoracic centers and multidisciplinary decision-making, salvage surgery represents a legitimate component of modern multimodal management.

**Perioperative Outcomes After Sublobar Lung Resection: The Impact of Anatomical Location and Resection Complexity**

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**Background:** Sublobar anatomical lung resection (SARL) is increasingly used for early-stage lung cancer and for patients with limited cardiopulmonary reserve. Although oncological results of segmentectomy are established, perioperative risk differences between specific SARL procedures remain unclear.
**Aims:** We assessed outcomes after SARL by anatomical location and extent of resection, and explored the impact of procedural complexity and 3D reconstruction.
**Methods:** This retrospective single-center study included all adults undergoing SARL between January 2015 and February 2023. Endpoints were 30-day and 90-day mortality, 30-day morbidity or readmission, blood loss, operative time (OT), and length of stay (LOS). Categorical variables were compared with chi-square or Fisher's exact test and continuous variables with nonparametric methods.
**Results:** Overall, 573 patients were analyzed; 57.9% were male. Mean age was 65 ± 10 years and mean body mass index 25.2 ± 4.7 kg/m². Right-sided SARL had higher 30-day morbidity than left-sided resections (32.9% vs 24.7%, p = 0.032). Thirty-day mortality was identical

(0.7% vs 0.7%), while 90-day mortality was numerically higher on the right (2.4% vs 1.4%) without significance. Median LOS was 3 days in both groups. Median blood loss tended to be higher on the right (150 vs 100 ml). Overall 30-day mortality was 0.55% (n = 4) and 90-day mortality 1.65% (n = 9), with no significant differences across anatomical segments. In contrast, 30-day morbidity differed by segment ($p < 0.001$), with highest rates after right upper lobe single-segment resections (31.6%) and left upper lobe combined or multisegment resections (25.0%). LOS ($p = 0.003$) and OT ($p = 0.019$) also varied, with longest OT after right lower lobe combined resections and left lingular resections. Blood loss did not differ significantly overall.

**Conclusion:** Perioperative outcomes after SARL vary by location and extent. Mortality is low, but morbidity, OT, and LOS increase in more complex combined resections, supporting tailored planning and counseling overall.

| | | Operative Side | | |
|---|---|---|---|---|
| | | Right | Left | p |
| 30 days Mortality | No | 275(99.3%) | 267(99.6%) | <0.999 |
| | Yes | 2(0.7%) | 2(0.7%) | |
| 30-day Morbidity or hospitalisation | No | 186(67.1%) | 206(77.2%) | 0.009 |
| | Yes | 91(32.9%) | 61(22.8%) | |
| 90 days Mortality | No | 271(97.8%) | 265(98.9%) | 0.505 |
| | Yes | 6(2.2%) | 3(1.1%) | |

Table 1. Comparison of mortality and morbidity rates by operative side

| | | N | Median (IQR) | p |
|---|---|---|---|---|
| Lenght Of Stay (days) | Right | 277 | 3(2-5) | 0.077 |
| | Left | 267 | 3(2-5) | |
| Op Time (Min) | Right | 277 | 145(112-186.5) | 0.181 |
| | Left | 268 | 142(108-178) | |
| Blood loss (ml) | Right | 145 | 150(100-300) | 0.120 |
| | Left | 128 | 100(100-200) | |

Table 2. Intraoperative and postoperative characteristics by surgical

| | 30 days Mortality | | |
|---|---|---|---|
| Segmente | No | Yes | p |
| Right upper lobe | | | 0.571 |
| Single segment | 136(25.1%) | 1(25%) | |
| Combined/multisegment | 24(4.4%) | 0(0%) | |
| Right lower lobe | | | |
| Single segment | 88(16.2%) | 1(25%) | |
| Combined/multisegment | 27(5%) | 0(0%) | |
| Left upper lobe | | | |
| Single segment | 35(6.5%) | 1(25%) | |
| Combined/multisegment | 104(19.2%) | 1(25%) | |
| Left lower lobe | | | |
| Single segment | 93(17.2%) | 0(0%) | |
| Combined/multisegment | 18(3.3%) | 0(0%) | |
| Left lingula lobe | | | |
| 4-5 segment | 17(3.1%) | 0(0%) | |
| | 90 days Mortality | | |
| Segmente | No | Yes | p |
| Right upper lobe | | | 0.644 |
| Single segment | 134(25%) | 3(33.3%) | |
| Combined/multisegment | 23(4.3%) | 1(11.1%) | |
| Right lower lobe | | | |
| Single segment | 87(16.2%) | 2(22.2%) | |
| Combined/multisegment | 27(5%) | 0(0%) | |
| Left upper lobe | | | |
| Single segment | 35(6.5%) | 1(11.1%) | |
| Combined/multisegment | 104(19.4%) | 0(0%) | |
| Left lower lobe | | | |
| Single segment | 91(17%) | 2(22.2%) | |
| Combined/multisegment | 18(3.4%) | 0(0%) | |
| Left lingula lobe | | | |
| 4-5 segment | 17(3.2%) | 0(0%) | |
| | 30-day morbidity or hospitalisation | | |
| Segmente | No | Yes | p |
| Right upper lobe | | | <0.001 |
| Single segment | 89(22.7%) | 48(31.6%) | |
| Combined/multisegment | 15(3.8%) | 9(5.9%) | |
| Right lower lobe | | | |
| Single segment | 67(17.1%) | 22(14.5%) | |
| Combined/multisegment | 15(3.8%) | 12(7.9%) | |
| Left upper lobe | | | |
| Single segment | 28(7.1%) | 7(4.6%) | |
| Combined/multisegment | 66(16.8%) | 38(25%) | |
| Left lower lobe | | | |
| Single segment | 80(20.4%) | 13(8.6%) | |
| Combined/multisegment | 16(4.1%) | 2(1.3%) | |
| Left lingula lobe | | | |
| 4-5 segment | 16(4.1%) | 1(0.7%) | |

Table 3. Comparison of mortality and morbidity rates across segments

| | Lenght Of Stay (days) | Op Time (Min) | blood loss (ml) |
|---|---|---|---|
| Right upper lobe | | | |
| Single segment | 3(2-6) | 145(108-182.5) | 175(100-300) |
| Combined/multisegment | 3.5(2-6) | 144.5(121.3-200.3) | 200(100-350) |
| Right lower lobe | | | |
| Single segment | 3(2-5) | 134(108-172.5) | 100(100-300) |
| Combined/multisegment | 3(3-5) | 171(116-224) | 200(100-300) |
| Left upper lobe | | | |
| Single segment | 3(2-4) | 112(93.5-154) | 100(50-200) |
| Combined/multisegment | 4(2-7) | 146.5(118-176.5) | 100(100-200) |
| Left lower lobe | | | |
| Single segment | 3(2-3.5) | 131(102-171.5) | 125(100-287.5) |
| Combined/multisegment | 3(2-4.3) | 137.5(119.8-175.8) | 150(50-0) |
| Left lingula lobe | | | |
| 4-5 segment | 3(2-4) | 164(123-193) | 100(100-400) |
| p | 0.003 | 0.019 | 0.661 |

Table 4. Intraoperative and postoperative characteristics across

## Intraoperative CT Imaging for Real-Time Nodule Visualisation and Margin Measurement in Sublobar Lung Resection: A Retrospective Study

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**Background:** Achieving negative resection margins in non-small cell lung cancer (NSCLC) is essential, as is ensuring accurate excision of the target nodule and avoiding incomplete or misplaced resections. Intraoperative computed tomography (iCT) may confirm nodule visualisation and support real-time margin assessment at the staple line.

**Aims:** To assess the feasibility of specimen-based iCT for nodule visualisation and compare

iCT-derived margins with pathology-confirmed margins, as well as radiologist-reported findings on iCT versus pre-operative CT.
**Methods:** We retrospectively included consecutive adult patients undergoing therapeutic sublobar resection for suspected or confirmed NSCLC with ex vivo specimen iCT performed intraoperatively using a mobile cone-beam CT system. Nodule visualisation on iCT was classified as good, uncertain, or not visualised based on the radiology report. The iCT margin was the minimal distance from the nodule to the staple line; the reference standard was histopathology. Continuous measurements were compared using Bland-Altman agreement analysis and categorical variables using kappa.
**Results:** Thirty-two patients were analysed (median age 68 years; 16 females); The preoperative indication for resection was a suspected malignant pulmonary nodule in 27/32 (84.4%) patients and confirmed NSCLC in 5/32 (15.6%) (prior history or biopsy-proven). Nodules were visualised on iCT in 30/32 (93.8%) and classified as uncertain in 2/32 (6.2%). R0 was achieved in 32/32 (100%). For the largest solid component (29 paired measurements), the nodules appeared larger in pre-operative CT than iCT with a mean bias of +0.79 mm (limits –8.84 to +10.43 mm); pathology measurements were larger than imaging (bias –4.19 mm vs pre-operative CT; –4.76 mm vs iCT). For staple-to-tumour margins, iCT versus pathology showed mean bias –1.08 mm (limits –19.27 to +17.10 mm).
**Conclusion:** Portable iCT is feasible for intraoperative nodule visualisation, helping to avoid incomplete or misplaced resections. Agreement with pathology for staple-to-tumour distance showed substantial variability, supporting iCT as an adjunct rather than a substitute for histopathology.

## Hepato-Pancreatico-Biliary II

### Transition From an Open To a Robotic Liver Surgery Program

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**Background:** The adoption of robotic liver surgery (RLS) represents a major innovation in hepatobiliary surgery, with improved perioperative outcomes. Compared to open liver surgery (OLS), RLS offers several advantages. We compared a two-year OLS phase (phase 1) with the follwing two-year RLS implementation phase (phase 2) focusing on case selection and surgical outcomes.
**Aims:** The aim of this study was to describe the institutional transition from a pure OLS program to a RLS program in a center without previous experience in laparoscopic liver surgery.
**Methods:** This retrospective, single-center cohort study was conducted at a tertiary referral center for hepatobiliary surgery with an annual case-load of around 100-110 liver resections. All consecutive patients undergoing liver resection between 01/2020 and 06/2025 were included, RLS started in 01/2023. Inclusion criteria comprised adult patients undergoing any form of liver surgery for benign or malignant indications.
**Results:** A total of 445 patients were included, of whom 346 (78%) underwent OLS and 99 (22%) RLS. Major resections were performed in 47% of OLS and 20% of RLS. After RLS implementation 45% of all cases were performend robotically. Compared to phase 1, major complications dropped from 40% to 21% (p<0.001). Both post-hepatectomy liver failure (PHLF) (6% vs. 4%; p=0.403) and bile leak were comparable (8% vs. 9%; p=0.119) in the two phases. Length of stay (LOS) was reduced from 11 (8-16.5) to 7 (5-10) days. Comparing the overall cohort of OLS with RLS, major complications (OLS : 38% vs RLS: 7%), PHLF (OLS : 6% vs RLS: 0%), and biliary leakage (OLS : 9% vs RLS: 3%), ocurred more often after OLS. Similarly, LOS was reduced for RLS compared to OLS (5 (4-7) vs. 10 (7-15) days).
**Conclusion:** Even without prior laparoscopic experience, a structured transition to robotic liver surgery allows a minimally invasive appraoch in every other patient. The transition to robotic liver surgery is associated with substantially reduced morbidity and shorter hospitalization.

### One-Hundred Consecutive Robotic Liver Resections: Initial Experience and Lessons Learned

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**Background:** Following prior open and laparoscopic experience, robotic liver resection (RLR) was introduced in early 2023.
**Aims:** To analyze the results of the first 100 RLRs.
**Methods:** Data of consecutive RLRs (02/2023 to 11/2025) were prospectively collected. The primary endpoint was postoperative morbidity; secondary ones included other clinical outcomes within 90-days after surgery. Subgroup analysis included patients with repeat hepatectomy, multiple resection areas, RLRs complexity based on the Iwate criteria. Kruskal-Wallis and Chi-square tests were used for subgroup comparisons.
**Results:** In 100 consecutive patients (40% females, mean age 65 years, mean Charlson-comorbidity-index 7), main indications were hepatocellular carcinoma (n=38), colorectal-liver-metastases (n=32). Cirrhosis rate was 28%, and 18% of patients underwent repeat hepatectomy (prior hepatectomy≥1). Mean number of nodules was 2.2, involving posterior-superior liver segments in 54%. Non-anatomic resections were performed in 54%, and multiple resection areas in 32% of cases (range 2-9) with mean blood loss of 200 cc. Non-urgent conversion to laparotomy occurred in 4% and intraoperative ablation was associated with RLR in 13% of cases. Postoperative overall and major morbidity (CD≥3) rates were 26% and 7% respectively (grade B post-hepatectomy liver failure 2%, biliary leak 1%), without reoperations. Overall morbidity was nihil after repeat hepatectomies and similar in patients with one (25%) vs. multiple resections (28%). Mean hospital stay was 6 days, with 90d readmission of 6%. Mortality was 1% (massive myocardial infarction). Textbook outcomes were reached in 79% of RLRs. Based on Iwate criteria RLR difficulty was low (n=25), intermediate (n=46), advanced (n=21) or expert (n=8). Operative time, blood loss, hospital stay increased with increasing difficulty, while complications and textbook outcomes remained stable.
**Conclusion:** Transition to robotic hepatectomy could be safely achieved, with good short-term results maintained in complex subgroups like repeat hepatectomies, multiples resections or high Iwate scores.

### Major Liver Resection in Cirrhotic HCC Patients in The Era of Robotic Surgery: Expanding Boundaries of Surgical Therapy

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**Background:** Cirrhosis has traditionally been considered a relative contraindication for hepatic resection due to the risk of post-hepatectomy liver failure (PHLF). With the rising incidence of HCC and persistent organ shortage, alternative curative approaches are urgently required. Robotic surgery may provide improved outcomes, less invasiveness, and be particularly beneficial for cirrhotic patients.
**Aims:** To evaluate the safety and outcomes of robotic liver resection in cirrhotic HCC patients.
**Methods:** We retrospectively analyzed all cirrhotic patients with HCC undergoing liver resection between 2020–2025. Patients were stratified by approach (open, laparoscopic, robotic).
**Results:** Fifty-seven (n=57) cirrhotic patients underwent liver resection for HCC: open (n=28), laparoscopic (n=7), and robotic (n=21). Whereas initially major resections accounted only for 17% (n=6/35) of open and laparoscopic resections, the initiation of the robotic program significantly increased the rate of major resections up to 43% (n=9/21). Despite a learning curve, overall median operative time was comparable between open and robotic resections (242 vs. 252 minutes, p=0.64), whereas robotic procedures significantly reduced operation time compared with equivalent laparoscopic resections from 214 to 198 minutes (p=0.03). With proportional increase of major liver resections, a trend to bigger tumor size and frameshift from BCLC 0 to BCLC A patients was observed for the robotic group. In that context, PHLF occurred in n=3/6 robotic major resections (all ISGLS grade A, resolved with supportive care) versus n=2/9 severe grade C cases after open surgery. Despite more complex resections, robotic patients had shorter ICU stay (1 vs. 3 days, p=0.01) and reduced hospital stay (7 vs. 11 days, p=0.02). No conversion and no mortality occured for robotic resections. R0 rates were comparable (98% vs. 96%, p=0.89).
**Conclusion:** Robotic hepatectomies are safe in selected cirrhotic HCC patients. Although mild PHLF was common, recovery outcomes are favorable. Therfore, in the era of organ shortage, robotic surgery can expand resectional options.

### Clinical Practice of Indocyanine Green Fluorescence Imaging in Robotic Liver Surgery – A Global Expert Survey

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**Background:** Indocyanine green (ICG) fluorescence imaging is increasingly incorporated into robotic liver resections (RLR), yet clinical practice regarding timing, dosage, and staining techniques is divergent.
**Aims:** This international expert survey aimed to characterize current practices for ICG in RLR.
**Methods:** Experts in RLR were invited to participate based on surgical volume (experience of 50 RLR and 30 annual RLR). A 74-item questionnaire was developed following a literature search and reviewed by a steering committee. The survey addressed indications, timing, dosage, imaging technology, benefits, limitations, training, and future directions of ICG use. Responses collected between September and October 2025 were analyzed.
**Results:** Seventy experts from 19 countries completed the survey, corresponding to an 88% response rate. Centers performed a median of 180 annual liver resections, including 55 RLR. Most experts used ICG (96%) during RLR. Anatomical demarcation (91%), tumor localization (60%), and biliary anatomy assessment (60%) were the most frequent indications. 60% of experts use preoperative ICG, while intraoperative ICG is mainly administered for demarcation (67%) and biliary tract visualization (40%). Considerable heterogeneity exists in dosage,

timing, and staining techniques, particularly in cirrhotic livers and for tumor localization. Only half of the experts had standard operating procedures, whereas 64% expressed the need for a higher degree of standardization. Reported benefits of ICG use included improved anatomical orientation, margin assessment, lesion detection, and support during complex resections. Perceived limitations included background fluorescence, tissue penetration and variable staining in diseased parenchyma. 80% anticipated improved outcomes with combined ICG and three-dimensional image-guidance.

**Conclusion:** ICG fluorescence is widely used in RLR and is an important cornerstone for precision-guided robotic liver surgery. Standardized clinical practice guidelines, structured training, and technological improvements in imaging and navigation systems are claimed to optimize its clinical use.

### Economic Impact of Robotic Liver Resection – A Systematic Review of Costs, Resource Utilization, and Length of Stay

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**Background:** Robotic liver resection (RLR) is increasingly adopted in hepatobiliary surgery due to perioperative advantages. However, its economic impact remains controversial, particularly in comparison with open liver resection (OLR) and laparoscopic liver resection (LLR).

**Aims:** This systematic review aimed to evaluate the existing evidence on costs, resource utilization, and length of stay associated with RLR in adult liver surgery.

**Methods:** A systematic review was conducted in accordance with PRISMA and AMSTAR-2 guidelines and registered with PROSPERO. MEDLINE, EMBASE, and the Cochrane Library were searched up to September 2025. Studies reporting cost analyses of RLR for benign or malignant liver disease were included. Primary outcomes were total hospital costs and length of stay (LOS). Secondary outcomes included intraoperative, postoperative, readmission, and indirect costs. Study quality was assessed using the Drummond checklist.

**Results:** Thirty-two observational studies comprising 17,016 patients were included. RLR was consistently associated with higher intraoperative costs compared with OLR and LLR, largely driven by consumables and robotic instrumentation. Despite this, most studies comparing RLR with OLR reported comparable or lower total costs for RLR, primarily due to reduced LOS, fewer complications, and lower readmission rates. Median postoperative LOS was shorter with RLR than OLR in nearly all studies. Comparisons between RLR and LLR showed more heterogeneous results, with laparoscopy generally associated with lower total costs, although selected high-volume centers reported cost equivalence or lower costs with RLR. Only 25% of studies incorporated indirect costs such as robotic platform acquisition and maintenance. Overall study quality was predominantly rated as average.

**Conclusion:** RLR incurs higher intraoperative costs but may achieve comparable or reduced total hospital costs relative to open surgery through reduced LOS and complication burden. Compared with laparoscopy, a consistent economic advantage for RLR is less evident and appears context dependent. Future high-quality economic evaluations incorporating indirect costs and standardized cost definitions are required to better define the cost-effectiveness of RLR within modern hepatobiliary practice.

| Cost domain | OLR | LLR | RLR |
|---|---|---|---|
| Intraoperative costs | •• | ••• | •••• |
| Consumables / instruments | • | •• | •••• |
| Length of stay | •••• | •• | • |
| Complications / readmissions | ••• | •• | • |
| Total hospital costs | ••• | •• | •• |

Legend: • indicates relative magnitude (qualitative comparison). RLR demonstrates higher intraoperative and consumable costs, which may be offset by reduced length of stay and lower complication-related costs, particularly when compared with open liver resection.

**Table 1. Cost Structure and Drivers of Robotic Liver Resection**

### Mutli-center Analysis of Surgical Outcomes after Simultaneous Robotic Resection of Primary Colorectal Cancer and Liver Metastasis

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**Background:** Colorectal cancer (CRC) is the third most common cancer and the second leading cause of cancer death worldwide. The liver is the most common site of metastatic disease, with an estimated 15-20% of patients presenting with synchronous colorectal liver metastasis (LM). While overall robotic resections are increasingly performed due to the beneficial effects for patients and surgeons, scientific data on outcomes of simultaneous robotic (CRC and LM) resections is scarce.

**Aims:** The aim of this observational study is to analyze outcomes after simultaneous robotic resections of primary CRC and LM.

**Methods:** This oberservational multi-center cohort study analyzed 23 patients undergoing simultaneous robotic hepatic and colorectal resection for metastatic CRC at 3 tertiary care centers. All patients were ≥18 years and underwent surgery from 01/2018 to 07/2025.

**Results:** Twenty-three patients underwent simultaneous robotic resection of CRC and LM at 3 centers. Median hospital stay was 4 days (mean 5.61, SD 2.95). The highest Clavien–Dindo complication grade was IIIa in 1 patient (4.35%) during index admission and at 90 days. The 90-day Comprehensive Complication Index showed a median of 0 (mean 9.50, SD 12.86). No colonic anastomotic leaks or postoperative hemorrhage occurred. Biliary leakage was observed in 4 patients (17.39%; Grade A n=3, Grade B n=1, Grade C n=0). Postoperative liver failure occurred in 2 patients (8.70%; Grade A n=1, Grade C n=1). R0 resection was achieved in all colonic specimens (100%) and in 21 hepatic specimens (91.30%). Thirty-day mortality was 0%.

**Conclusion:** Simultaneous robotic resection of primary CRC and synchronous LM appears to be a safe and feasible surgical strategy when performed in experienced centers. Favorable short-term perioperative outcomes with preserved oncologic quality are demonstrated. The findings support further adoption of the robotic approach and warrant larger prospective studies to confirm long-term oncologic benefits and define optimal patient selection.

### Postoperative Alpha-Fetoprotein as a Predictive Marker in Patients With Hepatocellular Carcinoma After Liver Resection

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**Background:** Recurrence after curative-intent hepatic resection for hepatocellular carcinoma (HCC) remains prominent. Alpha-fetoprotein (AFP) is used for prognostic assessment, with most studies relying on dichotomised cut-offs. The prognostic value of early postoperative continuous AFP remains insufficiently assessed.

**Aims:** To evaluate the association of AFP at three months after resection for recurrence-free survival (RFS).

**Methods:** Single centre, retrospective study of adult patients undergoing curative-intent hepatic resection for HCC, with AFP measurements at 3 months. Patients with recurrence prior to laboratory assessment were excluded. RFS was assessed using a 3-month landmark Cox proportional hazards regression model. Smoothed hazard regression using restricted cubic splines was performed. Multivariable Cox regression adjusted for tumour size and multifocality. Discriminatory performance was assessed using a 1-year time-dependent area under the receiver operating characteristic (AUROC).

**Results:** Among 320 eligible patients, AFP values were available in 201 (62.8%) preoperatively and 94 (29.4%) at 3 months, 103 (32.2%) at 6 months, and 113 (35.3%) at 1-year. After exclusion of early recurrence (n=17) and patients with missing data on either tumour size or multifocality (n=4), 73 patients were analysed. Median AFP at 3 months was 3.6mg/L (IQR:2.5-7.4), and 46 (63.0%) had AFP <5mg/L. During median follow-up of 6.7 years from the 3-month landmark (IQR:2.8-8.9), 46 (63.0%) developed recurrence. Landmark RFS at 1-, 3-, and 5-years was 59.0%, 35.9% and 25.8%, median RFS of 1.6 years (IQR:0.4-7.1). Higher AFP levels at 3 months were strongly associated with recurrence (HR 1.35 per unit increase in log-transformed AFP, 95% CI:1.11-1.62; p=0.008) (Figure 1). No evidence of non-linearity between AFP and recurrence risk was observed (p=0.40). After adjustment for tumour size and multifocality, AFP remained independently associated with recurrence. The 1-year time-dependent AUROC was 0.58.

**Conclusion:** AFP after hepatic resection is independently associated with recurrence risk when analysed as a continuous variable but demonstrates only moderate discriminatory performance.

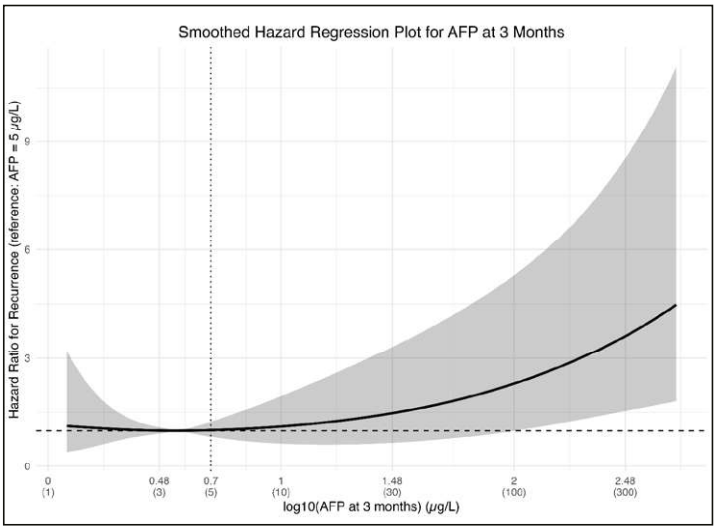


**Figure 1. AFP was modelled on the logarithmic scale. The x-axis shows log10(AFP) with corresponding AFP values in mcg/l, hazard ratios are refrenced to AFP = 5mcg/l (log10=0.699)**

## Hernia

### Prophylactic Mesh Augmentation in Midline Laparotomy in Elective or Emergency Settings: A Systematic Review and Network Meta-analysis of Randomized Trials

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**Background:** Incisional hernia (IH) after midline laparotomy occurs in 5-20% of patients, and can reach 30% in high-risk settings. Cost for IH repair was estimated at $15,899 per case in 2006. Although current guidelines support prophylactic mesh augmentation, the optimal anatomical plane, particularly in emergency settings, remains controversial. We conducted a systematic review and a network meta-analysis (NMA) of randomized trials (RCT) to compare mesh positions for IH prevention.
**Aims:** To identify the optimal prophylactic mesh plane for preventing IH after midline laparotomy in elective or emergency settings.
**Methods:** A systematic search of Pubmed, Embase and Cochrane databases was performed, including RCT on prophylactic mesh augmentation after midline laparotomy. Primary outcome was IH incidence. Secondary outcomes were surgical site occurrence (SSO), and surgical site infection (SSI). Elective and emergency settings were included. A random-effect NMA with Bayesian comparison was performed.
**Results:** 27 RCT, including 4298 patients, were analyzed (20 elective, 7 emergency). Control group was suture-only closure (1891 patients). Mesh positions were onlay (OM, 38%), retromuscular/preperitoneal (RM/PP, 37%), intraperitoneal (IP, 19%), and inlay (IM, 7%). Overall, mesh augmentation significantly reduced IH incidence (RR 0.41, 95% CI 0.27-0.62). Our analysis showed that both OM and RM/PP are the most effective techniques. OM ranked highest for IH prevention in both elective (RR 0.19, 95% CI 0.07-0.40), and emergency settings (RR 0.22, 95% CI 0.02-0.98), whereas RM/PP was not statistically significant in emergency surgery. Mesh augmentation increased SSO risk (RR 1.38, 95% CI 1.06-1.79), particularly with OM (RR 1.59, 95% CI 1.03-2.55). SSI rates were not significantly increased, irrespective of mesh positions or surgical settings.
**Conclusion:** Prophylactic mesh augmentation effectively reduces IH after midline laparotomy. OM provides the best prevention of IH, including in emergency surgeries, at the cost of increased SSO. These findings support OM or RM/PP as valid preventive strategies, with individualized risk-benefit assessment.

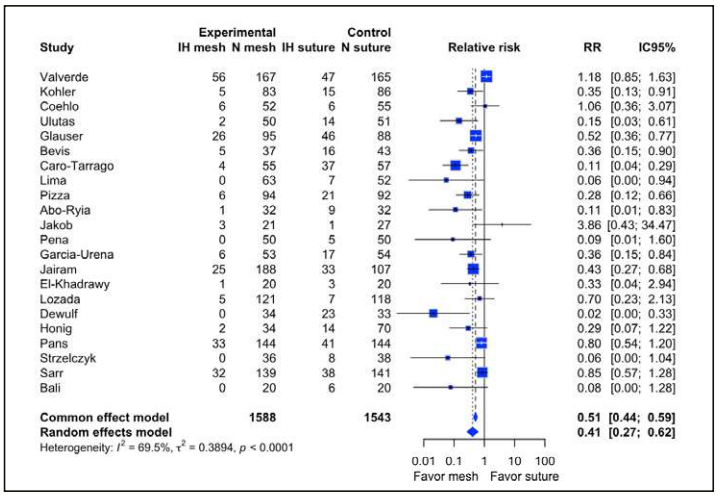


Table 1. Meta-analysis of mesh augmentation irrespective of mesh position to prevent IH

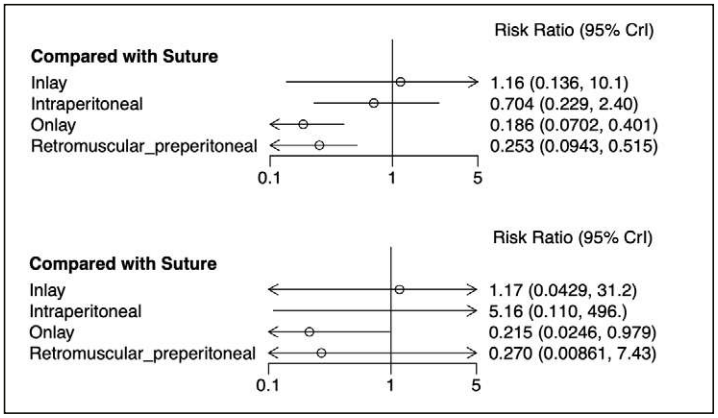


Table 2. NMA of mesh augmentation in elective or emergency settings to prevent IH (above) or in emergency settings to prevent IH (below)

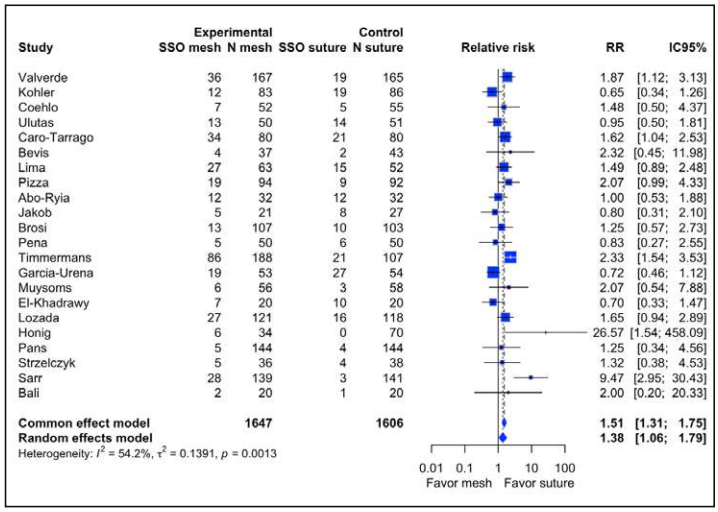


Table 3. Meta-analysis of SSO occurrence after mesh augmentation irrespective of mesh position

### Robotic Minimally Invasive Ventral Hernia Repair With the DEXTER Robotic Surgery System (RAVEN)

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**Background:** In ventral and incisional hernia repair, robotic approaches have expanded the surgical armamentarium, particularly for extraperitoneal and retromuscular reconstructions, offering improved ergonomics, enhanced visualization, and facilitation of intracorporeal suturing. After perioperative safety and feasibility of the DEXTER Robotic Surgery System have been demonstrated in inguinal hernia repair and cholecystectomy, its application in ventral hernia repair remains to be evaluated.
**Aims:** The aim of this clinical study was to confirm the perioperative and early postoperative safety and clinical performance of the DEXTER Robotic Surgery System in patients undergoing incisional or primary ventral hernia repair.
**Methods:** We conducted a prospective study at five centers in France, Germany, and Switzerland (ClinicalTrials.gov Identifier NCT07071740) including seven surgeons. Eligible patients presented with incisional or primary midline ventral hernia smaller or equal to 8 cm. The primary objectives of the study were to document the successful completion of the ventral hernia repair procedures and to collect data on the occurrence of major complications (Clavien-Dindo grades III-V), and other adverse events perioperatively and up to 30 days post-surgery.
**Results:** 33 patients were operated for ventral hernia repair with eTEP (2), IPOM+ (2), TARUP (9) and TAPP (20) techniques. The mean age and BMI of the patients were 56 years (±15) and 27.8 kg/cm$^2$ (±5.3), respectively. All surgeries were successfully completed as planned without conversions to open surgery. No intra-operative complications or device deficiencies were observed, and one Clavien-Dindo IIIa postoperative complication occurred. The mean skin-to-skin operative time was 97 min (±46), the console time 73 min (±39) and docking time 2.2 min (±1.3).
**Conclusion:** Our experience with VHR utilizing DEXTER confirms its feasibility and safety, with operative times aligning with those reported in the literature for other robotic platforms. The Dexter system emerges as a valuable device in the toolkit of ventral hernia repair.

### Robotic Versus Open Mesh-enforced Ventral Hernia Repair: A Multicenter Comparative Study

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[1]Viszeralchirurgie, Clarunis St.Claraspital, Basel; [2]Viszeralchirurgie, Clarunis, Basel

**Background:** Open mesh enforced ventral hernia repair is associated with increased surgical site occurrences (SSO) and prolonged hospital stay. A robotic-assisted minimally-invasive approach may offer benefits compared to open surgery, but comparative literature is scarce.
**Aims:** To report postoperative outcomes comparing open versus robotic mesh-enforced ventral hernia repair.
**Methods:** This multi-center prospective cohort study used data from the international CROSSIFRE (MultiCentre InteRnational PrOSpective DatabaSe For Ventral HernIa REpair) register. All patients who underwent open or robotic mesh-enforced ventral hernia repair between December 2023 – November 2025 were analyzed using a 1:1 propensity score matching to adjust for body mass index (BMI), hernia size and type and component separation.
**Results:** Ninety-three patients (34% female, median BMI 28.7kg/m$^2$, 72% incisional hernias, median hernia diameter 4cm) underwent open repair and 93 patients (30% female, median BMI 28.4kg/m$^2$, 68% incisional hernias, median hernia diameter 3.5cm; p=n/s) underwent robotic-assisted repair. Posterior component separation was performed in 31% open repairs and 26% robotic-assisted repairs (p=0.5). Median operation time was shorter in open repair

compared to robotic-assisted repair (81min vs. 158min (p<0.001). Median length of hospital stay (LOS) was longer in open repair compared to robotic-assisted repair (3.5 days vs. 2days; p=0.006) and 30-day readmission rate was higher in open repair (9.7% vs. 0%; p=0.003). The rate of postoperative interventions and reoperations was higher in open repair compared to robotic repair (13% versus 1.1%; p=0.002 and 13% versus 0%; p<0.001, respectively).
**Conclusion:** This prospective comparative study indicates that robotic-assisted mesh-enforced ventral hernia repair offers clinically relevant perioperative benefits compared to an open approach with a shorter LOS, a lower readmission rate and fewer reinterventions and reoperations. Randomized controlled trials should be initiated to confirm these findings.

### Comparative Outcomes of Laparoscopic and Robotic-Assisted Inguinal Hernia Repair: A Systematic Review of Randomized Controlled Trials

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**Background:** While conventional laparoscopic techniques, including totally extraperitoneal (TEP) and transabdominal preperitoneal (TAPP) repair, are well established, robotic-assisted approaches (rTEP/rTAPP) are increasingly adopted. However, the clinical and economic superiority in robotic inguinal hernia repair (IHR) remains unclear.
**Aims:** This systematic review compares outcomes of conventional laparoscopic versus robotic-assisted IHR.
**Methods:** A comprehensive literature search was conducted in Embase, MEDLINE, and the Cochrane Library to identify randomized controlled trials comparing robotic and conventional laparoscopic IHR. Four eligible trials (ROGER, RIVAL, ROLAIS, and VOLTAIRE), comprising 482 patients, were analyzed. Outcomes included operative time, surgeon workload assessed by the NASA Task Load Index (NASA-TLX), and postoperative complications.
**Results:** Baseline characteristics were comparable across studies regarding age, body mass index, and sex distribution. Surgeon proficiency requirements varied substantially between trials, ranging from twenty to over one hundred required previously performed procedures. Although all trials reported significant differences in operative time between approaches, only one demonstrated shorter duration with robotic surgery, resulting in a non-significant pooled estimate (MD 17.63; 95% CI −1.82 to 37.08). In total, robotic approach was associated with lower surgeon workload, although this result was not significant due to heterogeneous evidence in the individual studies (Figure 1; MD −4.50; 95% CI −16.78 to 7.78). Only one study reported significant differences in postoperative adverse events, favoring the robotic-assisted method. In summary, the complication rate did not differ significantly between laparoscopic and robotic-assisted approaches (OR 0.89, 95% CI 0.42 to 1.90).
**Conclusion:** Robotic-assisted IHR can offer workload benefits for surgeons compared to laparoscopic IHR without significantly increasing operative time and with comparable results regarding adverse events.

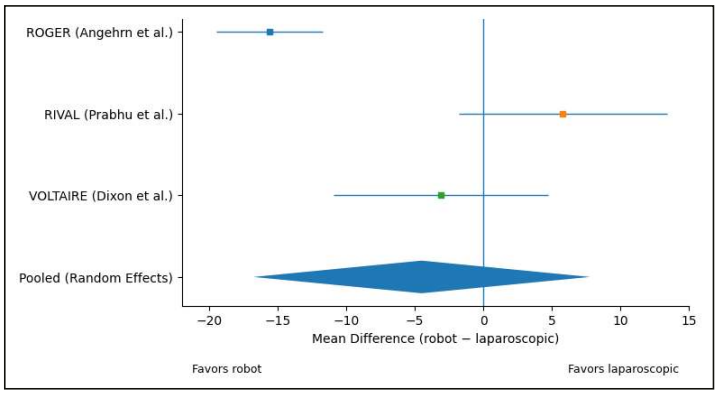


**Table 1. Forest plot comparing robotic-assisted and laparoscopic IHR regarding surgeon workload (NASA-TLX)**

### Safety and Patient-Reported Outcomes After Suprapubic eTEP Robot-assisted Repair of Rectus Diastasis: A Single-Center Cohort Study

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**Background:** Postpartum rectus diastasis is common and may cause pain, core instability, functional impairment, and poor body image. Indications for surgical repair remain controversial. Minimally invasive and robotic techniques, including robotic-assisted eTEP suprapubic approach, expand options, but high-quality data on safety and patient-reported outcomes (PROMs) are limited. This study aimed to evaluate postoperative outcomes, safety, and patient-reported quality of life after robotic-assisted repair.
**Aims:** Assess safety, operative outcomes, complications, and patient-reported outcomes after robotic-assisted eTEP suprapubic repair.
**Methods:** All consecutive patients undergoing robotic-assisted repair of postpartum rectus diastasis with an eTEP suprapubic approach and retromuscular or preperitoneal mesh placement at a single center between 2018 and 2025 were retrospectively analyzed. Postoperative clinical outcomes and follow-up data were systematically reviewed. All patients completed validated PROMs, including the EuraHS-QoL, SF-36, and a Body Image Questionnaire. Primary endpoint was postoperative safety; secondary outcomes included operative time, complications, length of stay, and PROMs at follow-up.
**Results:** Thirty-seven female patients were included; median age 42 years (IQR 38–47), ASA 2 (62%), median BMI 23.4 kg/m² (IQR 21.9–25.8). Median pregnancies: 2; pain was the main indication (78%). Concomitant hernias were present in 30 (81%) and repaired concurrently. Median operative time 189 min (IQR 165–215), hospital stay 3 days (IQR 2–4). Preoperative diastasis 55 mm (IQR 45–70), reduced to ≤5 mm (IQR 0–10) postoperatively. Mesh was used in all cases (median 20 × 10 cm, IQR 18 × 10–25 × 12 cm). Five patients (13.5%) had complications; one major (Clavien–Dindo IIIb) required reintervention. Median follow-up 18 months (IQR 12–30), 89% follow-up rate; no recurrences. PROMs showed low pain, minimal functional limitation, good physical function, and high body image satisfaction.
**Conclusion:** Robotic eTEP suprapubic repair of postpartum rectus diastasis with retromuscular/preperitoneal mesh and hernia repair appears safe, with low morbidity and favorable patient-reported outcomes.

### Combined Robotic-Assisted Ventral Hernia and Rectus Diastasis Repair: A Comparative Analysis of Primary versus Incisional HerniasCombined Robotic-Assisted Ventral Hernia and Rectus Diastasis Repair: A Comparative Analysis of Primary versus Incisional Hernias

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[1]Chirurgiezentrum St.Anna, Hirslanden Clinic St.Anna, Lucerne; [2]Department of Surgery, Obesity & Bariatric Surgery Centre, Limmattal Hospital, Zurich-Schlieren

**Background:** Rectus diastasis frequently accompanies ventral hernias but is often undertreated. Combined robotic-assisted repair has emerged as a promising approach, yet comparative data on outcomes between primary and incisional hernias remain limited.
**Aims:** We evaluated the safety and efficacy of combined robotic-assisted ventral hernia and rectus diastasis repair in primary versus incisional hernias.
**Methods:** This retrospective analysis included 40 consecutive patients undergoing combined robotic-assisted ventral hernia and rectus diastasis repair (January 2018-July 2025), comprising 19 primary hernias (47.5%) and 21 incisional hernias (52.5%). All repairs utilized retromuscular mesh placement. Primary endpoint was perioperative safety by Clavien-Dindo classification. Secondary endpoints included technical success, operative time, hospital stay, and recurrence. Statistical analysis employed Mann-Whitney U test, Fisher exact test, and chi-square test (p<0.05).
**Results:** Baseline characteristics were comparable for age (p=0.13), sex (p=1.00), and body mass index (p=0.92). Incisional hernias had higher American Society of Anesthesiologists classification (28.6% vs 5.3% grade III, p=0.045) and larger defects (16.0 vs 4.8 cm², p<0.001). Technical success was 100% without conversions. Operative time was longer for incisional hernias (90 vs 72 minutes, p=0.016), yet hospital stay remained comparable (2 days, p=0.56). Overall complications occurred in 7.5% (3/40), exclusively in incisional hernias (14.3% vs 0%, p=0.23), all grade I seromas resolving spontaneously. No major complications, reoperations, or mortality occurred. At median follow-up of 478 days, no recurrences were observed (0%, p=0.34).
**Conclusion:** Combined robotic-assisted ventral hernia and rectus diastasis repair demonstrates excellent safety and efficacy for both primary and incisional hernias. Despite higher complexity in incisional hernias (higher risk classification, larger defects, longer operative time), outcomes remain comparable with low morbidity and no recurrences, supporting robotic-assisted repair across the spectrum of ventral hernia complexity.

### Linea Arcuata Hernia: A Series of Three Cases of a Rare Internal Hernia

S. Widjaja Kaufmann
General Surgery, LUKS Sursee, Sursee

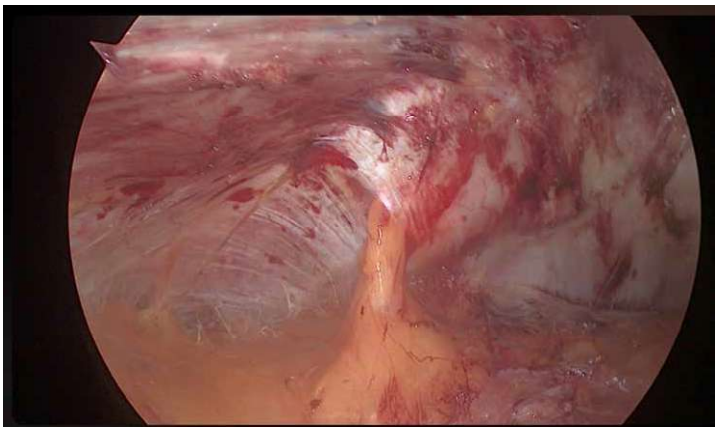
**Background:** Linea arcuata hernia is an exceedingly rare type of abdominal wall hernia. Due to its deep anatomical location and nonspecific clinical presentation, linea arcuata hernias are frequently underdiagnosed or incidentally detected on computed tomography (CT).
**Aims:** The aim of this case series is to increase awareness of this rare entity and to correlate it with an accurate CT-based classification. This case series demonstrates the heterogeneity of linea arcuata hernias and emphasizes their inclusion in the differential diagnosis of lower abdominal pain.
**Methods:** On CT imaging, three morphological forms can be distinguished:
- Isolated preperitoneal fat protrusion beneath the arcuate line
- A true hernia sac containing omentum or bowel
- A combined or advanced form characterized by a significant fascial defect with visceral involvement

We present three cases of linea arcuata hernia. The first case involved a class 3 hernia with an additional ipsilateral trocar-site hernia and was treated using using a robotic transabdominal approach with partial transversus abdominis release. The second case consisted of a class 2 hernia associated with bilateral femoral hernias, a contralateral Spighelian hernia, and an umbilical hernia, and was managed via a totally extraperitoneal laparoscopic approach. The third case was an intraoperative finding of a class 1 linea arcuata hernia during laparoscopic preperitoneal umbilical hernia repair, requiring wider dissection and extended mesh coverage.
**Results:** Two of the patients were symptomatic and reported recurrent lower abdominal pain on the affected side. Only CT scan revealed the diagnosis of linea arcuata hernias. The cases presented demonstrate variability in radiological appearance as well as differences in surgical strategies.

**Conclusion:** These cases highlight the heterogeneity of linea arcuata hernias in both radiological appearance and surgical management. Awareness of this rare condition and precise CT-based classification are crucial for accurate diagnosis and optimal surgical planning.

Case 1

Case 2



Case 3

**Gender-Based Differences and the Impact of Surgical Techniques on Postoperative Outcomes in Groin Hernia Surgery**

M. Iburg[1], E. Frida[2], S. Gerdes[3], D. Vetter[1], J. Oberholzer[1], P. Limani[3]
[1]Visceral Surgery, University Hospital of Zurich, Zürich DE; [2]Visceral Surgery, City Hospital Zürich Triemli,, Zurich; [3]Visceral Surgery, Cantonal Hospital Aarau, Zurich

**Background:** Women are less frequently affected by inguinal hernias than men and are underrepresented in clinical studies, despite evidence suggesting a higher risk of postoperative complications such as chronic pain and recurrence. This highlights the need for a gender-sensitive evaluation of surgical techniques and postoperative outcomes in groin hernia surgery.
**Aims:** The aim of this ongoing study is to investigate gender-specific differences in surgical management, and outcomes, with particular emphasis on female patients.
**Methods:** This retrospective single center study included all consecutive patients undergoing surgical repair of inguinal and/or femoral hernias at a tertiary university surgical department between 2018-2024. Demographics, surgical techniques and postoperative outcomes. Demographics, surgical techniques, and postoperative outcomes, including complications, recurrence, and postoperative pain, were analyzed.
**Results:** A total of 148 patients were included, of whom 18.2% were women. No significant differences were observed between women and men with respect to age (mean 59 vs. 57.7 years) or body mass index (26 vs. 25.5 kg/m²). Mean operative time was longer in women compared with men (105.7 vs. 97 minutes), although this difference did not reach statistical significance. Postoperative pain occurred significantly more frequently in women than in men ($p = 0.031$). Spontaneous resolution of postoperative pain was observed in 5 of 19 women and 4 of 20 men, with a mean time to resolution of 287 days in women and 307 days in men. No significant sex-based differences were found regarding preoperative pain or subjectively disturbing swelling ($p = 0.173$). Total extraperitoneal endoscopic repair was the most frequently performed technique in both groups, followed by Lichtenstein, Stoppa, and transabdominal preperitoneal (TAPP) repair.
**Conclusion:** Women remain underrepresented among patients undergoing inguinal and femoral hernia repair; however, postoperative pain occurs significantly more frequently than in men. Postoperative pain in women may be more frequently self-limiting and resolve earlier. A prospective multicenter study is planned to further elucidate gender-specific differences in postoperative pain trajectories following groin hernia surgery.

**Occult Femoral Hernias Are Frequently Underdiagnosed**
**Findings across Laparoscopic, Robotic, and Open Approaches**

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[1]Department of Visceral, Thoracic and Vascular Surgery, City Hospital Zürich, Triemli, Thalwil; [2]Department of Surgery and Transplantation, University Hospital Zurich, Zurich; [3]Department of General and Visceral Surgery, Cantonal Hospital Aarau, Aarau

**Background:** Femoral hernias represent an important subgroup of groin hernias frequently underdiagnosed preoperatively. According to the European Hernia Society Guidelines, clinical examination has limited sensitivity for femoral defects, and even cross-sectional imaging may fail to detect them. Laparoendoscopic approaches provide superior visualization of the myopectineal orifice, enabling identification of femoral hernias. To date, comparative data on the detection of occult femoral hernias across different surgical techniques remain limited.
**Aims:** This study aims to evaluate the incidence of occult femoral hernias and to assess differences in detection between open, laparoscopic and robotic approaches.
**Methods:** Retrospective analysis of patients undergoing groin hernia repair (inguinal and femoral) at a tertiary university surgical department between 2018–2024. Surgical approaches included laparoscopic repair (TAPP/TEP), robotic-assisted repair, and open repair (e.g. Lichtenstein/Stoppa). Occult femoral hernia was defined as a femoral defect identified intraoperatively without preoperative documentation on clinical assessment or imaging. Parameters included hernia characteristics, preoperative imaging findings, intraoperative findings, and postoperative outcomes.
**Results:** Among 148 patients (27 women, 121 men), occult femoral hernias occurred 29 times and, thereby, constituted 19.6% of groin hernia repairs. Detection of occult femoral hernia occurred predominantly during laparoscopic repair (22/29), followed by open repair (6/29) and robotic-assisted repair (1/29). No occult femoral hernia was documented preoperatively despite frequent imaging. Postoperative pain was reported in 31.0% of patients with occult femoral hernia at a mean follow-up of 172 days. Complications were rare; one seroma required reoperation.
**Conclusion:** Occult femoral hernias remain underdiagnosed despite routine clinical and radiological assessment. Both laparoscopic and robotic-assisted approaches allowed intraoperative identification of occult femoral hernias, reinforcing their role as possible preferred modalities for groin hernia repair. Increased awareness of the prevalence and morphology of occult femoral hernias may improve surgical planning, informed consent of patients, and surgical outcomes.

## Free Communication I – STS

**Preventing Cerclage Failure: How Many Twists Are Needed to Avoid Untwisting and Maximize Fixation Strength**

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[1]Trauma Surgery, University Hospital Zurich, Zurich; [2]Department of Orthopaedic and Trauma Surgery, Lucerne Cantonal Hospital, Lucerne; [3]Department for Biomedical Development, AO Research Institute, Davos; [4]Department of Orthopaedic and Trauma Surgery, Lucerne Cantonal Hospital, Lucerne; [5]Biomedical Development, AO Research Institute Davos, Davos

**Background:** Cerclage wires are widely used for fixation of long-bone spiral and peri-implant fractures. However, the optimal number of twists to maximize biomechanical stability is not defined and is largely based on surgical experience. This study investigated the influence of twist number and wire diameter on cerclage stability.
**Aims:** To determine how twist number and wire diameter affect failure mode, stiffness, and load-bearing capacity of cerclage wires, and to identify the minimum twist number required to prevent untwisting.
**Methods:** A total of 120 stainless-steel cerclage constructs were produced using 1.0-mm, 1.25-mm, and 1.5-mm wires with 4, 6, 8, or 10 twists. Twist formation was standardized with controlled axial load of torque, followed by uniform trimming. Static tensile testing assessed stiffness, load-to-yield, elongation, and load-to-failure. Hand-twisted 1.5-mm constructs underwent cyclic loading at 700 N until elongation of 2, 3, or 5 mm or catastrophic failure.
**Results:** Across all diameters, low twist counts failed predominantly by untwisting, while higher twist counts shifted failure toward wire breakage. In 1.0-mm wires, breakage occurred only at 10twists (50%), whereas all lower twist counts failed by untwisting ($p=0.040$). In 1.25-mm wires, breakage appeared only at 8 and 10twists ($p>0.9$). Stiffness increased with twist number: 1.0-mm wires from 34.1±2.4 N/mm (4twists) to 41.5±5.0 N/mm (10 twists); 1.25-mm from 44.0±5.5 to 50.5±5.4 N/mm; and 1.5-mm peaked at 8 twists (92.8±17.0 N/mm) before decreasing at 10 twists (82.3±11.8 N/mm). Load-to-failure increased with diameter and twist

number, reaching 660.7±139.6 N (1.0-mm, 10 twists), 858.0±220.0 N (1.25-mm, 8twists), and 1873.7±80.6 N (1.5mm, 10twists). In cyclic testing, six-twist 1.5-mm constructs showed the greatest durability, requiring the most cycles to reach 2,3,and 5mm elongation.
**Conclusion:** Increasing twist number consistently shifts failure from untwisting to wire breakage. Six to eight twists provide optimal biomechanical performance, with six twists representing the minimum required to prevent untwisting across all clinically used wire diameters.

**Is There a Relation Between Muscle Mass Surrounding Fractures and Acute Compartment Syndrome Incidence? A Retrospective Cohort Study Examining Extra-Articular Tibial Fractures**
N. Naim Rodriguez[1], S. Budabbous[2], L. Wuarin[3], A. Lübbeke[3], A. Gamulin[3]
[1]Orthopaedics and Traumatology, University Hospitals of Geneva, Geneva AU; [2]Radiology, University Hospitals of Geneva, Geneva; [3]Orthopaedics and Traumatology, University Hospitals of Geneva, Geneva

**Background:** Acute compartment syndrome (ACS) following tibial fractures is a frequent and potentially catastrophic complication when not promptly identified.
**Aims:** The aim of this study was to compare muscle mass and ACS incidence rate around extra-articular tibial fracture sites. This could potentially highlight muscle mass as an ACS risk factor.
**Methods:** This retrospective cohort study was performed in a level I trauma center and included 614 extraarticular tibial fractures occurring between 01/01/2005 and 12/31/2019 in 559 patients older than 16. Fractures classified as AO/OTA 41-A, 42-A, 42-B, 42-C and 43-A were eligible. The tibia was arbitrarily divided into 8 equally long bony segments, and each fracture was allocated to one of these segments depending on the localization of its center. For each tibial segment, an ACS incidence rate was determined. Alternatively, muscle mass surrounding the same 8 equally long tibial segments was measured on a series of 31 patients having undergone bilateral fine cut computed tomography scans of the legs. These measurements were obtained from healthy limbs (no past surgery, no ancient or recent trauma, no active or sequelar infection, no tumoral condition, no systemic disease with muscular involvement) using a semi-automatic tool in Osirix (ROI volume/compute volume) with manual drawing and automatic propagation of measurements of muscle volume.
**Results:** Figure 1 shows ACS incidence rates using a LOESS (locally estimated scatterplot smoothing) curve and mean muscle volumes associated to each of the 8 tibial segments.
**Conclusion:** When comparing ACS incidence rate and muscle volume curves, a similarity is visible as both curves increase initially and then slope down. Because both cohorts of patients were different and heterogenous, a purely mathematical or statistical comparison is not possible. However, descriptive comparison of both curves may lead to the conclusion that the more muscle mass is around a fracture site, the more chances there are of developing ACS.

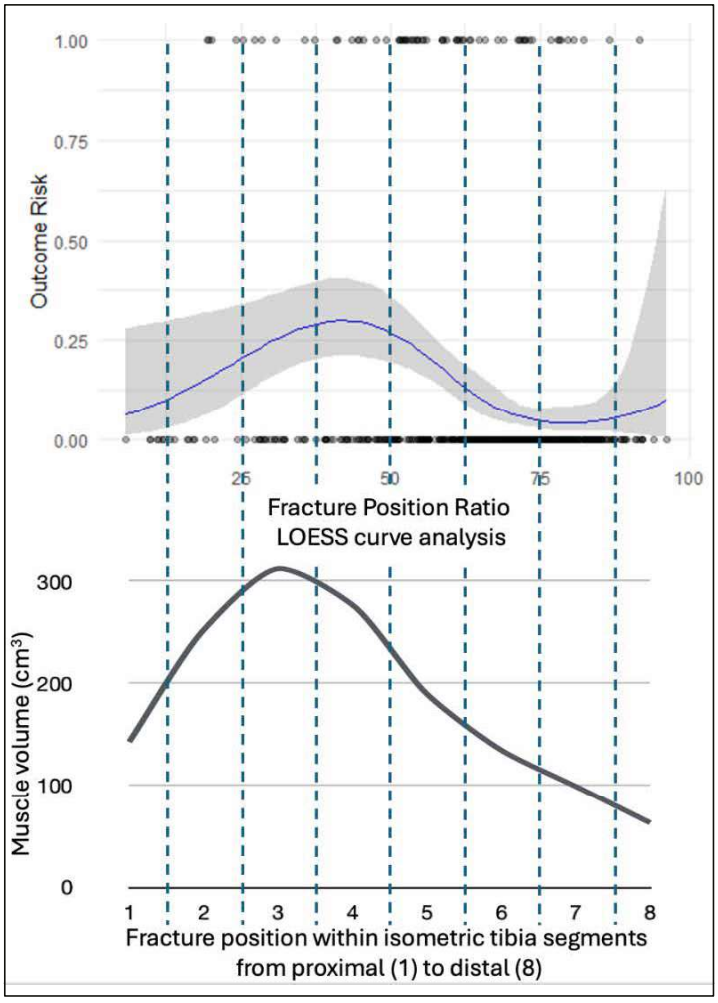


Figure1

**The Prefabricated MFC–SCIP Chimeric Flap: An Engineered Approach to Reconstruction**
F. Leoni, T. Giesen, E. Fritsche
Orthopaedics and Hand Surgery, SOS Mano, Manno

**Background:** Complex composite defects of the upper limb resulting from trauma, infection, multiple surgeries, or tumors remain a major reconstructive challenge. While staged reconstruction is often considered standard, it exposes patients to repeated procedures, prolonged hospitalization, and delayed rehabilitation. Advances in microsurgery have enabled multi-tissue and chimeric flaps; however, these may be limited by local tissue availability or insufficient volume in extensive defects. Fabricated chimeric flaps – constructed by microsurgical assembly of tissues from different donor sites – represent an emerging concept at the frontier of microsurgical reconstruction, though clinical experience remains scarce.
**Aims:** This study presents a series of five patients undergoing complex upper limb reconstruction using a fabricated chimeric flap combining a medial femoral condyle (MFC) corticoperiosteal flap with a superficial circumflex iliac artery perforator (SCIP) flap. The aim was to evaluate feasibility, reliability, and clinical outcomes.
**Methods:** Between 2021 and 2024, five consecutive patients with composite upper limb defects underwent single-stage reconstruction. Defects involved the wrist (n=3), elbow (n=1), and clavicle (n=1). A corticoperiosteal MFC flap based on the descending genicular artery was combined with a SCIP skin paddle through microsurgical prefabrication. Outcomes included flap survival, radiological bone consolidation, complications, and functional results. Follow-up was performed using serial radiographs and computed tomography.
**Results:** Mean follow-up was 31 months. Complete survival of the soft-tissue component was achieved in all cases. Bone integration was obtained in four patients; one case of nonunion required salvage wrist shortening and fusion. No total flap loss occurred. Functional assessments and patient-reported outcomes were favorable in all patients achieving bone consolidation.
**Conclusion:** The prefabricated chimeric MFC–SCIP flap allows reliable single-stage reconstruction of complex upper limb osteocutaneous defects, offering high osteogenic potential, robust soft-tissue coverage, and satisfactory functional outcomes.

**Long Term Outcome After Spanning Plate for Distal Radius Fractures**
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Orthopädie und Unfallchirugie, Luzerner Kantonsspital, Lucerne

**Background:** Minimal invasive temporary spanning plate fixation has been established as a valuable treatment method for complex distal radius fractures. While short-term outcomes are promising, data on long-term results remain limited.
**Aims:** The purpose of this study is to conduct a long-term outcome analysis of patients treated with SP fixation, representing the longest follow-up period documented in current literature.
**Methods:** We retrospectively analyzed spanning plate fixation for complex distal radius fractures at a level I trauma centre (2018–2024). Patients with minimum one-year follow-up were assessed using PRWE, VAS, and satisfaction scores, while monitoring complications like CRPS and tendon ruptures (Figure 1).
**Results:** A total of 35 patients (Table 1) met the inclusion criteria, with 26 patients available for long-term follow-up (Table 2). The average age was 57 years (range 22–92) and 89% of fractures were classified as AO type C. The SP was removed on average 3.8 months postoperatively. The mean follow-up period was 58.3 months (range 13–90 months). Radiological fracture union was achieved in all patients with a mean time to union of 8.5 weeks. Complications included one implant failure due to renewed trauma and one Extensor Pollicis Longus (EPL) rupture in a patient where the tendon was not superficialized. There were no cases of surgical site infection. The mean satisfaction score was 4.1 (range 2–5) and the mean Visual Analog Scale (VAS) for resting pain was 1.7. The mean PRWE score was 16.7 (Table 3).
**Conclusion:** The radiological, functional, and patient-rated outcomes in this study confirm that the excellent results observed in the short term are successfully maintained over a long-term period of 4.5 years. The spanning plate technique proves to be a reliable and durable treatment option for complex distal radius fractures with a low long-term complication rate.

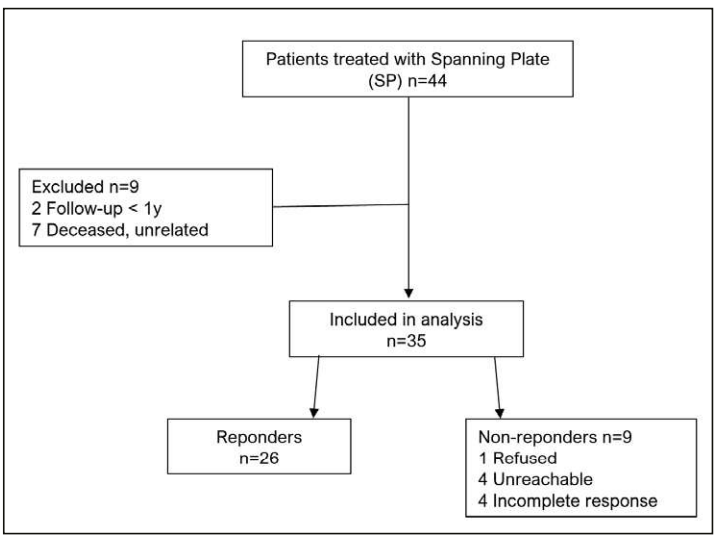


Figure 1

| Table 1 Patient characteristics (n=35) | |
|---|---|
| Mean age, yr (range) | 57 (22-92) |
| Gender | |
| Male, n (%) | 18 (51) |
| Female, n (%) | 17 (49) |
| Smoker, n (%) | 6 (17) |
| Diabetes, n (%) | 4 (11) |
| ASA Score, mean (range) | 2 (1-4) |
| AO Classification | |
| Typ A Fracture, n (%) | 0 (0) |
| Typ B Fracture, n (%) | 4 (11) |
| Typ C Fracture, n (%) | 31 (89) |
| Previous Fix Ex, n (%) | 21 (60) |
| Time to surgery (SP fixation), mean d (range) | 7.1 (4-11) |
| Implant used | |
| 2.4/3.5mm SP, n (%) | 35 (100) |
| Metacarpal SP fixation | |
| MC 3, n (%) | 27 (77) |
| MC 2, n (%) | 8 (23) |
| Additional fracture fixation, n (%) | 30 (86) |
| Mean duration of SP fixation, months (range) | 3.8 (1.8-12.9) |

Table 1

| Table 2 Missing case analysis | Responders (n=26) | Non-responders (n=9) | p-value |
|---|---|---|---|
| Mean age, yr (range) | 57 (22-92) | 57 (24-89) | 0.95 |
| Gender | | | 0.78 |
| Male, n (%) | 13 (50) | 5 (56) | |
| Female, n (%) | 13 (50) | 4 (44) | |
| Smoker, n (%) | 2 (8) | 4 (44) | **0.01** |
| Diabetes, n (%) | 4 (15) | 0 (0) | 0.22 |
| ASA Score, mean (range) | 2 (1-4) | 2 (1-3) | 0.5 |
| AO Classification | | | 0.97 |
| Typ A Fracture, n (%) | 0 (0) | 0 (0) | |
| Typ B Fracture, n (%) | 3 (12) | 1 (11) | |
| Typ C Fracture, n (%) | 23 (88) | 8 (89) | |
| Previous Fix Ex, n (%) | 15 (58) | 6 (67) | 0.65 |
| Time to surgery (SP fixation), mean d (range) | 6.8 (4-11) | 7.8 (4-11) | 0.25 |
| Implant used | | | 0.41 |
| 2.4/3.5mm SP, n (%) | 26 (100) | 9 (100) | |
| Metacarpal SP fixation | | | 0.96 |
| MC 3, n (%) | 20 (77) | 7 (78) | |
| MC 2, n (%) | 6 (23) | 2 (22) | |
| Additional fracture fixation, n (%) | 21 (81) | 9 (100) | 0.16 |
| Mean duration of SP fixation, months (range) | 3.8 (1.8-12.9) | 3.6 (2.9-4.5) | 0.73 |

Table 2

| Table 3 Long-term follow-up functional and radiological outcomes, and complications (n=26) | |
|---|---|
| Follow-up duration in months, mean (range) | 58.3 (13-90) |
| Satisfaction score (5 Point Scale), mean (range) | 4.1 (2-5) |
| VAS score, mean (range) | 1.7 (0-4) |
| CRPS I, n (%) | 3 (12) |
| PRWE score Pain, mean (range) | 8.2 (0-24) |
| PRWE score Function, mean (range) | 8.4 (0-47.5) |
| PRWE score Total, mean (range) | 16.7 (0-62.5) |
| Weeks until fracture union, mean (range) | 8.5 (5-29) |
| Delayed union, *n* (%) | 3 (12) |
| Mean radial inclination, ° (range) | 23.6 (17-32) |
| Mean volar tilt, ° (range) | 2.7 (-12 to 14) |
| Mean ulnar variance, mm, (range) | 0.4 (-3 to 5) |
| Implant failure, *n* (%) | 1 (4) |
| Surgical site infection, n (%) | 0 (0) |
| Tendon rupture, n (%) | 1 (4) |
| Total complications, n (%) | 2 (8) |

Table 3

## Supervised or Unsupervised Physiotherapy After Distal Radius Fracture Surgery: Is Supervision Worth the Cost?

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Trauma Surgery, Luzerner Kantonsspital, Luzern

**Background:** This systematic review and meta-analysis evaluated the effectiveness of traditional face-to-face physiotherapy (supervised [SP]) compared with home exercise programs supported by paper handouts, instructional videos, or smartphone applications (unsupervised [UP]) in the postoperative rehabilitation of patients with surgically treated distal radius fractures.
**Aims:** The primary aim of this study is to determine whether unsupervised or supervised physiotherapy after operative treatment of distal radius fractures yields more favorable results in terms of Patient-Rated Wrist Evaluation (PRWE) scores, pain, and range of motion (ROM).
**Methods:** A comprehensive search of PubMed, Embase, and the Cochrane Library identified randomized controlled trials comparing supervised and unsupervised physiotherapy following osteosynthesis of distal radius fractures. The primary outcome was wrist function and pain assessed by the Patient-Rated Wrist Evaluation (PRWE). Secondary outcomes included the Disabilities of the Arm, Shoulder and Hand score (qDASH), range of motion (ROM), grip strength, and postoperative complications.
**Results:** Nine trials comprising 470 patients met the inclusion criteria. Across all time points, no significant differences were observed between the SP and UP groups, except for the PRWE score at 12 weeks, which slightly favoured the SP group (12.2 [95% CI: 9.8–14.7] vs. 16.0 [95% CI: 13.8–18.1]). However, this difference did not exceed the minimal clinically important difference (MCID) of 11.5 points. Aftercare-related complications occurred in 1.1% of patients in both groups, with complex regional pain syndrome (CRPS) being the most common (SP 3.4% vs. UP 4.9%). Subgroup analysis indicated a non-significant but clinically relevant trend toward worse PRWE scores at six weeks among patients aged over 60 years.
**Conclusion:** Supervised and unsupervised physiotherapy yielded comparable outcomes in wrist function, pain, and complications after distal radius fracture surgery. Although the SP group demonstrated a statistically significant advantage in PRWE at 12 weeks, this difference is unlikely to be clinically meaningful. Older patients, however, may experience inferior functional recovery with unsupervised programs.

## MIPO Versus ORIF for Proximal Humerus Fractures: Comparison of Functional Outcomes Between Two Conceptually Distinct Operative Approaches

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**Background:** Minimally invasive plate osteosynthesis (MIPO) and open reduction and internal fixation (ORIF) are widely used approaches for proximal humerus fractures, reflecting distinct philosophies of soft-tissue preservation and direct anatomic control. Despite decades of refinement, it remains unclear whether these differences translate into meaningful differences in recovery. Interpretation of existing comparisons is limited due to technique selection commonly reflecting fracture complexity, surgeon preference, and experience, resulting in substantial confounding by indication.
**Aims:** To compare functional outcomes after MIPO and ORIF for proximal humerus fractures at six weeks and one year within a natural-experiment framework.
**Methods:** The study included operatively treated patients with displaced proximal humerus fractures from a cohort characterised by expert disagreement on operative versus nonoperative management. Treatment allocation was determined by geographical catchment area: patients treated at one centre routinely underwent MIPO, whereas those treated at another underwent ORIF, assigning technique independently of surgeon choice or fracture characteristics. Functional outcomes were assessed at six weeks and one year using validated patient-reported measures (QuickDASH, EQ-5D index and health score, Subjective Shoulder Value, and pain NRS). Multivariable analyses adjusted for age, ASA classification, and Neer fracture type; complications and reoperations were recorded.
**Results:** Eighty-four patients were included (MIPO 57, ORIF 27), with high follow-up completeness. No clinically relevant differences were observed in functional outcomes at six weeks or one year. Both groups improved substantially with parallel recovery trajectories. Revision rates were low and comparable (10.5% vs 11.1%). Implant removal was more frequent after MIPO (31.6% vs 7.4%), largely reflecting elective, protocol-driven practice rather than complication-related reoperations.
**Conclusion:** When evaluated as mature, centre-embedded treatment pathways rather than isolated techniques, MIPO and ORIF yield equivalent functional recovery and comparable safety profiles. Operative choice should therefore be guided less by theoretical advantages of exposure or soft-tissue preservation and more by surgeon expertise, organisational consistency, and downstream planning, including conversion to arthroplasty.

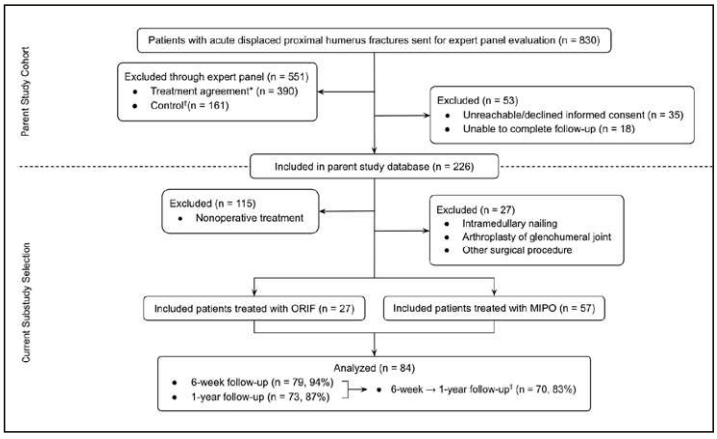


**Figure 1. Flow diagram showing patient selection for the MIPO versus ORIF substudy derived from the parent study**

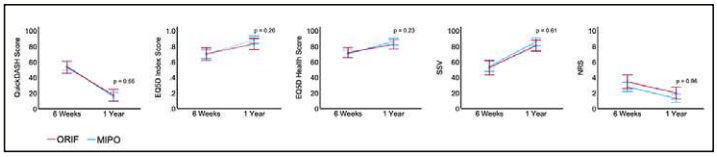


**Figure 2. Repeated-measures analysis of changes in functional outcomes from 6 weeks to 1 year after ORIF or MIPO**

| Complications/secondary outcome, n (%) | | Treatment type ORIF (n = 27) | MIPO (n = 57) |
|---|---|---|---|
| Revision surgery | | 3 (11.1) | 6 (10.5) |
| Indication*: | Implant failure | 1 (3.7) | 4 (7.0) |
| | Loss of reduction | 1 (3.7) | 2 (3.5) |
| | Infection | 1 (3.7) | 0 (0.0) |
| | Nonunion | 0 (0.0) | 1 (1.8) |
| | Other | 1 (3.7) | 1 (1.8) |
| Nerve palsy | | 1 (3.7) | 1 (1.8) |
| Frozen shoulder | | 0 (0.0) | 1 (1.8) |
| Implant removal | | 2 (7.4) | 18 (31.6) |
| Reason†‡: | Fracture consolidation | 0 (0.0) | 4 (7.0) |
| | Reduced ROM | 0 (0.0) | 5 (8.8) |
| | Hardware irritation | 2 (7.4) | 10 (17.5) |

*Multiple indications for revision surgery could apply to the same case.
†Multiple reasons for implant removal could apply to the same case.
‡For MIPO, implant removal is routine around 9 months unless the patient is elderly with low demand or symptom-free.

**Figure 3. Postoperative Complications and Secondary Outcomes According to Treatment Type**

### Influence of Cemented Femoral Stem Design on the Risk of Periprosthetic Femoral Fractures: A comparative retrospective study

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[1]Trauma and Orthopaedics, Kantonsspital Münsterlingen, Romanshorn; [2]University Hospital Basel

**Background:** Periprosthetic femoral fractures (PPFx) are an increasingly common complication after hip arthroplasty and a major cause of revision surgery. Although cemented femoral stems are generally associated with a lower fracture risk than uncemented designs, the influence of cemented stem geometry and cementation technique on long-term fracture incidence remains insufficiently defined. The classification proposed by Hegde et al. (2024) differentiates cemented stems into polished taper-slip (Type I) and composite-beam (Type II) designs, but comparative clinical data remain limited.
**Aims:** The primary aim of this study was to compare the risk of periprosthetic femoral fracture between Type I cemented stems implanted using traditional cementing versus line-to-line cementing techniques. Secondary objectives were to compare fracture risk between cemented and uncemented stems and to identify additional risk factors, including stem material and geometry.
**Methods:** This retrospective registry study analysed nationwide data from 2015 to 2024 obtained from the Swiss Implant Registry (SIRIS), which captures all hip arthroplasties performed in Switzerland. Cemented stems were classified according to the Hegde system. Multivariable regression models were used to assess associations between stem design, cementation technique, implant material, patient-related variables, and the risk of periprosthetic femoral fracture at different postoperative time points.
**Results:** A total of 223,959 primary hip arthroplasties were included. Fracture incidence differed significantly between stem categories, with Type I cemented stems showing a higher risk of periprosthetic femoral fracture than Type II stems. Within the Type I group, line-to-line cementing was associated with a higher fracture risk compared with traditional cementing. Regarding stem geometry, straight stems demonstrated the lowest fracture incidence, while gradual taper designs, followed by quadruple-taper stems showed the highest risk.
**Conclusion:** Femoral stem design and cementation technique significantly influence the PPFx risk. Large-scale registry analysis highlights relevant design-related differences that may inform stem selection and reduce fracture incidence. Prospective studies are warranted.

### Assessing Surgical Skill in Orthopedic Trauma Surgery Training: Behavioral Metrics for Digital Performance Evaluation

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[1]Faculty of Health Science and Medicine, Universität Luzern, Luzern; [2]Product Development Group Zurich, ETH Zurich, Zurich; [3]Department of Surgery, Obwalden Cantonal Hospital, Sarnen; [4]Faculty of Health Science and Medicine, University of Lucerne, Lucerne; [5]Department of Orthopedics and Trauma Surgery, Lucerne Cantonal Hospital, Lucerne; [6]Faculty of Health Science and Medicine, University of Lucerne, Lucerne; [7]Department of Orthopedics and Trauma Surgery, Lucerne Cantonal Hospital, Lucerne

**Background:** Surgical skill assessment in orthopedic trauma surgery still relies on subjective expert ratings, limiting consistency and scalability. Although digitalization offers opportunities for objective evaluation, the manual and haptic nature of surgery makes digital capture of tool use challenging, keeping such approaches underdeveloped.
**Aims:** This study introduces a digital framework that uses optical tracking to create a digital twin of surgical real-world procedures with realistic haptics, enabling extraction of digital behavioral metrics (DBM). It investigates (1) which DBM reflect technical proficiency and (2) how well these metrics predict surgical performance compared to expert assessment.
**Methods:** 28 participants performed three standardized fracture fixations on synthetic bone models of the radius, ulna, and fibula. Tool motion was captured and transformed into a digital twin from which metrics such as path length, smoothness, and task duration were derived. (Figure 1) These metrics were statistically compared to benchmark performance scores, defined as the average of four expert ratings using the Global Rating Scale (GRS). (1) Correlation analysis identified skill-relevant metrics, and (2) a predictive model was trained to estimate performance from DBM evaluating its accuracy against the expert ratings.
**Results:** (1) Several DBM were found to be indicative of surgical performance. Measures based on tool path length and time per activity showed strong correlations with expert ratings, reaching coefficients of up to 0.6. Correlation strength varied across tools and procedures. (Figure 2) (2) The predictive model achieved a mean absolute difference from the benchmark score of 3.8 on the GRS scale (range: 28–70 points), outperforming the average inter-expert difference of 4.6 points. (Figure 3)
**Conclusion:** DBM were identified as valid indicators of surgical skill. Their predictive performance exceeded the agreement between individual experts, demonstrating the potential for objective, expert-independent assessment using digital performance evaluation frameworks.

**Figure 1. Training setup with synthetic bone models, surgical tools, and implants. Motion tracking via reflective markers creates a real-time digital twin for objective performance assessment**

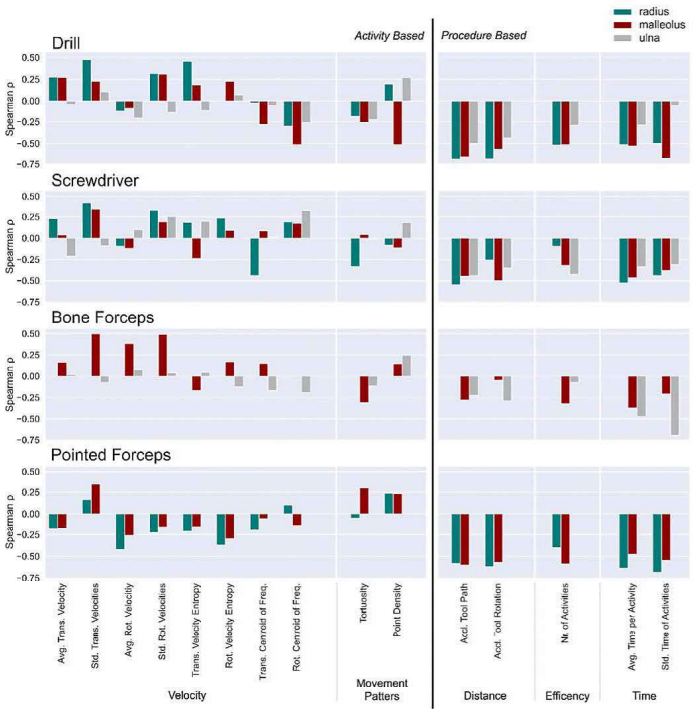


**Figure 2: Spearman correlation coefficients between average GRS scores and DBM, stratified by tool and procedure type (radius, malleolus, ulna). Each bar shows the strength and direction of the correlation. Higher absolute values indicate stronger associa**

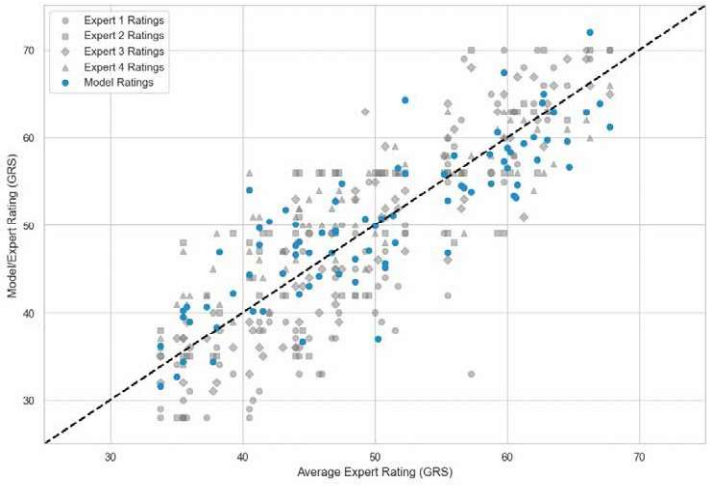


**Figure 3. The average GRS score is plotted against the GRS scores predicted by the linear mixed-effects model using leave-one-out cross-validation (blue dots). Individual expert ratings are shown in light gray for reference**

### Old Versus New Generation Plates in Distal Radius Fractures: Impact on Implant Removal Rates

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**Background:** Distal radius fractures are among the most common fractures in the human body, with incidence increasing worldwide. Advances in surgical techniques and implant design have led to widespread use of variable-angle volar locking plates, allowing stable fixation and anatomical reduction even in complex fracture patterns. Despite ongoing innovation, it remains unclear whether newer-generation implants provide meaningful clinical advantages or reduce the need for secondary implant removal after fracture healing.
**Aims:** The aim of this study was to compare old- and new-generation volar locking plates in the treatment of distal radius fractures, focusing on implant removal rates, postoperative complications, and plate positioning.
**Methods:** This retrospective study included patients treated between June 2019 and June 2022 at a level I trauma center in Switzerland. All distal radius fractures managed with variable-angle volar locking plates either from Synthes, Medartis or Arthrex were eligible. Synthes plates were classified as old-generation implants, whereas Medartis and Arthrex plates were considered new-generation designs. Patients were grouped according to implant generation. The primary outcome was implant removal for any indication, including volar irritation or patient request. Secondary outcomes included postoperative complications at one year.
**Results:** A total of 213 cases were analyzed, with 64 patients in the old-generation group and 149 in the new-generation group. The new-generation group included significantly more complex fractures (68.5%, $p < 0.001$) and greater surgeon experience (58.4% vs. 32.8%, $p = 0.001$). Implant removal rates did not differ between old-generation (24.2%) and new-generation plates (26.6%, $p = 0.731$). The distance between the distal plate edge and the volar lip of the radius was shorter in the new-generation group (2.4 ± 0.9 mm vs. 2.8 ± 0.9 mm, $p = 0.027$). Postoperative complication rates were comparable.
**Conclusion**
These findings indicate that newer-generation volar locking plates do not reduce implant removal rates or complications compared with older designs.

## Bariatrics

### Value and Limitations of Non-invasive Liver Assessment in Obesity: A Biopsy-controlled Study in Metabolic Bariatric Surgery

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[1]Faculty of Medicine and Biology, University of Lausanne, Lausanne; [2]Visceral Surgery, Lausanne University Hospital, Lausanne; [3]Endocrinology, Lausanne University Hospital, Lausanne; [4]Gastroenterology, Lausanne University Hospital, Lausanne

**Background:** Metabolic-associated steatotic liver disease (MASLD) is frequent in patients with obesity, ranging from steatosis to cirrhosis. Accurate preoperative assessment of hepatic steatosis and fibrosis is essential to identify high risk patients, optimize surgical selection and guide follow-up.
**Aims:** The aim of the present study was to evaluate diagnostic accuracy of FIB-4 score and preoperative liver elastography for detecting severe fibrosis and steatosis in metabolic bariatric surgery (MBS) patients.
**Methods:** All patients undergoing MBS in our center between 01.2024 and 12.2024 with an available liver biopsy were included. Preoperative FIB-4 and elastography parameters (liver stiffness [kPa] and CAP [dB/m]) were assessed for association with severe fibrosis (SF, defined as F3-F4) and steatosis. Spearman's coefficient assessed correlation between continuous variables; ROC curve analysis with Youden's index identified optimal thresholds. Multivariable logistic regression was performed to identify independent predictors of SF.
**Results:** Overall, 86 patients were included in the study (51.2% female), with a mean age of 43±11.2 years and a mean BMI of 44.6±8.4 kg/m². In multivariable analysis, only increased FIB-4 score (OR 25.8, 95%CI 2.8-241.1, p=0.004) remain independently associated with histologically proven SF; a FIB-4 threshold of ≥0.625 was associated with SF (AUC=0.790). Baseline ARFI and liver stiffness were not predictive of SF, whereas CAP was significantly associated with severe steatosis (p=0.042), with an optimal threshold of≥322.5 dB/m. After a median postoperative follow-up of 18months (95%CI 10.4-25.6), FIB-4 remained comparable to pre-surgical levels, without correlation with weight loss. Liver stiffness showed a significant decrease (preoperative 9.7±6.7 kPa, post-operative 5.6±1.3 kPa, p=0.044). Similarly, CAP decreased from 333.7±64.6 to 210.1±89.2 dB/m (p=0.010).
**Conclusion:** FIB-4 score and elastography provide complementary information for preoperative assessment of MASLD in surgical candidates. Postoperative improvements in elastography-derived stiffness and CAP reflect the metabolic benefits of surgery on liver disease.

### Endoscopic Transoral Outlet Reduction for Weight Regain After Roux-en-Y Gastric Bypass: A Retrospective Single-Centre Analysis

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[1]Chirurgie, Chirurgie Zentrum St.Anna, Küsnacht AF; [2]Chirurgie, Chirurgie Zentrum St.Anna, Lucerne; [3]Stoffwechsel, Stoffwechselzentrum Zentral Schweiz, Lucerne; [4]Gastroenterologie, Gastroenterologie St.Anna, Lucerne; [5]Medizinische Universität Lucerne, Lucerne; [6]Obesity and Bariatric Center, Limmattal Hospital, Zurich-Schlieren

**Background:** Weight regain after Roux-en-Y gastric bypass (RYGB) affects up to 25% of patients. Dilatation of the gastrojejunal anastomosis (GJA) is a recognised anatomical contributor. Endoscopic transoral outlet reduction (TORe) has emerged as a minimally invasive alternative to surgical revision, but data on clinical efficacy, particularly beyond anatomical correction, remain heterogeneous.
**Aims:** This study aimed to evaluate the efficacy and safety of endoscopic transoral outlet reduction (TORe) in patients with weight regain after RYGB, focusing on weight-related outcomes, anatomical GJA reduction, and improvement of dumping syndrome symptoms assessed using the CMWQ dumping score. A secondary aim was to descriptively assess outcomes across different endoscopic techniques.
**Methods:** We retrospectively analysed consecutive patients undergoing endoscopic outlet reduction for weight regain after RYGB at a single tertiary centre between 2012 and 2024. Procedures were performed using endoscopic suturing, over-the-scope clips (OTSC), or combined techniques. Primary outcomes included percentage total body weight loss (%TWL) and excess weight loss (%EWL) at 3, 6, 12, and 24 months. Secondary outcomes were changes in body mass index (BMI), reduction in GJA diameter, dumping syndrome resolution, technical success, and 30-day adverse events.
**Results:** Ninety-five patients were included (mean age 47.3 ± 11.5 years; 80% female). Mean baseline BMI was 32.6 ± 5.4 kg/m², with a mean weight regain of 14.2 ± 13.0 kg. Mean GJA diameter was reduced from 25.0 ± 7.0 mm to 10.7 ± 2.1 mm ($p < 0.001$), with a technical success rate of 97.9%. At 12 months, mean %TWL was 1.1 ± 6.4%. Among patients with dumping syndrome at baseline, 66% achieved complete symptom resolution based on CMWQ scores. The 30-day adverse event rate was 6.3%, including one procedure-related death.
**Conclusion:** Endoscopic TORe is safe and technically effective in reducing dilated GJA and provides significant improvement in dumping syndrome symptoms. However, weight loss outcomes were modest and variable. TORe should be considered primarily as an anatomical stabilisation strategy within a multidisciplinary treatment concept, particularly in patients with dumping syndrome.

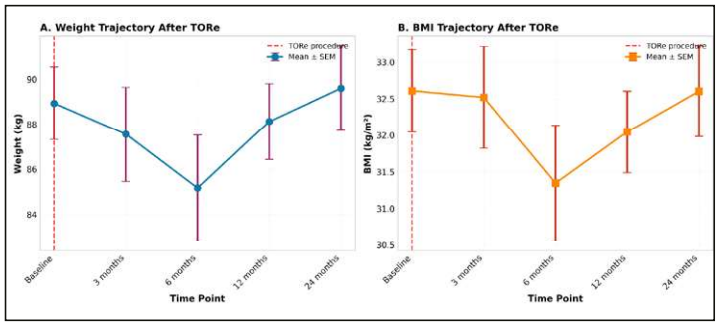


**Figure 1. Weight BMI Trajectory**

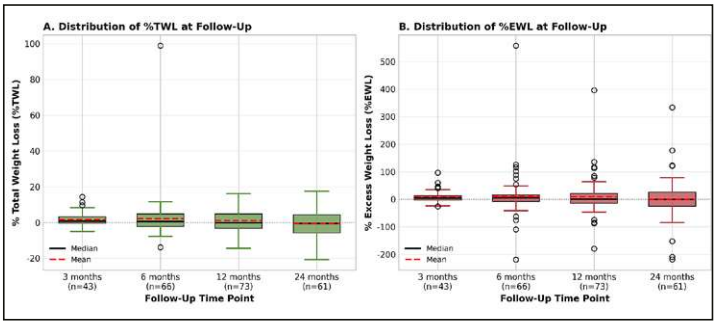


Figure 2. TWL EWL Boxplots

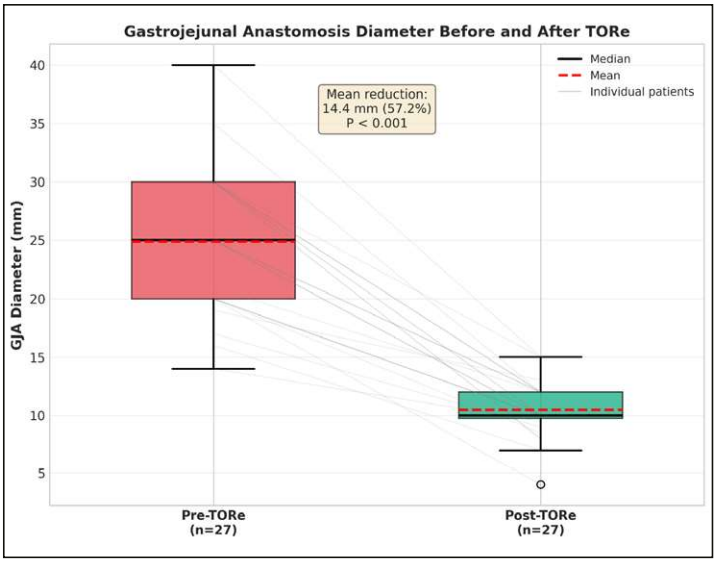


Figure 3. GJA Diameter Reduction

**Early Jejunojejunostomy Complications After Laparoscopic Roux-en-Y Gastric Bypass: Incidence, Management, and Technical Insights From a 3,200-Patient Cohort**

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[1]Department of Surgery, Lausanne University Hospital, Lausanne; [2]Department of Surgery, Riviera-Chablais Hospital, Rennaz

**Background:** Although rare, early complications at the jejunojejunal anastomosis after Roux-en-Y gastric bypass significantly affect postoperative outcomes. They include hemorrhage, mechanical obstruction – often due to blood clots or kinking – and, more rarely, anastomotic leaks. Prompt diagnosis and tailored management are essential to prevent severe consequences, such as blow-out of the excluded stomach.
**Aims:** To evaluate the incidence, clinical, radiological presentation, and management strategies of jejunojejunal anastomosis complications occurring within 30 days of Roux-en-Y gastric bypass.
**Methods:** A retrospective analysis of our prospective database was conducted (n = 3,232) from 1999 to April 2024. Patients with early jejunojejunal anastomosis complications were identified. Clinical characteristics, imaging findings, therapeutic approaches, and outcomes were analyzed. Multivariate regression was used to identify independent predictors of complications.
**Results:** Early jejunojejunal anastomosis occurred in 102 patients (3.2%). The most frequent were hemorrhage (50%), isolated obstruction (33%), and combined hemorrhage with obstruction (14%). Leaks were rare (4%). Reoperation was necessary in 41% of cases, mainly by laparoscopy. Male sex (odds-ratio 1.60, p = 0.031) and longer operative time (p=0.035) were associated with increased risk of jejunojejunal anastomosis complications, while diabetes mellitus was associated with significantly reduced risk (odds-ratio 0.39, p = 0.007).
**Conclusion:** Early jejunojejunal anastomosis complications after Roux-en-Y gastric bypass are infrequent but clinically significant. Bleeding is the most frequent and may lead to obstruction. Early CT imaging and a stepwise management algorithm including conservative measures and timely surgical reintervention are critical to ensure favourable outcomes.

**Current Practices in Post-Operative OSA Monitoring After Metabolic Bariatric Surgery: An International Survey and Scoping Review of the Literature**

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**Background:** Obstructive sleep apnea (OSA) is common in patients undergoing metabolic bariatric surgery (MBS) and is linked to increased perioperative cardiopulmonary risk. However, perioperative screening, respiratory monitoring, and postoperative care strategies vary widely, and optimal management pathways remain unclear.
**Aims:** To assess the current perioperative strategies for patients affected by OSA and undergoing MBS.
**Methods:** This study combined a scoping review with a survey endorsed by the International Federation for the Surgery and Other Therapies for Obesity (IFSO). Studies reporting perioperative outcomes of obstructive sleep apnea in MBS patients were searched in PubMed, Embase, and the Cochrane Library. Extracted variables informed survey creation, then distributed to IFSO members.
**Results:** We analyzed 101 responses, predominantly from surgeons (89.1%), with ≥10 years of experience (86.1%) and from high-volume centers (>100 cases/year, 76.3%). Over half of responding centers (56.4%) had access to intermediate care units, and 28.7% used remote ward telemetry. Only 24.7% routinely performed preoperative polysomnography. Perioperative triage was usually determined by anesthesiologists (64.4%) rather than being protocol-driven (12.9%). Postoperative disposition for mild or moderate OSA was usually the standard surgical ward (63.4–70.3%, Fig. 1). For severe OSA, practices diverged: 58.4% of centers sent patients without home continuous positive airway pressure (CPAP) therapy to an intensive care unit (ICU) or intermediate care, whereas those with severe OSA already on CPAP were more often managed on the ward (57.4%) than in ICU/intermediate care (38.6%) (Fig. 2). These real-world discrepancies mirror the heterogeneity found in the 22 studies (from 1,997 screened) from our review. Some studies found no increase in major complications or higher-level care needs for OSA patients, while others reported higher rates of early postoperative hypoxemia or minor respiratory events.
**Conclusion:** While mild/moderate OSA patients are generally managed similarly after MBS, substantial variation persists for severe OSA, supporting the need for standardized, risk-adapted postoperative monitoring pathways.

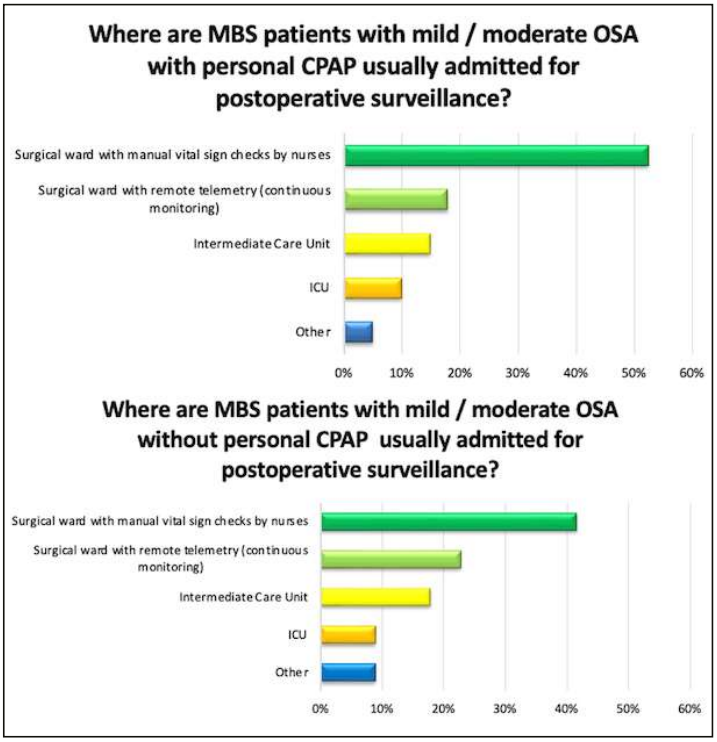


Figure 1. Triage of patients affected by mild/moderate OSA with and without personal CPAP

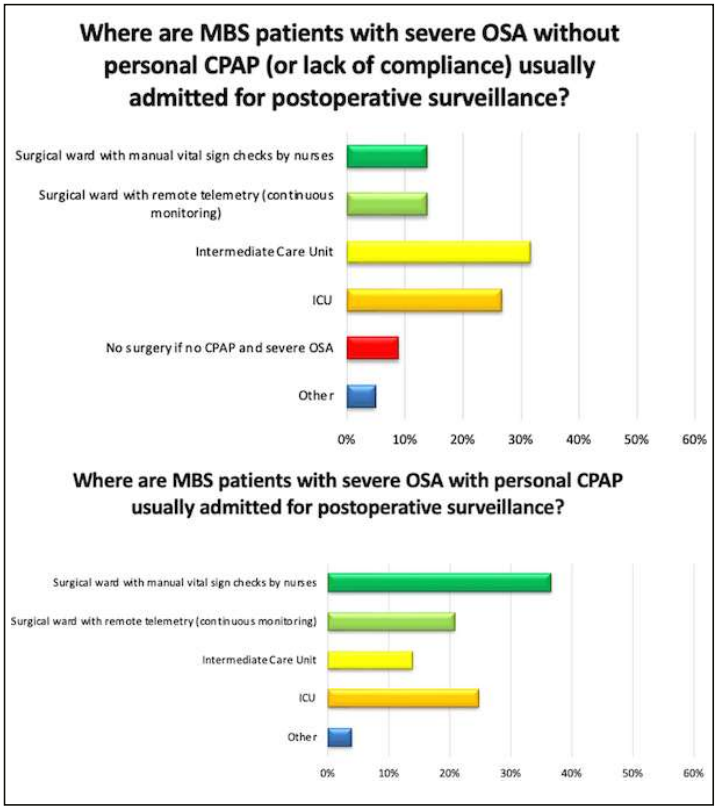


**Figure 2. Triage of patients affected by severe OSA with and without personal CPAP**

### Five-Year Outcomes of Robotic Revisional Surgery for Insufficient Weight Loss and Weight Regain after Sleeve Gastrectomy

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**Background:** Sleeve gastrectomy (SG) is the most performed bariatric procedure worldwide, yet the reported rate of surgical conversions due to insufficient weight loss (IWL) or weight regain (WR) is 10-20%.
**Aims:** The aim of this study was to determine the best metabolic response after robotic SG conversions for IWL/WR and identify the most appropriate surgical option.
**Methods:** We analysed prospective registry data from eight expert centres across three continents. Included patients underwent either secondary robotic Roux-en-Y gastric bypass (rRYGB) or robotic biliopancreatic diversion with duodenal switch (rBPD-DS) for IWL/WR after SG. Perioperative outcomes, postoperative morbidity assessed using the Comprehensive Complication Index (CCI®), total bodyweight loss (TBWL), and SFBARI scores were compared at 90 days, 1 year and 5 years.
**Results:** 148 patients were included; 79·7% were females, with a mean (SD) age of 44·0 (10·1) years and baseline BMI of 45·2 (8·4) kg/m². 55 (37·2%) underwent rRYGB and 93 (62·8%) rBPD-DS. Baseline characteristics were comparable. Median hospital stay was 2 days in both groups (p=0·84). An uneventful 90-day postoperative course occurred in 92·7% of patients undergoing rRYGB and 82·8% undergoing rBPD-DS (p=0·088). At 1 year, follow-up was available for 79·1% of patients; TBWL did not differ between groups (17·7% for rRYGB vs 19·2% for rBPD-DS; p=0·36), nor did SFBARI scores (33·9 vs 36·1; p=0·52). At 5 years, follow-up was available for 53·4% of patients; rBPD-DS was associated with greater TBWL (25·3% vs 14·1%; p=0·003) and higher SFBARI scores (45·1 vs 24·6; p=0·006).
**Conclusion:** As a secondary procedure for IWL/WR after SG, rBPD–DS was associated with a 9.9% higher 90-day morbidity compared to rRYGB. At 5-year follow-up, rBPD–DS was associated with significantly greater weight loss and higher SFBARI scores, suggesting a potential long-term advantage over rRYGB.

### Long-Term Effects of Laparoscopic Sleeve Gastrectomy: What Are the Results at 15 Years?

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**Background:** The prevalence of obesity more than doubled in the last 30 years. In 2021, an estimated 3.7 million deaths from diseases such as diabetes and cardiovascular events occurred in people with higher-than-optimal BMI, emphasizing the importance of durable weight loss therapies. Since 2014, sleeve gastrectomy (SG) has become the most performed Metabolic Bariatric Surgery (MBS) worldwide.
**Aims:** To present long-term results of SG at 15 years.
**Methods:** Retrospective single-center analysis of individuals 15 years after SG.
**Results:** In this cohort, 146 individuals underwent SG between 2004 and 2010. Follow-up rates were 84.9%, 56.9% and 47.2% at 5, 10 and 15 years, respectively. Fifty-six individuals underwent a conversion to either short biliopancreatic limb Roux-en-Y gastric bypass (n=23, 41.1%), biliopancreatic diversion with duodenal switch (n=17, 30.4%), long biliopancreatic limb Roux-en-Y gastric bypass (n=12, 23.2%), or re-sleeve gastrectomy (n=3, 5.4%). Indications included suboptimal initial clinical response with an initial total weight loss (TWL) of less than 20% (SICR) or recurrent weight gain (RWG) (n=25, 44.6%), gastroesophageal reflux disease (GERD) (n=11, 19.6%), SICR/RWG + GERD (n=19, 33.9%), or kinking of the sleeve (n=1, 1.8%). Conversion rates were 9.7%, 37.3% and 55.1% at 5, 10 and 15 years, respectively. TWL at 15 years showed no significant difference between non-converted and converted individuals (22.3% vs 26.6%, p=0.1). Diabetes and hypertension remission rates declined from 42.4% and 53.3% at 5 years to 9.1% and 12.0% at 15 years, respectively.
**Conclusion:** This analysis of individuals after SG demonstrated a progressively increasing conversion rate over time due to recognized long-term challenges such as SICR/RWG and GERD underscoring the importance of a long-term follow-up in order to optimize outcomes. Stable weight loss could be achieved in both groups; however, obesity associated diseases tended to reappear over time.

### Efficacy of GLP 1 Receptor Agonists in Managing Weight Regain Following Roux-en-Y Gastric Bypass: A Therapeutic Avenue to Restore Metabolic Control?

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**Background:** Weight regain after Roux en Y gastric bypass (RYGB) can diminish the long-term benefits of bariatric surgery. Glucagon-like peptide 1 receptor agonists (GLP 1 RAs) offer a pharmacologic option to counter postoperative weight recurrence.
**Aims:** To evaluate the efficacy, tolerability, and impact on quality of life of GLP 1 RAs in patients with weight regain after RYGB.
**Methods:** In this retrospective cohort, 70 patients with ≥15% weight regain after RYGB received GLP 1 RA therapy and were followed for 18 months. Primary endpoints were changes in body weight and Body Index Mass (BMI); secondary endpoints included remission of metabolic comorbidities and quality of life assessed by the BAROS score.
**Results:** Median total body weight loss (TBWL) reached 12.8% at 18 months. Remission of type 2 diabetes mellitus (T2DM) was observed in 96.6% at 12 months, hypertension remission in 80%, and dyslipidaemia remission in 86%. Quality of life scores improved significantly. Therapy discontinuation occurred in 7.1% of patients.
**Conclusion:** GLP 1 RAs appear effective and well tolerated in managing weight regain after RYGB, delivering metabolic improvements and measurable enhancement in quality of life. The durability of these effects beyond treatment requires further investigation.

## Free Communication I – SGG

### Snuffbox versus Cimino Arteriovenous Fistulas: A Single-Center Comparative Analysis

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**Background:** The distal-first principle prioritizes distal radio-cephalic sites for hemodialysis access. While snuffbox arteriovenous fistulas (SBAVFs) offer an additional option for future revisions, smaller vessel calibers may impair maturation compared to Cimino fistulas (RCAVFs).
**Aims:** We compared the outcomes of SBAVFs and RCAVFs to evaluate whether a SBAVF-first approach is justified.
**Methods:** One year outcomes of SBAVFs and RCAVFs (2021–2024) created for hemodialysis were analyzed retrospectively. Endpoints included maturation rates (functioning dialysis or ultrasound results for preemptive cases), reinterventions (specifically proximalizations), and ischemic complications. Access site selection was based on vessel diameter measurements during preoperative sonography (under anesthesia or prior vascular mapping by an angiologist).

**Results:** A total of 61 distal radio-cephalic fistulas were created (25 SBAVFs, 36 RCAVFs). Eight patients were lost to follow-up due to unrelated death or transfer to external care. In the SBAVF group (n=23), primary maturation was 52.2% (12/23) and secondary 73.9% (17/23). 14 re-interventions were required in 11 patients (47.8%), including 12 surgical revisions – eight of which were proximalizations (34.8%) – and two percutaneous transluminal angioplasties (PTA). Notably, two cases of steal syndrome (8.7%) were identified. In the RCAVF group (n=30), primary and secondary maturation rates were 63.3% (19/30) and 83.3% (25/30) respectively. 19 reinterventions were needed in 14 patients (46.7%) including five proximalizations (16.7%) and 11 PTAs. No ischemic complications were observed.
**Conclusion:** Snuffbox fistulas have slightly lower maturation rates than Cimino fistulas and require twice as many proximalization procedures. Furthermore, steal syndrome was observed exclusively in the snuffbox fistula group. Consequently, a SBAVF-first approach may not be justified.

### Safety of Totally Implantable Venous Access Port Implantation Performed by Residents via the Percutaneous Subclavian Vein Approach

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**Background:** Totally implantable venous access ports (TIVAPs) are widely used for long-term intravenous therapies. The safety of TIVAP implantation performed primarily by surgical residents remains a subject of debate, particularly when using the percutaneous subclavian vein approach.
**Aims:** Primary aim was to assess the safety of TIVAP implantation performed by residents via the percutaneous subclavian vein approach and to compare complication rates across different levels of surgical supervision.
**Methods:** Retrospective single-center study included all consecutive adult patients undergoing TIVAP implantation between January 2015 and June 2024. A total of 1075 procedures were analyzed. Five surgeon groups were defined: resident alone, junior plus senior resident, resident with secondary attending support, resident with attending surgeon and attending surgeon alone. The primary endpoint was any complication including pneumothorax, hemothorax, failed catheter insertion, primary catheter dysfunction or early infection. Secondary endpoints were late infections (>90 days) and secondary catheter dysfunction. Crude and adjusted logistic regression analyses were performed, adjusting for relevant patient -and procedure-related confounders.
**Results:** Mean patient age was 59±14 years, and 79% were female. Residents performed 42.9% of procedures independently. Percutaneous subclavian vein technique was used in 95% of cases. Pneumothorax occurred in 2.1% of patients, chest tube insertion in 1.0%, and no hemothorax was observed. Overall complication rates did not differ significantly between surgeon groups after adjustment. Residents operating independently showed no increased risk compared with attending surgeons. Pneumothorax was most frequent in cases requiring secondary attending support. Independent predictors of complications included higher body mass index, anticoagulation, immunosuppression, and pre-existing venous devices.
**Conclusion:** TIVAP implantation via the percutaneous subclavian vein can be performed safely by residents within a structured training and supervision framework. Comparable complication rates to attending surgeons support resident autonomy, while increased complications in assisted cases likely reflect higher procedural complexity rather than insufficient experience.

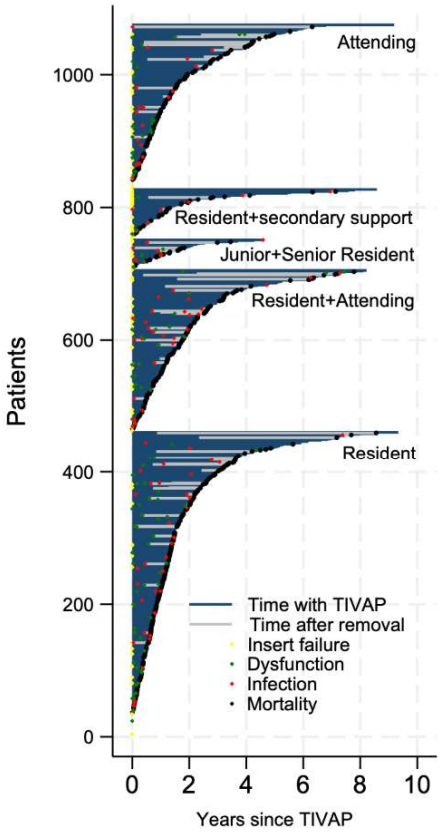


**Figure 1. Clinical course over 10 years by surgeon group**

### Postoperative Antithrombotic Therapy and Outcomes After Open Popliteal Artery Aneurysm Repair: A Multicenter Retrospective Cohort Study

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**Background:** Optimal postoperative therapy after poplital artery aneurysm (PAA) repair remains poorly defined with limited evidence mainly based on peripheral arterial disease (PAD) revascularization procedures.
**Aims:** To compare antithrombotic strategies and their impact on graft patency and survival following elective open PAA repair in a large multicenter cohort.
**Methods:** This multicenter retrospective study analyzed PARADE registry data from 40 centers in 10 European countries, including patients undergoing elective open posterior PAA repair between 2010 and 2023. Postoperative antithrombotic therapy was categorized as single (SAPT), dual antiplatelet (DAPT), direct/indirect anticoagulants, or combination therapy (CT). Primary outcomes were patency and survival, with secondary outcomes included secondary patency and major cardiovascular adverse events (MACE). Kaplan-Meier and Cox regression analyses were used.
**Results:** A total of 638 patients (median age 70 years; 96% male) were included, with a median follow-up of 30 months. Autologous vein grafts were used in 46.6% and prosthetic grafts in 50.7%. The most common postoperative regimen was SAPT (56.3%), followed by CT (17.7%), DAPT (14.4%), and anticoagulation alone (11.6%). Early outcomes showed 2.0% graft occlusion and 1.1% early MACE. Long-term survival was 90.3%. CT was linked to worse overall survival (HR 1.30, p=0.018). Primary patency at follow-up was 86.1%, with CT associated with increased risk of patency loss (HR 1.43). Similar results were seen for secondary patency. The overall MACE rate was 1.1%, with no differences between CT and other regimens. No significant differences were found between antiplatelet versus anticoagulant therapy, or between direct and indirect anticoagulants for all endpoints.
**Conclusion:** After open posterior PAA repair, intensified antithrombotic therapy combining anticoagulation and antiplatelet agents was associated with inferior survival and graft patency, without apparent benefit over simpler antithrombotic strategies.

### Is There Still a Place for Extraanatomic Axillofemoral Bypass in The Endovascular Era?

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**Background:** In an era of rapid advances in endovascular surgery, axillofemoral bypass has become a rare solution for lower limb revascularization.
**Aims:** This evolution in the indication for axillofemoral bypass makes analyzing outcomes of these procedures even more important.

**Methods:** Consecutive patients who underwent uni- or bifemoral axillofemoral bypass between March 2018 and May 2024 at a single center were analyzed. Outcomes were primary patency, mortality and major amputation rate at 30 days and one year postoperatively.
**Results:** Twelve patients were identified. Four (33%) received axillobifemoral bypass, and the remaining patients received axillounifemoral bypass. Median age was 75 (range 57 - 88) years, and 66% were male. All patients had aortoiliac occlusive disease and more than one cardiovascular risk factor. Most patients (75%) were American Society of Anesthesiologists (ASA) category III and three patients (25%) were ASA category IV. Axillofemoral bypass was an urgent procedure in half of the patients due to acute limb ischemia. The other half underwent elective procedures for disabling claudication. Mean operation time was 165 minutes (range 40–309 minutes), and the mean blood loss was 375 mL (range 50–1500 mL). Eight patients (66%) required simultaneous outflow optimization by femoral endarterectomy and patchplasty. One of these patients also received profundopopliteal bypass. Primary patency at 30 days was 100%. One bypass occluded after 10 months, all others were patent at one year. Mortality at 30 days and one year was 8% and 33%, respectively. Two patients (17%) required major amputation within one year of follow-up.
**Conclusion:** Although axillofemoral bypass surgery has become less common, it may still be a safe and feasible option for polymorbid patients even in emergency situations. Despite the advances in endovascular techniques, we should keep this option in mind.

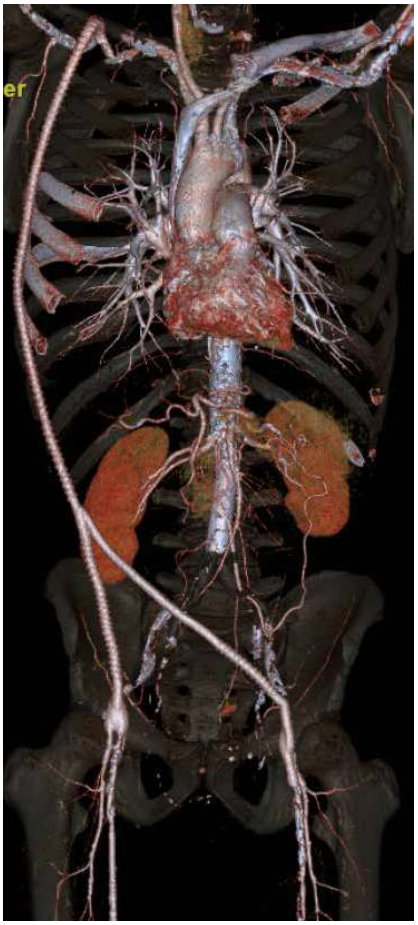

**Figure 1. Axillobifemoral bypass in a patient with extended aortoiliac occlusive disease**

### Treatment Strategies and Long-Term Outcomes in Shoulder Girdle Vascular Trauma

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**Background:** Traumatic injuries of the subclavian and axillary arteries are rare and associated with fractures and dislocations of the shoulder girdle, often accompanied by polytrauma and neurologic lesions. Management options include open surgical repair and endovascular techniques, however comparative data on outcomes and long-term patency remain limited.
**Aims:** To evaluate open and endovascular treatment strategies and to compare short- and long-term outcomes in patients with traumatic subclavian or axillary artery injuries treated at a single center.
**Methods:** All patients treated for traumatic injuries of the subclavian or axillary arteries between 2010 and 2025 were retrospectively reviewed. Demographics, injury mechanisms, associated injuries, clinical presentation, treatment modality, technical success, 30-day mortality, patency, and long-term outcomes were analyzed.
**Results:** 16 patients were included (mean age 63 years, range 17-88; 56% female). Injuries involved the subclavian artery in 3 patients and the axillary artery in 13 patients. Concomitant brachial plexus injury was present in 75%. Associated skeletal injuries included shoulder dislocations (n=7), humerus- (n=6), clavicle- (n=2) and rib fractures (n=1). Ischemia due to arterial occlusion occurred in 62.5% of patients, while 37.5% presented with active bleeding. Trauma mechanisms included winter sports (32%), pedestrian (25%), traffic (25%), domestic (13%), and agriculture (6%) accidents. Treatment consisted of open repair in 50%, endovascular repair in 31%, hybrid procedures in 6% and isolated arterial repositioning in 13%. Technical success was achieved in all cases. Thirty-day mortality was 6%. Mean follow-up was 2 years (range 0-13). Primary and secondary patency rates were 82% and 100%, respectively. Two patients required a subclavian-axillary bypass and one patient angioplasty to achieve secondary patency. Persistent impairment was mainly related to brachial plexus injuries, with 47% showing residual motor or sensory deficit.
**Conclusion:** Both open and endovascular approaches achieve durable patency in vascular trauma of the shoulder girdle. Long-term functional outcome is primarily determined by associated neurological injuries rather than the vascular repair technique.

### The First European Clinical Experience With the Santreva (Angiosafe®) System for Femoropopliteal Chronic Total Occlusions: A Case Report

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**Background:** Chronic total occlusions (CTOs) of the superficial femoral artery remain challenging, particularly in heavily calcified lesions where multiple devices are often required for recanalization, vessel preparation, and definitive treatment. Santreva (AngioSafe®, San Jose, United States) is a novel CTO crossing system that combines mechanical entry into the occlusion with controlled plaque modification and facilitate placement of guidewire into the distal true lumen.
**Conclusion:** Santreva appears to be feasible and a promising tool for complex femoropopliteal CTOs. Adjunctive technologies are still required in severely calcified lesions.
**Case presentation:**
Methods: The aim of this case is to report the first clinical use of Santreva in our center and evaluate its feasibility and technical success.
Results: We report the case of a patient with a superficial femoral artery (SFA) occlusion crossed using Santreva system in October 2025. Our patient was 61 years old, presenting with chronic limb-threatening ischemia Rutherford 3 with lifestyle-limiting claudication. Preoperative CTA showed a highly calcified 6-cm distal SFA occlusion with a 2 vessels run-off to the foot. A prior recanalization attempt with a contralateral crossover had failed 6 weeks earlier. Ipsilateral 6 French femoral access was obtained. Arteriography confirmed the distal SFA occlusion and Santreva enabled controlled intraluminal CTO entry and facilitated true-lumen recanalization without the need for a dedicated re-entry device. Following successful crossing, intravascular lithotripsy was performed in the context of severe calcification. Completion angiography revealed a proximal flow-limiting dissection requiring self-expandable stent implantation, resulting in restoration of inline flow with no residual stenosis. Technical success was achieved. Santreva facilitated CTO entry and partial plaque modification and enabled full intraluminal crossing. No distal embolization nor perforation occurred, and no immediate access-site complications were observed.

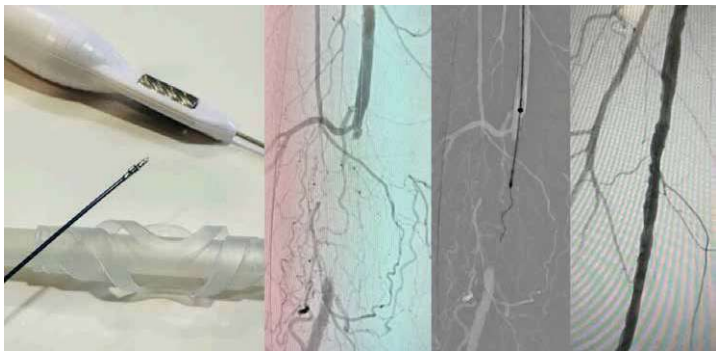

**Figure 1. Santreva**

### Intravascular Lithotripsy for Coral Reef Aorta: A Case Report

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**Background:** Severe vascular calcification poses a major challenge for endovascular treatment. Intravascular lithotripsy (IVL) has emerged as an effective and safe technique for reducing calcified stenoses and facilitating vessel preparation. We report a case of high-grade stenosis of the proximal descending aorta (coral reef aorta) associated with refractory upper-extremity hypertension and impaired renovisceral perfusion, successfully treated using IVL and balloon percutaneous transluminal angioplasty (PTA).
**Conclusion:** Coral reef aorta is a rare condition. In our case, intervention was indicated due to refractory upper-extremity hypertension and compromised renovisceral perfusion. Intravascular lithotripsy proved to be a safe and effective treatment option, enabling successful lesion modification with low peri-interventional risk.
**Case presentation:** A 73-year-old woman with progressive chronic kidney disease and treatment-resistant arterial hypertension underwent further diagnostic evaluation. Imaging revealed extensive aorto-viscero-iliac occlusive disease with critical lower-extremity ischemia. She underwent complex open revascularization, including thrombendarteriectomy of the renovisceral segment and orthotopic aorto-iliac bypass, resulting in improved lower-extremity perfusion. However, severe treatment-resistant hypertension of the upper extremities persisted. CTA demonstrated a high-grade, exophytic calcified stenosis of the proximal descending aorta

consistent with coral reef aorta (Figure 1). Diagnostic angiography with lesion crossing was followed by balloon PTA and intravascular shockwave lithotripsy via a femoral approach. IVL was performed using a L6 IVL 12-mm balloon with 300 pulses, without stent implantation (Figure 2). Immediately after the intervention, upper-extremity systolic blood pressure decreased from 170 to 130 mmHg.

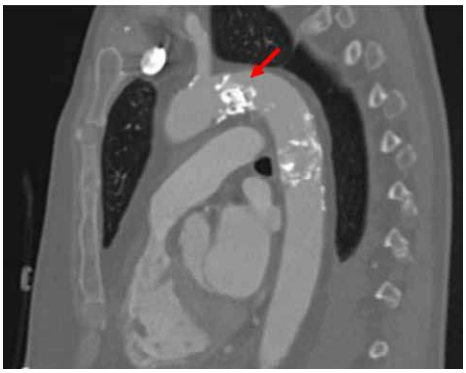

Figure 1. Coral Reef Aorta

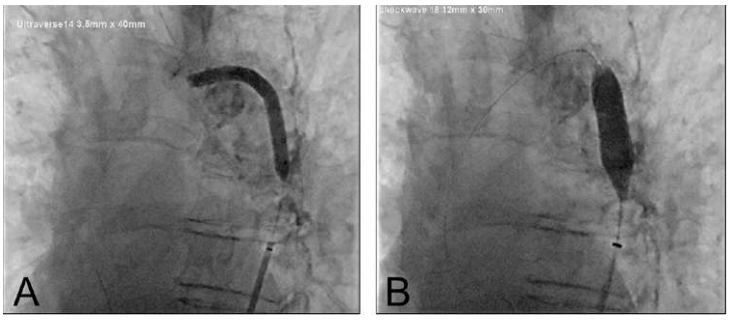


Figure 2. Intravascular Shockwave Lithotripsy for Coral Reef Aorta

**Posterior Popliteal Open Retrieval of an Embolised Angio-Seal Vascular Closure Device Causing Acute Limb Ischaemia: A Case Report**

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**Background:** Vascular closure devices (VCDs) shorten time to haemostasis and ambulation after transfemoral procedures. Rare device-related embolisation can cause acute limb ischaemia (ALI), and evidence guiding the choice between endovascular salvage and open surgery remains limited.
**Conclusion:** VCD embolisation is uncommon but limb threatening. Rapid recognition, targeted imaging and prompt removal of the foreign body are essential. Although endovascular options (aspiration, snares/forceps) have been described, open surgery offers a fast and definitive solution for popliteal emboli, allows concomitant thrombectomy or arterial repair, and avoids placing a stent across flexion points when required. This case supports a pragmatic decision algorithm based on anatomical location, limb threat, and device type. Furthermore, we advocate for routine pre-deployment ultrasound screening to identify calcifications and prevent such failures.
**Case presentation:** A 65-year-old diabetic male underwent diagnostic coronary angiography via the right common femoral artery. Vascular closure was performed using an Angio-Seal device. Post-procedure, the patient developed immediate signs of acute limb ischaemia (Rutherford IIb). Ultrasound and CT-angiography (Figure 1) confirmed an abrupt occlusion of the popliteal artery at the P2 segment by the migrated device. Therapeutic anticoagulation with intravenous heparin was initiated. The therapeutic decision prioritized the prevention of distal embolisation. Unlike metallic foreign bodies, the Angio-Seal comprises a rigid polymer anchor and a soft collagen sponge. Percutaneous snare retrieval carries a high risk of fragmenting the collagen, leading to "showering" emboli into the crural arteries. Consequently, an open surgical approach was selected. Using a posterior S-shaped popliteal approach, a transverse arteriotomy allowed the "en bloc" retrieval of the intact device (anchor, suture, and sponge) (Figure 3). Distal Fogarty thrombectomy cleared propagated thrombus. The patient recovered with fully restored palpable pulses and no residual deficits and was discharged on postoperative day 2.


Figure 1. Ultrasound and computed tomography showing the occlusion

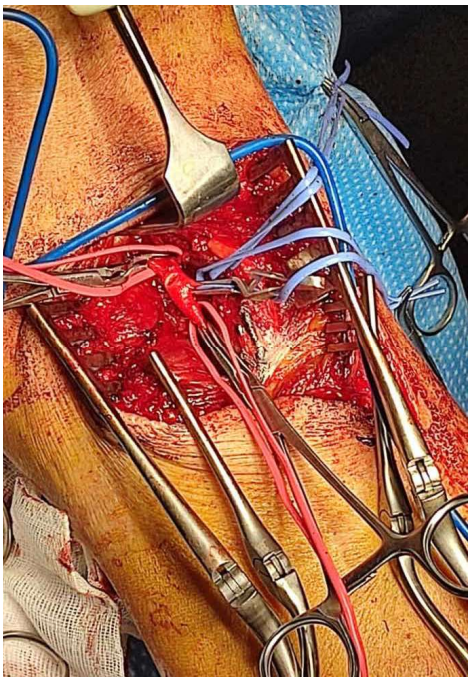

Figure 2. S-Shaped popliteal approach

Figure 3. Retrieved AngioSeal (Anchor, collagen plug, thread)

## Main Session AGEC

### PET/CT or SPECT/CT in the Surgical Management of Primary Hyperparathyroidism

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**Background:** Successful surgical management for primary hyperparathyroidism (pHPT) depends on accurate localization of parathyroid adenomas. Recent studies suggest that 18F-fluorocholine positron emission tomography/computed tomography (PET/CT) may outperform Tc99m-sestaMIBI single-photon emission (SPECT/CT) in sensitivity and accuracy.
**Aims:** This study aimed to compare the efficacy of PET/TC with conventional SPECT/TC in the preoperative localization of parathyroid adenomas.
**Methods:** All patients who underwent parathyroidectomy at our hospital between January 2023 and July 2025 were retrospectively reviewed, excluding those with multiple endocrine neoplasia type 1. Preoperative imaging pathways were analyzed and correlated with intraoperative and histopathological findings. Secondary outcomes included the need for additional imaging, operative time, requirement for bilateral exploration when adenomas were not localized, immediate postoperative parathyroid hormone (PTH) drop > 50% and reoperation rates.
**Results:** Fifty-five patients were enrolled in the study, all assessed by an endocrinologist with a neck ultrasonography. Twenty-nine patients underwent SPECT/CT prior to surgery. Five of these required PET/CT due to negative/indeterminate SPECT/TC results. Twenty-one patients underwent PET/CT directly. PET/TC demonstrated significantly higher concordance with intraoperative and histopathological findings (96%) compared with SPECT/TC (75%), indicating superior localization sensitivity. Accordingly, the need for additional imaging was significantly higher after SPECT/TC (32%), whereas no further diagnostic analysis was required in the PET/TC group. Moreover, in the SPECT/TC group the operative time was significantly longer (58 min vs 41 min) and there was a trend toward more frequent bilateral exploration (24% vs 15%). Conversely, no significant differences were observed in postoperative PTH drop or reoperation rates, suggesting effective intraoperative adenoma identification even when imaging results were suboptimal.
**Conclusion:** PET/CT provides superior sensitivity for parathyroid adenoma localization when compared to SPECT/TC, resulting in fewer additional imaging and shorter operative times. These results support the use of PET/TC as a preferred diagnostic modality in preoperative evaluation of pHPT.

### First Results After Implementation of Fluor Choline PET/CT as Standard First-Line Imaging: High Cure Rates but More Bilateral Neck Explorations

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**Background:** Since July 2023, Fluor Choline PET/CT has been approved in Switzerland as a first-line imaging modality for parathyroid adenoma localization in primary hyperparathyroidism (pHPT). This change represents a shift from previous reimbursement policies, which required inconclusive results from ultrasound and MIBI scintigraphy.
**Aims:** The aim of this study was to evaluate the impact of implementing Fluor Choline PET/CT as a standard first-line imaging modality for localization in primary hyperparathyroidism (pHPT) on surgical outcomes, cure rates, and the rate of bilateral neck explorations.
**Methods:** We retrospectively analyzed 281 parathyroidectomies performed between January 2017 and June 2025. Thirty-three patients were excluded due to hereditary HPT, redo surgeries, lithium treatment, or pregnancy. Preoperative biochemical characteristics, imaging techniques, surgical approaches, and outcomes were compared between patients treated before (preCholin, N=161) and after (postCholin, N=87) the implementation of Fluor Choline PET/CT as standard first-line imaging.
**Results:** The overall cure rate was 96.7% (235/243) after the first operation and 98.8% after redo surgery in 5 cases (240/243). Sensitivity for MIBI scintigraphy/SPECT CT was 64.1%, whereas Fluor Choline PET/CT demonstrated a sensitivity of 90.5%, enabling precise localization of parathyroid lesions. Interestingly, the rate of bilateral neck explorations increased from 22.3% in the preCholin group to 31.0% in the postCholin group.
**Conclusion:** The implementation of Fluor Choline PET/CT as a standard first-line imaging modality for pHPT localization resulted in high cure rates. However, the increased rate of bilateral neck explorations warrants further investigation to understand its impact on surgical outcomes and patient management.

### Unexpected Diagnosis of a Retroperitoneal Mass with Neuroendocrine Imaging Features: A Robotic Surgical Case Report

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**Background:** Incidentally detected retroperitoneal tumors are rare and can pose a diagnostic challenge because of nonspecific clinical presentation and overlapping radiological features. Advanced cross-sectional and functional imaging modalities, including somatostatin receptor-based PET/CT, are commonly used to refine the differential diagnosis but may occasionally be misleading.
**Aims:** This video case report aims to illustrate to demonstrate the diagnostic pitfalls of an asymptomatic retroperitoneal mass with imaging characteristics suggestive of a neuroendocrine tumor and to highlight the value of robotic surgery in managing complex retroperitoneal lesions.
**Methods:** A 66-year-old asymptomatic woman was found to have a retroperitoneal mass during routine follow-up ultrasound examination. Contrast-enhanced CT demonstrated a well-circumscribed lesion suspicious for paraganglioma, with close proximity the duodenum, compression of the inferior vena cava, and adjacent to the right psoas muscle. Subsequent Ga-68-DOTATATE PET/CT revealed intense SSTR2 uptake, further supporting the presumptive diagnosis of a paraganglioma, while a duodenal gastrointestinal stromal tumor remained a differential consideration. Given the uncertain biological behavior and challenging anatomical location, a robotic-assisted surgical approach was chosen. Complete tumor resection was achieved from the right retroperitoneum between the inferior vena cava, duodenum, transverse colon, and right kidney.
**Results:** The robotic procedure was completed successfully without intraoperative complications. Postoperative recovery was uneventful, and the patient was discharged in good conditions. Histopathological examination unexpectedly revealed a high-grade leiomyosarcoma (G3), not otherwise specified (NOS).
**Conclusion:** This case underscores that somatostatin receptor positivity on DOTATATE PET/CT is not specific for neuroendocrine tumors and may also occur in rare malignant mesenchymal neoplasms. Surgical resection remains essential for definitive diagnosis. Robotic surgery offers a safe, precise, and minimally invasive approach for the management of complex retroperitoneal tumors.

## Pediatric Urology

### Does Open Prenatal Repair of Spina Bifida Aperta Decrease the Incidence of Undescended Testes?

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**Background:** Several studies have reported an increased incidence of undescended testis (UDT) in boys with postnatally treated spina bifida aperta compared to the general population (17.7–27.3% vs. 1–4%). A spinal lesion level at L1–L2 or above has been associated with a higher risk of UDT, presumably due to neurogenic mechanisms leading to impaired testicular descent.
**Aims:** As open prenatal spina bifida aperta repair (OPSBAR) has been shown to improve neurological function, we aimed to assess its effect on the incidence of congenital undescended testis (cUDT).
**Methods:** Patients who underwent OPSBAR at our centre were followed according to a standardized protocol, including annual genital examinations. We retrospectively reviewed clinical findings of boys aged 1–12 years, including anatomical and functional levels of the spinal lesion.
**Results:** A total of 89 boys who underwent OPSBAR (aged 1–12 years) were included. Fifteen patients (16.9%) required surgical treatment for UDT. Seven boys (7.9%) were diagnosed with cUDT within the first 12 months of life, while eight (9.0%) developed acquired UDT (aUDT) following an initially scrotal testicular position. An anatomical spinal lesion at L2 or above was present in 13/89 patients (14.6%) and was significantly more frequently associated with cUDT compared to lower lesion levels (23% vs. 5.2%, $p<0.05$), but not with aUDT (7.7% vs. 9.2%, $p=0.8$). Due to the limited number of patients with a functional lesion level at L2 or above (5/89; 5.6%), no clear association between functional neurological deficit and either cUDT or aUDT could be established.
**Conclusion:** Boys undergoing OPSBAR demonstrate a reduced incidence of cUDT; however, the overall risk of UDT and the subsequent need for surgical intervention remains comparable to that of postnatally treated patients. UDT appears to be more frequently associated with an anatomical spinal lesion at the L2 level or above.

### What Is the Ideal Point of Injection in ICG-assisted Lymphatic Sparing Palomo Procedure? A Case Study

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**Background:** Varicocele is a common condition in adolescents, requiring surgical intervention in cases of testicular atrophy or symptoms. The lymphatic-sparing Palomo procedure, enhanced by indocyanine green (ICG) fluorescence, minimizes complications such as hydrocele formation by preserving lymphatics. However, the optimal injection site for ICG remains debated, with most protocols using intra-testicular injections, raising concerns about possible long-term iatrogenic damage.
**Conclusion:** The ICG-guided Palomo procedure is an effective approach for adolescent varicocele management. Our findings suggest that injecting ICG into the parietal vaginalis tunica provides optimal lymphatic visualization while avoiding intra-parenchymal injection. This technique may serve as a foundation for standardizing para-testicular ICG administration, pending further validation through larger studies.

**Case Presentation:** We report the case of a 13-year-old boy with a progressive left-sided Grade III varicocele and documented testicular hypotrophy (32% volume reduction). Additionally, he experienced recurrent testicular torsion-detorsion episodes. The patient underwent combined ICG-assisted lymphatic-sparing laparoscopic Palomo varicocelectomy and bilateral orchidopexy. Having the opportunity inject under direct vision, three consecutive injection sites for ICG were tested: (1) transcutaneous near the dartos of the spermatic bundle, (2) direct application inside the dartos of the spermatic bundle, (3) beneath the parietal vaginalis tunica. Only (3) successfully identified lymphatic vessels adjacent to the spermatic vessels, whereas (1) and (2) exclusively highlighted lymphatics located along the vas deferens. This allowed precise dissection and ligation of dilated veins while preserving lymphatics. The surgery was uneventful, with the patient discharged on the same day. At 1 week post-op he showed an infection on the orchydopexy site that was treated conservatively. At 2 months post-op he had no more pain and a reduction of the varicocele both clinically and at the US finding.

Figure 1. Extra-spermatic lymphatics

Figure 2. Third site of injection

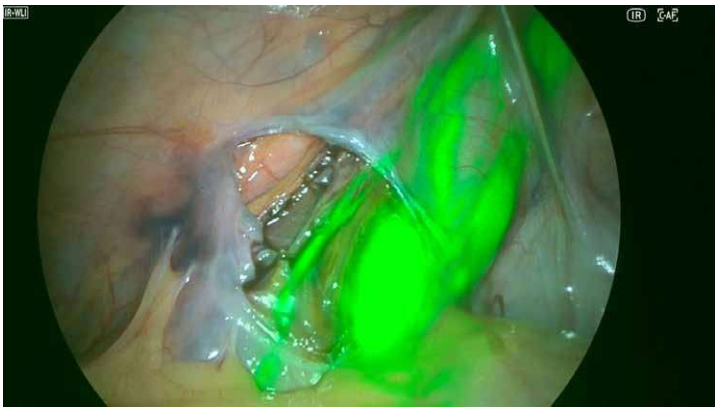

Figure 3. Extra-spermatic lymphatics and intra-spermatic bundle

**Advancing Paediatric Renal Stone Management: The Role Of Percutaneous Nephrolithotomy**

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**Background:** Paediatric urolithiasis is increasingly observed, especially in patients with metabolic disorders or recurrent urinary tract infections. While percutaneous nephrolithotomy (PNL) has long been a standard treatment in adults, its application in children is expanding.
**Aims:** We report a series of three paediatric cases treated with PNL to evaluate the feasibility, safety, and effectiveness of this approach in diverse clinical scenarios.
**Methods:** Three children aged between 13 and 15 years, diagnosed with symptomatic renal stones measuring 10 to 18 mm, underwent PNL between 2022 and 2025. Indications for the procedure included recurrent flank pain and recurrent urinary tract infections. All procedures were performed in the prone position using lower calyceal access under radioscopic and fluoroscopic guidance. A ureteral catheter and a nephrostomy tube were placed perioperatively. The mean operative time was 70 minutes, and the average hospital stay was 3 days, with removal of the nephrostomy tube and ureteral catheter on the first postoperative day. Postoperative follow-up included renal ultrasound and clinical assessment at 1 and 3 months.
**Results:** Two patients achieved complete stone clearance without the need for additional procedures. One patient required a second intervention consisting of flexible ureteroscopy and mono-J stent placement for a residual stone. No major bleeding, visceral injury, or need for transfusion was observed. In the paediatric cohort, a prolonged urine leakage from the percutaneous access site was observed compared to the adult population. Moreover, one patient developed intraoperative hypothermia, which resulted in delayed postoperative awakening.
**Conclusion:** PNL is a viable and safe option for managing paediatric renal stones, particularly in complex or recurrent cases. It offers high stone-free rates with a low complication risk. These findings align with literature suggesting PNL's superiority over extracorporeal shock wave lithotripsy (ESWL) for stones >15 mm. A tailored, patient-specific approach remains crucial for optimal outcomes.

**Posterior Urethral Valves Presenting as Acute Abdomen in a Neonate: A Diagnostic Pitfall**

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**Background:** Posterior urethral valves (PUV) are the most common cause of lower urinary tract obstruction (LUTO) in male neonates. But only around 46–53% of cases are detected prenatally. If untreated, PUV may lead to chronic kidney disease (CKD) in up to 50% of cases, with about 20% progressing to end-stage kidney disease (ESKD). Classic postnatal presentation includes poor urinary stream, urinary tract infection or anuria but atypical presentations has also been described.
**Conclusion:** This case highlights the importance of considering obstructive uropathy, including PUV, as a differential diagnosis of acute abdomen in neonates. PUV may escape prenatal detection and postnatal presentation can be atypical and misleading.
**Case presentation:** We report the case of a late preterm neonate who presented with signs of acute abdomen, respiratory distress, and circulatory compromise mimicking a gastrointestinal emergency. Initial point-of-care ultrasound and laboratory evaluation revealed bilateral hydronephrosis, severe hyponatremia, and renal insufficiency. The diagnosis of posterior urethral valves (PUV) was not suspected prenatally. Due to unsuccessful catheterization, bladder decompression was achieved via suprapubic catheter placement. The clinical condition rapidly improved, and the diagnosis of PUV was confirmed via micturating cystourethrogram (MCU) followed by endoscopic valve ablation.

**Bilateral Anorchia – Is Diagnostic Laparoscopy Necessary?**

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**Background:** We present four cases of Bilateral Anorchia (BA), a rare congenital condition characterized by the partial or complete regression of the testes after normal gonadal development. BA occurs when there is an interruption or failure in the normal process of testicular descent or differentiation, leading to a complete absence of functional testicular tissue.
**Conclusion:** BA is a rare condition with complete regression of the testes after normal gonadal differentiation. Endocrine and imaging findings suggest that surgery can be avoided in BA when diagnostic tests confirm the absence of functioning testicular tissue in boys with otherwise normally virilized external genitalia.
**Case presentation:** The medical records of four male patients diagnosed with BA were analyzed, focusing on clinical presentation, endocrine evaluations, imaging findings, and surgical outcomes. All patients were diagnosed with nonpalpable testes, accompanied by normal scrotal and penile development. Endocrine testing in all four patients revealed elevated levels of luteinizing hormone (LH) and follicle-stimulating hormone (FSH), as well as low anti-Müllerian hormone (AMH) levels (<0.2 pmol/l) in each case. Two patients also exhibited low inhibin B, which is consistent with the absence of testicular function. Furthermore, two patients showed low testosterone levels following human chorionic gonadotropin (hCG) stimulation. Sonographic imaging revealed testicular remnants in three cases. Two patients underwent diagnostic laparoscopy which showed no evidence of testicular tissue.

**Diagnostic Pitfalls and Clinical Reasoning: A Rare Case of Pyelonephritis**

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Kinderchirurgie, Kinderspital Zentralschweiz, Lucerne

**Background:** This case illustrates a diagnostic challenge in which a clinical presentation suggestive of appendicitis obscured the underlying diagnosis of pyelonephritis. It highlights confirmation bias and shows how the oftentimes sound principle "common things are common" may lead to diagnostic error.
**Conclusion:** This case highlights the importance of considering alternative diagnoses when clinical presentation and responds to therapy do not fully match the initial differential diagnosis.
**Case presentation:** A 12-year-old girl presented with lower abdominal pain and a history of recurrent non-febrile urinary tract infections. Our initial differential diagnosis was pyelonephritis with urolithiasis, and intravenous antibiotics were initiated. However, her clinical condition deteriorated, and doubt regarding the initial diagnosis arose, as urinalysis revealed only a small number of leukocytes, and neither a urinary stone nor the appendix was visualized on ultrasound. With rising inflammatory markers, ultrasonography was repeated and demonstrated a suspicious mass in the right upper quadrant. As the appendix remained undetectable, the working diagnosis was revised to a perforated retrocecal appendicitis. Diagnostic laparoscopy was subsequently performed; a non-inflamed appendix was resected, and Meckel's diverticulum was excluded. Still at a loss for the diagnosis, antibiotics were continued, but the patients' condition detreated further. An MRI was performed which revealed nephritis, a lower-pole crossing vessel, persistent hydronephrosis, and perirenal free fluid. A CT scan confirmed the presence of a ureteral stone at the UPJO. Cystoscopy was perfomed for DJ placement. The bladder contained clear urine but purulent, cloudy fluid drained as soon as the DJ was advanced. Postoperatively, the patient recovered rapidly. Antibiotics were continued for 10 days, and the DJ catheter was removed after two months. At follow-up, the patient showed no recurrence of symptoms, and the hydronephrosis had resolved spontaneously.

**Recurrent Ovarian Torsion in an 8-Year-Old Girl: Should Oophoropexy Be Considered? A Case Report and Review of the Literature**

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**Background:** Primary ovarian torsion in the pediatric population is a rare condition accounting for approximately 3% of cases of acute abdominal pain. The etiology of torsion in the absence of cysts is not clear. Contributing factors may include a long hypermobile utero-ovarian ligament, hyperlaxity of the mesosalpinx and mesovarium in combination with premenarchal hormonal activity, abrupt changes in intra-abdominal pressure, and sudden movements. Recurrent torsion after simple detorsion may occur in 12–35% in premenarchal patients with normal adnexa and still up to 30% after oophoropexy, depending on the performed surgical technique. The indication, timing, and technique of oophoropexy (OPY) remain controversial in the literature. Potential risks include ovarian injury, disruption of normal tubo-ovarian anatomy, pelvic pain, dysmenorrhea, and dyspareunia. Several fixation techniques have been described in the literature, and none has been clearly shown to be superior.
**Conclusion:** Laparoscopic detorsion with ovarian preservation is considered the gold standard. Given the lack of evidence supporting the efficacy of oophoropexy and its potential risks and unnecessary overtreatment, simple detorsion without oophoropexy should be considered after a first recurrence in prepubescent girls as in our present case. Oophoropexy may be reserved for patients who experience further recurrent episodes and plication of the utero-ovarian ligament may be preferred to preserve normal anatomical relationships.
**Case presentation:** We report the case of an 8-year-old premenarchal girl who presented with lower abdominal pain of 8 hours' duration. She had experienced a left ovarian torsion two months earlier, which was treated by simple laparoscopic detorsion. Ultrasonography demonstrated findings consistent with recurrent ovarian torsion. Laparoscopic detorsion was performed again. The left ovary appeared enlarged and bluish, and the fallopian tube was edematous (Figure 1). Ovarian preservation was chosen without performing oophoropexy (Figure 2). At one-month follow-up, ultrasonography demonstrated a well-vascularized left ovary.

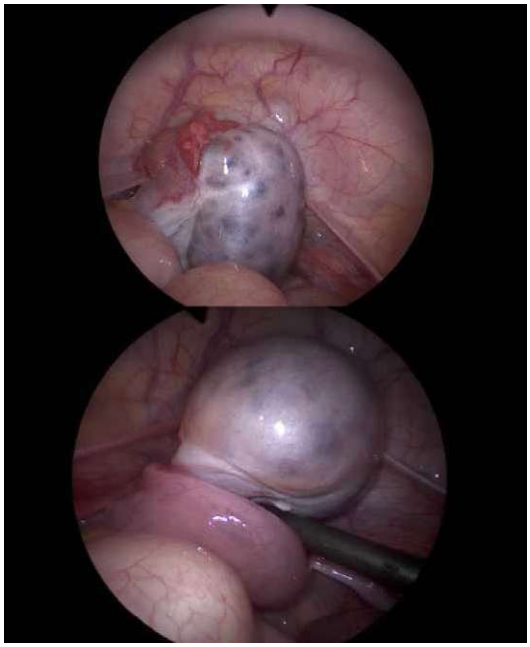

**Figure 1. Intraoperative view of the left ovary, appearing enlarged, bluish, and presenting a torsion**

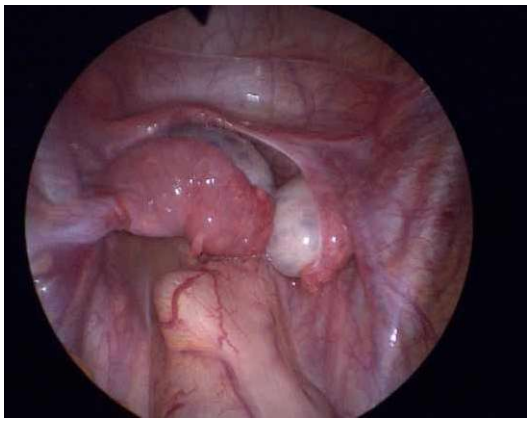

**Figure 2. Intraoperative view of the left ovary, after detorsion**

**Retroperitoneoscopic Management of Bilateral Renal Duplication With Ectopic Upper-Pole Ureters: A Case Report**

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**Background:** Bilateral duplication of the renal pelvis associated with ectopic upper ureters is a rare congenital anomaly that requires complex surgical management. We present a case of bilateral renal duplication with double ureteral ectopic implantation below the bladder neck, associated with high-grade reflux in the lower right pole treated by retroperitoneoscopy.
**Conclusion:** Bilateral renal duplication associated with ectopic upper-pole ureteral implantation is a rare anomaly requiring an individualized and often staged surgical approach. This case highlights the value of retroperitoneoscopy as a minimally invasive and effective technique, allowing preservation of functional renal units while treating non-functioning segments. The favorable outcome support ureteroureterostomy, combined, when necessary, with targeted heminephrectomy and reflux management, as a reliable strategy to restore functional urinary drainage with low surgical morbidity.
**Case presentation:** A baby boy was prenatally diagnosed with bilateral renal duplication associated with uretero-hydronephrosis of both upper renal systems. A voiding cystourethrogram (VCUG) showed high-grade reflux in the lower right pole. A cystoscopy was performed at 2 years of age to better understand the anatomy and showed ectopic implantation of the two upper-pole ureters, just below the bladder neck. Renal scintigraphy showed persistent significant function of both upper poles and a non-functioning lower right pole. The lower left pole had normal function, with normal implantation and no reflux. At 2.5 years of age, the patient underwent a proximal left side-to-side ureteroureterostomy by retroperitoneoscopy, allowing drainage of the left upper pole through the left lower pole ureter. On the right side, after initial Deflux injection, he underwent a lower pole heminephrectomy and a ureteroureterostomy anastomosis by retroperitoneoscopy, allowing drainage of the upper pole via the lower pole ureter. The outcome has been favorable, with no urinary tract infections and a renal scintigraphy performed 19 months after the last surgery showing stable renal function.

**Rectovestibular Fistula Associated With Anorectal Malformation in a Term Female Newborn: Case Report**

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**Background:** Anorectal malformations are congenital defects resulting from abnormal embryological development of the anus and rectum. Due to their wide anatomical variability, individualized surgical planning is essential to achieve optimal functional outcomes.
**Conclusion:** Accurate identification of the sphincter complex is fundamental for successful repair of anorectal malformations. This case demonstrates that meticulous surgical planning and technique are essential to optimize anatomical reconstruction and preserve continence in newborns with rectovestibular fistula.
**Case presentation:** A full-term female newborn was delivered at 38 weeks and 2 days of gestation. The mother, in her first pregnancy, had gestational diabetes well controlled with lifestyle modifications. Delivery was by cesarean section without complications. Birth weight was 3,250 g, with APGAR scores of 7 and 9 at 1 and 5 minutes. Physical examination revealed an anorectal malformation with a rectovestibular fistula, and the patient was admitted to the neonatal intensive care unit. Pediatric surgical evaluation showed an imperforate anus, a vestibular fistula of approximately 1 mm, a visible anal dimple, and well-developed gluteal muscles. On the second day of life, surgical correction was performed. The patient was positioned prone and bladder catheterization was carried out. The sphincter muscle complex was identified using perianal electrical stimulation, confirming appropriate localization and preserved reflex contractility. A midline skin incision was marked over the sphincter complex. The fistulous tract was dissected for approximately 3 cm until the distal rectum was reached. A cruciate perineal incision allowed identification and preservation of the circular anal musculature with the aid of electrical stimulation.

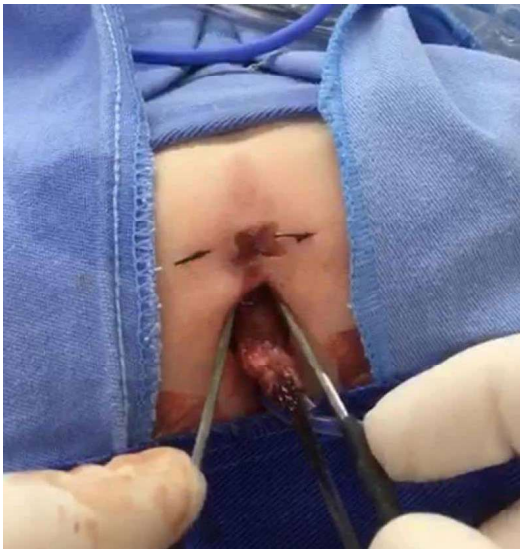

**Figure 1. Preoperative Perineal View Showing Rectovestibular Fistula and Skin Marking Over the Sphincter Complex**

**Figure 2. Perineal Aspect After Surgical Exposure, Demonstrating the Midline Perineal Anatomy**

**Figure 3. Intraoperative Traction of the Rectovestibular Fistula With Exposure of the Distal Rectal Mucosa**

**Figure 4. Vestibular Region Showing the Fistulous Opening Between the Vaginal Orifice and Perineum**

**A Rare Cause of Acute Scrotum: Spermatocele Torsion**

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**Background:** Epididymal cysts in children and spermatoceles in adolescents and adults are benign epididymal retention cysts (referred to as spermatoceles) that are common in the adult population but considerably less frequent in children, with an increasing incidence reported in pubescent boys (approximately 2–14% in those older than 14 years). They typically remain asymptomatic and represent a very rare cause of acute scrotum, particularly in the pediatric population. To date, only around 11 cases of an acute scrotum due to spermatocele torsion have been described in the pediatric urology literature.
**Conclusion:** Spermatoceles are rare but well-described entities in pediatric urology and are typically asymptomatic. Larger lesions (>2 cm) have been associated with an increased risk of torsion, warranting clinical surveillance and urological consultation. Although exceedingly rare, torsion of a spermatocele should be considered in the differential diagnosis of acute scrotum.
**Case presentation:** We discuss two cases of spermatocele torsion resulting in varying presentations of an acute scrotum, treated at the Children's Hospital of Zurich. We review the nomenclature, origin, and anatomy of spermatoceles, as well as their typical clinical presentation and management. Particular emphasis is placed on the rare clinical entity of spermatocele torsion in pediatric patients. In addition, we numerate previously described predisposing factors detailed in the literature, which may increase the likelihood of adverse events such as spermatocele torsion.

**Abdominoscrotal Hydrocele in a 6-Month-Old Boy: Which Surgical Approach? A Case Report**

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**Background:** Abdominoscrotal hydrocele (ASH) is a rare condition, representing 0.2-3.1% of pediatric hydroceles. ASH corresponds to giant hydroceles which occupy the scrotum and extend into the retroperitoneal space through the inguinal ring, up to the kidney. ASH can cause discomfort, ureterohydronephrosis and has been involved in testicular dysmorphism and impaired spermatogenesis. Testicular torsion, spontaneous rupture or hemorrhage may occur, but full resolution has been described as well. Surgical management remains recommended to prevent complications. Scrotal, inguinal and laparoscopic approaches- or a combination of these- have been described.
**Conclusion:** ASH is a rare form of hydrocele suspected on clinical examination, requiring imaging. Early surgical intervention is advised, as spontaneous resolution is rare. Although the inguinal approach is common and safe, multiple surgical approaches have been shown to be effective.
**Case presentation:** A 6-month-old male presented with a left, large and tense hydrocele, associated with an abdominal left lower quadrant mass. This mass swelled visibly by compressing the hydrocele (Springing Back Ball Sign) (Figure 1). An ultrasound confirmed a unique fluid filled cyst, extending from the scrotum up to the level of the bladder, through the inguinal canal (Figure 2). The swelling was important and appeared to cause discomfort. Surgical management was offered. Through a unique inguinal incision, the cyst was peeled of the peritoneum intraabdominally, of the vas deferens and the spermatic vessels, and excised at the level of the testis (Figure 3). No patent processus vaginalis was identified. Recovery was marked by an important swelling without any other complications.

Figure 1

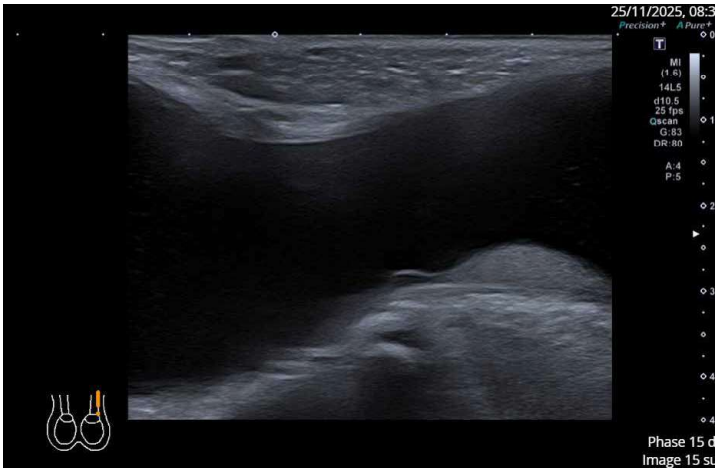


Figure 2

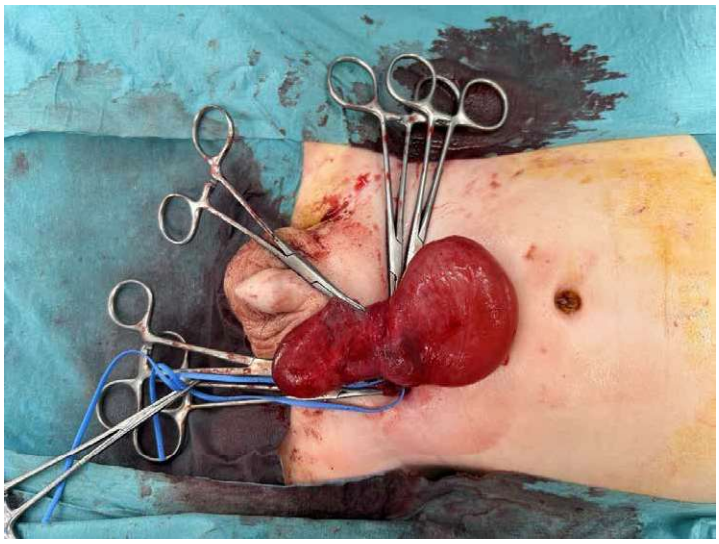

Figure 3

## Rectum & Proctology

**Tumor Height Measurement in Rectal Cancer: A Comparative Study of Rigid Rectoscopy and Pelvic MRI**

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**Background:** Tumor height is a critical factor in the management of rectal cancers; yet there is no standardized reporting method. Pelvic magnetic resonance imaging (MRI) and rigid rectoscopy are the primary tools for measuring tumor height.
**Aims:** To compare the accuracy of rigid rectoscopy and MRI in measuring tumor height in patients with rectal cancer.
**Methods:** We conducted a retrospective review of patients who underwent both preoperative rigid rectoscopy and pelvic MRI for rectal cancer located within 12 cm of the anal verge (AV) between 2007 and 2018. An expert radiologist evaluated the MRI by measuring the distance from the AV using two lines: one from the AV to the upper end of the anal canal and another from the upper end to the lower border of the tumor. The primary outcome was the agreement between tumor heights measured by rigid rectoscopy and pelvic MRI.
**Results:** Ninety-eight patients underwent both procedures. The mean tumor height measured by rigid rectoscopy was 6.3 cm (SD 3.1), and by MRI was 6.9 cm (SD 3.2). A Bland Altmann plot (Figure 1) indicated good agreement between measurements with a mean difference of 0.6 cm. Regression analysis revealed a significant correlation between the two methods ($p < 0.001$). Notably, measurements differed by more than 2cm in 11 patients (11.2%), with a maximal discrepancy of 5.8cm. Upon reviewing the peri-operative and histopathological data for these cases, MRI was found to be more accurate in half of the patients, while rigid rectoscopy was determined to be more accurate in the other half.
**Conclusion:** There is a strong correlation between tumor height measurements from rigid rectoscopy and MRI. However, notable discrepancies highlight the need for standardized reporting. Since tumor height significantly influences treatment strategies, employing a combination of both techniques may enhance evaluation.

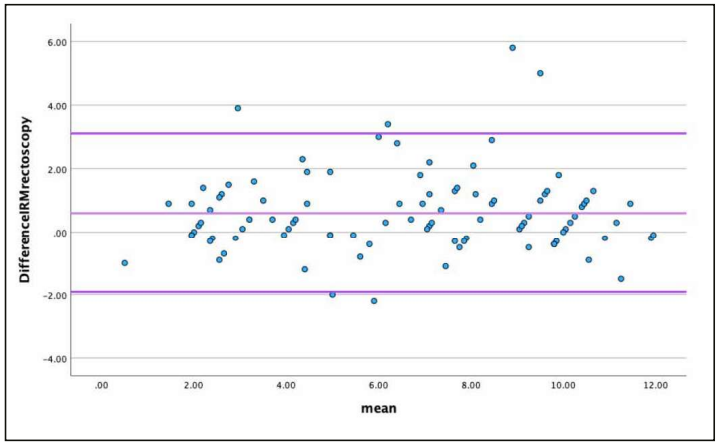


Figure 1. Bland Altmann plot

## A Quantitative Assessment of Discordance Rates Between Preoperative MRI Restaging and Postoperative Pathologic Reports in Patients Undergoing Rectal Resection Following Neoadjuvant Therapy – A Word of Caution Regarding Patient-selection for Watch-and-wait Strategies

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**Background:** Accurate restaging after neoadjuvant therapy (NAT) is crucial in the management of rectal cancer, especially in centers that aim to implement organ-preserving watch-and-wait (W&W) strategies for patients achieving complete remission (CR). MRI is the cornerstone of restaging, but its diagnostic accuracy remains debated, with both overstaging and understaging reported. Such discrepancies can lead to unnecessary resections in true complete responders or to potentially detrimental undertreatment in patients with residual disease.
**Aims:** This study evaluated the concordance between MRI-based restaging and pathological staging in patients who underwent TME following NAT at our institution.
**Methods:** Retrospective analysis of patients with rectal cancer who underwent NAT (chemotherapy, radiotherapy, chemoradiotherapy or immunotherapy) followed by surgical resection between 2018 and 2024 at our institution.
**Results:** A total of 113 patients were eligible for analysis. In 51 patients preoperative MRI-based tumor regression grade (ymrTRG) and pathological tumor regression grade (ypTRG) (Dworak) was available. Overall, 31.4% were staged correctly, while 33.3% were overstaged radiologically and 35.3% radiologically understaged. In 38 patients, preoperative ymrT and ypT staging was available. Correct preoperative radiological staging was achieved in 36.8%, while 47.4% were radiologically overstaged and 15.8% radiologically understaged. ymrT0 was reported in 2 patients of which one resulted in ypT0 and the other in ypT1. ypT0 was reported in 6 patients of which only 1 patient had a preoperative ymrT0 staging. Two patients were staged ymrT2, 2 patients ymrT3 and one patient ymrT4.
**Conclusion:** MRI restaging after neoadjuvant therapy showed limited accuracy in identifying CR. Both overstaging and understaging were frequent, resulting in clinically relevant consequences. In clinical practice, these findings emphasize the need for a cautious and multimodal approach to restaging. MRI results should always be interpreted in conjunction with endoscopy and digital rectal examination. For centers offering organ-preserving strategies, knowledge of the limited reliability of restaging MRI to detect full remission is crucial for w&w patient selection and early recognition of tumor regrowth.

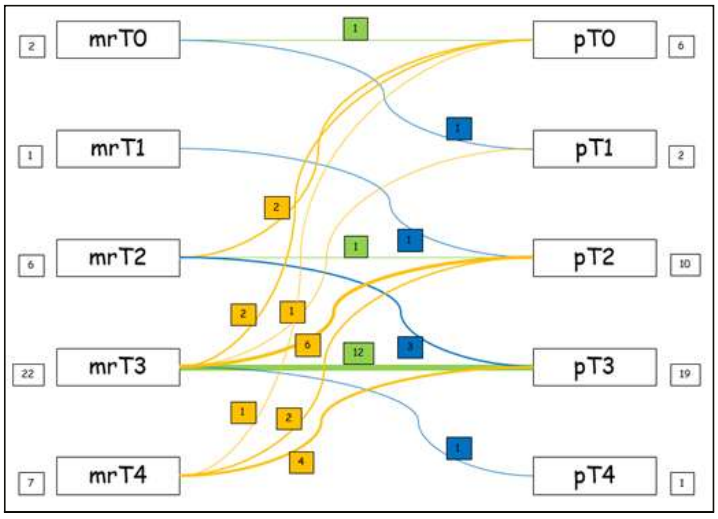


Figure 1. Diagram showing preoperative mrT compared to postoperative pT staging (yellow: radiological understaging, blue: radiological overstaging, green: correct staging)

## How Safe Is Teaching of Complex Rectal Surgery? A Propensity Score-Matched 10-Year Cohort Study

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[1]Universite de Lausanne, Epalinges; [2]Service de Chirurgie Viscerale, CHUV, Lausanne

**Background:** Centralization of complex rectal surgery to specialized centers provides opportunities for supervised training. However, the impact of surgical teaching on outcomes in this highly specialized setting remains uncertain.
**Aims:** This study aimed to analyse the impact of an institutional teaching program of highly specialized rectal procedures on intra- and early postoperative outcomes.
**Methods:** This is a retrospective 10-year cohort study of consecutive patients undergoing low anterior resection or abdominoperineal resection for rectal cancer located within 12cm from the anal verge or restorative proctocolectomy with ileal pouch-anal anastomosis at a tertiary high volume academic center. Procedures were classified as expert (consultant-only) or teaching procedures (performed ≥75% by the trainee under direct supervision). Groups were balanced after 1:1 propensity score matching for patient characteristics. Primary outcomes were intraoperative surgical adverse events (IAEs) and 30-day complications. Multivariable logistic regression identified predictors of morbidity.
**Results:** A total of 573 surgeries were included. After matching, 374 remained (187 per group). IAEs occurred in 16% and 17% of expert-led and teaching procedures, respectively (p = 0.9). Overall morbidity was 43% vs. 46% (p = 0.7), severe complications (Clavien–Dindo ≥ IIIb) occurred in 16% vs. 17% (p = 0.9), while 30-day mortality was 1.1% vs. 0% (p = 0.5). Median hospital stay was 8 vs. 7 days (p = 0.6). Reoperation within 30 days occurred in 15.5% in both groups. Multivariable analysis revealed high comorbidity indices and immunosuppression as independent risk factors. Robotic surgery was independently associated with lower postoperative morbidity, while teaching was neither associated with overall morbidity (OR 0.60, 95% CI 0.30–1.17) nor severe complications (OR 0.64, 95% CI 0.26–1.48).
**Conclusion:** Closely supervised teaching of complex rectal surgery can be implemented into clinical practice without increasing perioperative morbidity, supporting the dual mission of surgical proficiency and training of high-volume centers.

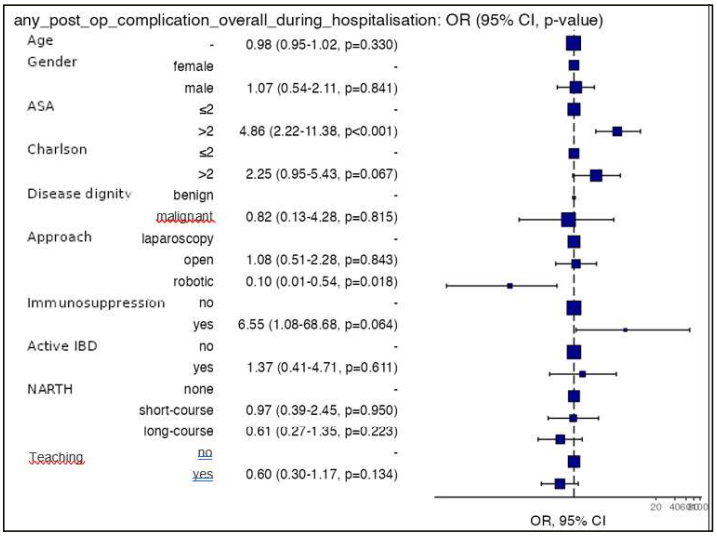


Figure 1. Adjusted odds rations (95% ci) for (a) overall postoperative complications and (b) severe complications in the matched cohort. Models adjust for age, sex, asa, charlson, dignity, surgical approach, immunosuppression, active id, and preoperative radiotherapy; robustess clustered by matched pair

| Item | | No teaching[1] N = 187 | Teaching[1,*] N = 187 | Total[1] N = 374 | p-value[2] |
|---|---|---|---|---|---|
| Operative time, min | Median (IQR) | 240.0 (190.0 to 287.0) | 242.0 (204.0 to 285.0) | 241.0 (197.0 to 286.2) | 0.262 |
| iAEs | | 29 (16.0) | 30 (16.7) | 59 (16.3) | 0.981 |
| Intraoperative bleeding | None | 55 (29.4) | 29 (15.9) | 84 (22.8) | **0.010** |
| | As usual | 92 (49.2) | 117 (64.3) | 209 (56.6) | |
| | More than usual, no relevant prolongation OR time | 26 (13.9) | 25 (13.7) | 51 (13.8) | |
| | More than usual, with significant prolongation OR time | 14 (7.5) | 11 (6.0) | 25 (6.8) | |
| Estimated blood loss, ml | Median (IQR) | 100.0 (30.0 to 200.0) | 100.0 (25.0 to 200.0) | 100.0 (30.0 to 200.0) | 0.793 |
| Perioperative transfusion | | 15 (8.0) | 12 (6.6) | 27 (7.3) | 0.733 |
| Wound classification | Clean | 2 (1.1) | 1 (0.5) | 3 (0.8) | 0.753 |
| | Clean-contaminated | 158 (84.5) | 154 (83.7) | 312 (84.1) | |
| | Contaminated | 23 (12.3) | 22 (12.0) | 45 (12.1) | |
| | Infectious | 4 (2.1) | 7 (3.8) | 11 (3.0) | |
| Type of rectal surgery | HAR | 27 (14.4) | 35 (18.7) | 62 (16.6) | 0.507 |
| | LAR | 137 (73.3) | 128 (68.4) | 265 (70.9) | |
| | APR | 23 (12.3) | 24 (12.8) | 47 (12.6) | |
| Conversion from MIS to open surgery | | 25 (13.4) | 25 (13.4) | 50 (13.4) | 1.000 |
| Conversion | Pre-emptive | 19 (10.1) | 21 (11.2) | 41 (11.0) | 0.889 |
| | Reactive | 6 (3.2) | 7 (3.7) | 13 (3.5) | |
| Protective ostomy | | 124 (66.3) | 112 (59.9) | 236 (63.1) | 0.238 |
| Type of protective ostomy | none | 63 (39.0) | 75 (44.3) | 138 (41.6) | 0.400 |
| | ileostomy | 104 (61.0) | 96 (55.7) | 200 (58.4) | |
| Distance anastomosis from anal verge, cm | Median (IQR) | 2.5 (1.5 to 4.4) | 4.0 (2.0 to 6.0) | 3.0 (2.0 to 5.0) | **0.001** |
| TME quality | complete | 98 (77.2) | 97 (72.9) | 195 (75.0) | 0.604 |
| | nearly complete | 11 (8.7) | 11 (8.3) | 22 (8.5) | |
| | incomplete | 18 (14.2) | 25 (18.8) | 43 (16.5) | |
| R (resection) | R0 | 101 (81.5) | 117 (88.0) | 218 (84.8) | 0.334 |
| | R1 | 21 (16.9) | 15 (11.3) | 36 (14.0) | |
| | R2 | 2 (1.6) | 1 (0.8) | 3 (1.2) | |

*Procedure performed >75% under teeching supervision. [1]Median (IQR) for continuous variables, n (%) for categorical variables. [2] Wilcoxon rank sum test; Fisher's exact test; Pearson's Chi-squared test. IQR: interquartile range. IAE: intraoperative adverse event. HAR: high anterior resection. LAR: low anterior resection. APR: abdominoperineal resection. TME: total mesorectal excision.

Table 1. Surgical data after propensity score matching

| Complication | | No teaching[1] N = 187 | Teaching[1]* N = 187 | Total[1] N = 374 | p-value[2] |
|---|---|---|---|---|---|
| Any complication | | 81 (43.3) | 86 (46.0) | 167 (44.7) | 0.677 |
| CCI | Median (IQR) | 0.0 (0.0 to 29.6) | 0.0 (0.0 to 30.8) | 0.0 (0.0 to 29.6) | 0.934 |
| Severe complications (Grade >3a) | | 29 (15.5) | 32 (17.2) | 61 (16.4) | |
| 30-day mortality | | 2 (1.1) | 0 (0.0) | 2 (0.5) | |
| LOS, days | Median (IQR) | 8.0 (5.0 to 15.5) | 7.0 (5.0 to 14.0) | 7.0 (5.0 to 14.0) | 0.584 |
| Anastomotic leak | | 9 (4.8) | 8 (4.3) | 17 (4.6) | 0.991 |
| Wound infection (superficial SSI) | | 10 (5.3) | 11 (5.9) | 21 (5.6) | 1.000 |
| SSI | | 26 (13.9) | 26 (13.9) | 52 (13.9) | 1.000 |
| Bleeding | | 15 (8.0) | 14 (7.5) | 29 (7.8) | 1.000 |
| Ileus | | 38 (20.3) | 37 (19.8) | 75 (20.1) | 1.000 |
| 30-day reoperation | | 29 (15.5) | 29 (15.5) | 58 (15.5) | 1.000 |
| 30-day readmission | | 27 (16.0) | 18 (10.3) | 45 (13.1) | 0.166 |

*Procedure performed >75% under teaching supervision. [1]Median (IQR) for continuous variables; n (%) for categorical variables. [2] Wilcoxon rank sum test; Fisher's exact test; Pearson's Chi-squared test. IQR: interquartile range. CCI: Comprehensive Complication Index. LOS: length of stay. SSI: surgical site infection.

Table 3. Postoperative outcomes after propensity score

### Rectal Cancer Surgery in Octogenarians: A 10-Year Experience

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**Background:** The increasing life expectancy in Europe has led to a growing number of octogenarians diagnosed with rectal cancer. Radical surgical treatment in this population remains debated due to concerns regarding frailty, postoperative morbidity and survival outcomes cohorts.
**Aims:** This study reports a 10-year experience of rectal cancer surgery in elderly patients, focusing on outcomes in octogenarians compared with younger.
**Methods:** All consecutive patients undergoing curative-intent rectal cancer surgery between 2012 and 2023 in our certified colorectal cancer centre were retrospectively analysed. Patients were stratified by age: <65 years, 65–80 years, and ≥80 years. Baseline characteristics, perioperative variables, postoperative complications, and oncological outcomes were compared. Statistical analysis was performed using RStudio (2025.09.2+418).
**Results:** A total of 223 patients were included, of whom 36 (16%) were aged ≥80 years. Octogenarians showed significantly higher ASA III–IV scores (75% vs 40% and 26%, p<0.001) and received neoadjuvant treatment less frequently. Minimally invasive surgery was adopted in over 97% of cases across all age groups, with comparable conversion rates. Major postoperative complications (Clavien–Dindo III–IV) were similar among groups (22% in ≥80 years, p>0.9), as were anastomotic leak rates. Postoperative delirium occurred more frequently in octogenarians (5.7%, p=0.024). Median disease-free survival and overall survival from any cause of deaths in octogenarians was 39 (20,67) and 42 (25, 67) months respectively and did not differ significantly from the younger groups.
**Conclusion:** In colorectal cancer centres with standardized minimally invasive techniques and perioperative pathways, rectal cancer surgery in selected octogenarians is safe and oncologically acceptable. Advanced age alone should not preclude curative surgical treatment, highlighting the importance of careful patient selection and multidisciplinary decision-making.

### Functional Outcomes in Patients With Rectal Cancer After Low Anterior Resection Compared to Watch-and-Wait – A Systematic Review and Meta-Analysis

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[1]Medizinische Fakultät, Universität Basel, Basel; [2]Viszeralchirurgie, Clarunis, Universitäres Bauchzentrum Basel, Basel

**Background:** Neoadjuvant chemoradiotherapy (CRT) followed by total mesorectal excision is the standard treatment for locally advanced rectal cancer. When sphincter preservation is feasible, low anterior resection (LAR) is commonly performed but often leads to long-term bowel dysfunction, referred to as low anterior resection syndrome (LARS). In patients achieving a clinical complete response after CRT, a watch-and-wait (W&W) strategy has emerged as a non-operative alternative to preserve rectal function. However, comparative evidence on bowel function remains heterogeneous.
**Aims:** To compare bowel functional outcomes, particularly LARS severity, in rectal cancer patients after neoadjuvant CRT managed with W&W strategy versus LAR.
**Methods:** Following PRISMA guidelines, we conducted a systematic review and meta-analysis of bowel function in rectal cancer patients after CRT managed with W&W strategy versus those undergoing LAR. The primary outcome was bowel dysfunction assessed with validated instruments, with LARS severity pooled as a standardized mean difference (SMD) from continuous or, in one study, from categorical data. Random-effects models accounted for between-study heterogeneity.
**Results:** Seven non-randomized comparative studies (n = 530; W&W 364, LAR 166; median follow-up ~24 months) were included. In studies using the LARS score (n = 4; W&W 302, LAR 124), W&W showed significantly better bowel function than LAR (SMD −0.79, 95% CI −1.22 to −0.37; no heterogeneity). Sensitivity analyses limited to continuous mean LARS scores were consistent. Overall pooled analysis indicated a non-significant trend favoring W&W (SMD −0.53, 95% CI −1.28 to 0.22; moderate heterogeneity). Secondary analyses using alternative instruments were directionally concordant but underpowered.
**Conclusion:** Among rectal cancer patients achieving a clinical complete response after CRT, W&W is associated with better bowel function than after LAR when assessed using continuous LARS measures. These findings support the consideration of organ-preserving strategies in appropriately selected patients and highlight bowel function as a key component of shared decision-making alongside oncological outcomes.

### Feasibility of Combined Sacrocolpopexy and Ventral Mesh Rectopexy Using the DEXTER® Robotic Surgery System – A Case series

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**Background:** Concomitant sacrocolpopexy and ventral rectopexy is a safe and effective approach for treating symptoms of multicompartment pelvic floor prolapse. Ideally, the procedure is performed by an interdisciplinary team consisting of a urogynecologist and a colorectal surgeon. The DEXTER® Robotic Surgery System is a three-arm open robotic platform that enables the combination of robot-assisted and conventional laparoscopic surgery. It consists of two independent patient carts, an individually controllable camera arm, and an open sterile surgeon console, allowing a rapid switch between robot-assisted surgery and laparoscopy whenever desired.
**Aims:** To date, only limited data has been published on its use for combined pelvic organ prolapse procedures. This video-supported case series demonstrates the use of the DEXTER® Robotic Surgery Systemfor this combined procedure.
**Methods:** Between October and November 2025, four concomitant sacrocolpopexies and ventral mesh rectopexies were performed by an interdisciplinary team (two specialized surgeons, two assistants) using the DEXTER® Robotic Surgery System.
**Results:** All key surgical steps were successfully completed using the robotic arms: (1) preparation of the anterior and posterior vaginal walls and the anterior rectal wall, (2) positioning and suturing of both meshes, and (3) closure of the peritoneum. The mean operating time was 310 ± 32.8 minutes (Table 1). No conversion to standard laparoscopy or open surgery was required. The procedures were completed using four trocars altogether (two 8-mm, two 12-mm). Trocar placement met the requirements of both surgeons. The individual mobile carts allowed easy patient access for vaginal and rectal manipulation during surgery. Use of the robotic system provided precise visualization and tissue dissection within the confined pelvic space while preserving surgeon ergonomics and thereby minimizing fatigue. No postoperative complications were reported. All patients were discharged on postoperative day two or three.
**Conclusion:** This case series demonstrates the feasibility and safety of the DEXTER® Robotic Surgery System for combined sacrocolpopexy and ventral mesh rectopexy.

| Pat | Age (years) | Previous abdominal or pelvic surgery | Duration of Surgery (min) | Length of hospital stay (days) | Postoperative complications |
|---|---|---|---|---|---|
| 1 | 56 | yes | 287 [1] | 3 | none |
| 2 | 61 | no | 288 [2] | 4 | none |
| 3 | 67 | yes | 375 [1] | 3 | none |
| 4 | 66 | yes | 288 [2] | 4 | none |

[1]adhesiolysis > 60min, [2] additional hysterectomy was performed

Table 1. Sacrokolpopexy

### Patient-reported Outcomes of Pessary Treatment for Rectocele-associated Obstructed Defecation Syndrome: A Real-life Survey

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[1]Digestive surgery, HUG, Geneva; [2]Gynaecology and Obstetrics, HUG, Geneva; [3]Physiotherapist, HOSSEGOR, HOSSEGOR; [4]Digestive surgery, HUG, Geneva

**Background:** Rectocele-associated obstructed defecation syndrome (ODS) is a frequent condition with a significant impact on quality of life. Conservative management is recommended as first-line treatment, but the specific effect of pessary therapy on ODS-related symptoms remains poorly documented in literature.
**Aims:** To evaluate pessary adherence and patient-reported effectiveness for rectocele-associated ODS.
**Methods:** We conducted a cross-sectional observational study based on an anonymous online questionnaire distributed to patients with rectocele. Collected data included symptoms, functional impact, management strategies, pessary use, tolerance, and perceived effectiveness. Primary outcome was pessary effectiveness on ODS symptoms. Logistic regression analyses were performed to identify factors associated with pessary effectiveness.
**Results:** From March 2024 to March 2025, a total of 205 women completed the online questionnaire and were included in the analysis. Rectocele was associated with a high symptom burden and impaired quality of life. Pessary therapy was used by 66% of participants (n=135). Among pessary users, 68% perceived an improvement in ODS symptoms, and 69% were still using a pessary at the time of the survey. Pessary users reported higher satisfaction with medical management compared with non-users (48% vs 29%, p=0.011). Among pessary-treated patients, perceived comfort of the device was strongly associated with symptom improvement (80% vs 49%, p<0.001). In multivariable analysis, perceived effectiveness of pelvic floor rehabilitation was independently associated with pessary effectiveness on ODS symptoms (OR 3.11, 95% CI 1.06-10.2; p=0.047).
**Conclusion:** Pessary therapy appears to be a commonly used and effective conservative treatment for rectocele associated ODS, particularly when combined with pelvic floor rehabilitation. Appropriate patient-provider interaction and individualized pessary fitting play a central role in treatment adherence and perceived benefit.

### The Diagnostic Value of Fecal Calprotectin Levels in Patients with Perianal Fistula: A systematic review

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[1]Department of Visceral Surgery, Hospital of Canton Graubünden, Chur; [2]Surgery, Universitiy Hospital of Zurich, Zurich; [3]Department of Surgery, Spitalverbund Appenzell Ausserrhoden, Herisau; [4]Department of Visceral Surgery, Hospital of Canton St.Gallen, St.Gallen; [5]Department of Visceral Surgery, University Hospital Lausanne, Lausanne

**Background:** Perianal fistula (PAF) is a common condition encountered in surgical and gastroenterological practice. Distinguishing between cryptoglandular disease (CGD) and inflammatory bowel disease (IBD)-related perianal disease is critical to ensure appropriate management. Fecal calprotectin (FC) has emerged as a promising non-invasive biomarker for IBD; however, its role in acute perianal disease is not well established.This systematic review aimed to evaluate the diagnostic accuracy of FC in distinguishing IBD-related perianal disease from CGD.
**Aims:** This systematic review of the current literature demonstrates that fecal calprotectin could reliably differentiate IBD from CGD-related fistulas, establishing an optimal 110–150 µg/g threshold with moderate to excellent AUC (0.73–0.90), and supports its use in clinical algorithms to guide endoscopic referral for a prompt diagnosis of possible IBD.
**Methods:** A systematic literature search was conducted in PubMed, Embase, and Cochrane databases following PRISMA guidelines. Studies were included if they assessed FC levels in patients with PAF and provided diagnostic accuracy metrics. Data extraction focused on study design, population characteristics, FC cut-off values, sensitivity, specificity, and area under the curve (AUC) metrics.
**Results:** Three studies met the inclusion criteria, all reporting significantly higher FC levels in IBD-related PAF compared to CGD-related fistulas. The proposed FC cut-off values varied, ranging from 110 µg/g to 344 µg/g, with corresponding sensitivities between 52% and 81%, as well as specificities between 77% and 93%. The AUC values indicated moderate to high diagnostic accuracy.
**Conclusion:** FC shows potential as a diagnostic tool for differentiating IBD-related perianal disease from CGD. A cut-off of 110-150 µg/g appears most suitable for early screening, whereas a higher threshold may be appropriate for confirmatory diagnosis. Further prospective studies with standardized protocols are necessary to refine these thresholds and validate FC as a clinical decision-making tool.

### Flexible Rectosigmoidoscopy in Outpatient Clinic as First Evaluation of Anorectal Bleeding: PICO Meta-analysis

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**Background:** Anorectal bleeding (hematochezia) is a frequent reason for proctology referral and can indicate serious conditions like malignancy or IBD, despite often being caused by benign issues. While rigid rectoscopy was historically used, "one-stop" clinics increasingly favor Flexible Recto-Sigmoidoscopy (FRS) for its superior diagnostic yield, visualizing up to the splenic flexure and detecting 95–97% of bleeding sources.
**Aims:** To conduct a concise meta-analytic review evaluating the utility of office-based on FRS during the initial proctological consultation for active anorectal bleeding.
**Methods:** A systematic search was performed using the PICO framework. Population: Adults presenting for a primary proctology consultation with active hematochezia. Intervention: In-office flexible sigmoidoscopy performed during the initial visit. Comparison: Rigid proctoscopy alone or delayed colonoscopy. Outcomes: Diagnostic yield for significant pathologies (colorectal cancer, polyps >10mm, inflammatory bowel disease [IBD], among others). Data sources included PubMed, Medline, and the Cochrane Library, with a 10-year chronological filter. Search terms used: "Flexible sigmoidoscopy", "rectal bleeding", "first examination/consultation", and "diagnostic yield". Inclusion criteria = Studies evaluating FS in the context of active bright red rectal bleeding. Exclusion criteria = Asymptomatic screening studies and patients with known history of malignancy or IBD.
**Results:** The diagnostic yield of FRS reached 95–97% in identifying the source of rectal bleeding. (Tab. 1 ) The procedure demonstrated high clinical utility in patients >40 years of age, with a malignancy detection rate of approximately 1.2%. Common findings included hemorrhoids and anal fissures (89.9%), and significant proximal lesions such as polyps up to the splenic flexure (7.7%). (Fig. 2 ) Given the statistical homogeneity of the data, a structured narrative synthesis was utilized to categorize lesion types.
**Conclusion:** Flexible sigmoidoscopy is established as the gold standard for the initial exploration of the left colon. It is less invasive than full colonoscopy and significantly more accurate than rigid proctoscopy. Furthermore, it facilitates immediate diagnosis, enabling real-time biopsies and therapeutic interventions during the first encounter.

| Pathology Type | Detection Rate | Clinical Significance / Notes |
|---|---|---|
| Hemorrhoidal Disease (Grades I-IV) | 89.9% | Most common finding; often co-exists with other lesions. |
| Anal Fissures / Anorectal Trauma | 12.4% | Often identified in conjunction with distal bleeding. |
| Proximal Polyps (>10mm) | 7.7% | Significant finding up to the splenic flexure; missed by rigid scopes. |
| Inflammatory Bowel Disease (IBD) | 4.2% | Includes Ulcerative Proctitis and Distal Colitis; allows real-time biopsy. |
| Colorectal Cancer (CRC) | 1.2% | Critical "red-flag" detection; rate increases to >2.5% in patients >60 years. |
| Radiation Proctitis / SRUS | 2.3% | Specific pathologies requiring targeted endoscopic therapy. |
| Normal / Non-specific Findings | 2.6% | High diagnostic certainty even when negative, reducing patient anxiety. |

Table 1. Yield Results of FRS

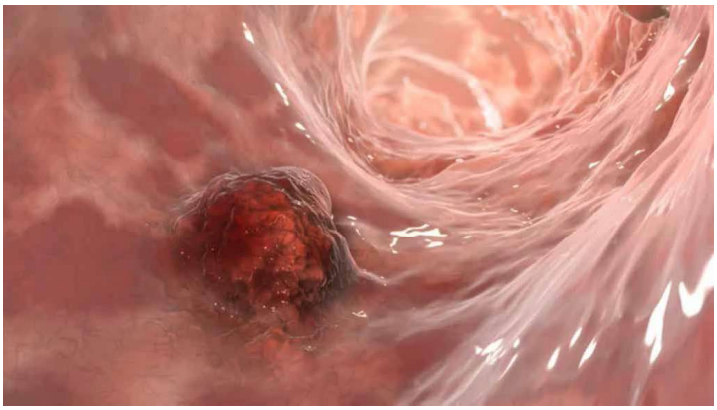

Figure 1. Polype Findings of FRS

## Upper GI

### Individualizing Neoadjuvant Treatment in Esophageal Cancer: A Real-World Comparison of CROSS and FLOT

S. Gerber[1], P. Aeschbacher[1], D. Kroell1, M. Berger[2], H. Hemmatazad[3], Y. Borbély[1]
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**Background:** Esophageal cancer is an aggressive malignancy with high recurrence rates. In patients with locally advanced disease, neoadjuvant chemoradiotherapy according to the CROSS protocol followed by esophagectomy has long been the standard of care across histological subtypes. More recently, randomized trials such as ESOPEC suggested a potential survival benefit of perioperative chemotherapy with the FLOT regimen, particularly in adenocarcinoma.
**Aims:** To compare lymph node yield, pathological outcomes, and survival between FLOT and CROSS treatment strategies in a real-world cohort.
**Methods:** We retrospectively analyzed all patients who underwent curative esophagectomy at our institution between 2014 and 2025 and signed general consent.
**Results:** A total of 266 patients were included, of whom 231 (86.8%) had adenocarcinoma. Neoadjuvant treatment consisted of CROSS in 194 patients (73%), FLOT in 42 patients (16%), surgery alone in 23 patients (9%), and other regimens in 8 patients (3%). Patients treated with FLOT had a higher median lymph node yield compared to those treated with CROSS or without neoadjuvant therapy (34.0 vs. 26.0 vs. 30.0 nodes, respectively; p=0.08), this difference was even more pronounced and statistically significant in patients with adenocarcinoma. FLOT-treated patients more frequently presented with nodal-positive disease, inferior tumor regression, and higher pathological T-stages. Overall survival was superior in patients treated with CROSS compared to FLOT (median OS 62.0 vs. 28.0 months, p=0.003, Fig. 1). These findings were consistent when analysis was restricted to patients with adenocarcinoma.
**Conclusion:** Although limited by its retrospective nature, our data suggest that neoadjuvant chemoradiotherapy according to the CROSS protocol may be associated with more favorable pathological and survival outcomes compared to perioperative FLOT, both in the overall cohort and in patients with adenocarcinoma. Possible explanations include higher treatment completion rates with CROSS and differences in baseline performance status in this real-world population. Treatment decisions should therefore be individualized based on patient and tumor characteristics.

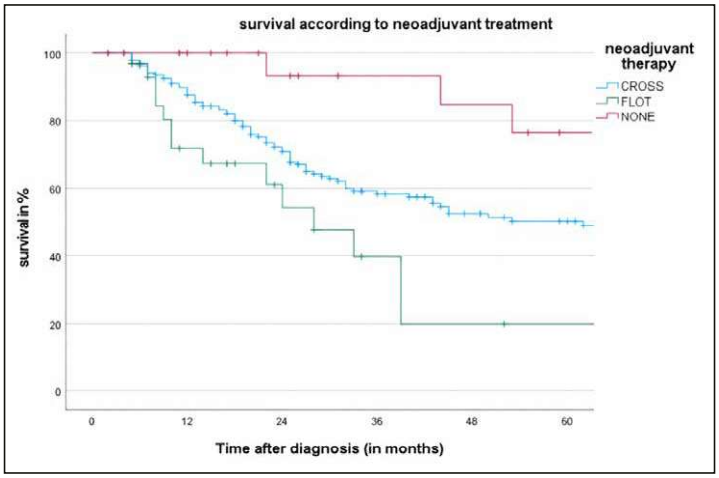


Figure 1. Survival curves stratified by preoperative neoadjuvant therapy

### Oncologic Safety and Recurrence Patterns of Watchful Waiting After Neoadjuvant Therapy for Esophageal Cancer

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**Background:** Esophagectomy remains a cornerstone of curative treatment for esophageal cancer but is associated with substantial morbidity and mortality, particularly in elderly and comorbid patients. As an alternative, watchful waiting (WW)–omitting surgery in patients with a clinical complete response after neoadjuvant therapy and reserving esophagectomy for recurrence-has gained increasing attention. However, WW carries the risk of missing a curative window and allowing progression to metastatic disease, making careful patient selection essential.
**Aims:** To analyze recurrence patterns in patients managed with a WW strategy.
**Methods:** We retrospectively analyzed all patients undergoing curative-intent treatment for esophageal cancer at our institution between 2014 and 2022. Follow-up data were reviewed until 2025 to ensure a minimum follow-up of at least two years for all patients.
**Results:** Among 458 patients with esophageal cancer treated with neoadjuvant chemoradiotherapy, 50 patients were managed with a WW approach. Of these, 8 patients (16%) initially presented with local tumor regrowth without lymph node involvement, while 39 patients (79%) had evidence of regional lymph node involvement. Overall, 30 patients (60%) developed disease recurrence during follow-up. Of these, 15 patients (50%) experienced local or regional recurrence that remained potentially amenable to curative treatment, 10 patients (33%) developed distant metastatic disease, and 5 patients (17%) declined further diagnostic evaluation. Notably, patients with initially localized tumor regrowth without lymph node involvement did not develop distant metastases (Figure 1).
**Conclusion:** These findings suggest that a watchful waiting strategy may be safe in carefully selected patients without regional lymph node involvement, for whom follow-up can primarily focus on endoscopic surveillance. In contrast, patients with regional disease may still be considered for WW; however, follow-up should be intensified and include regular imaging to enable early detection of distant metastases.

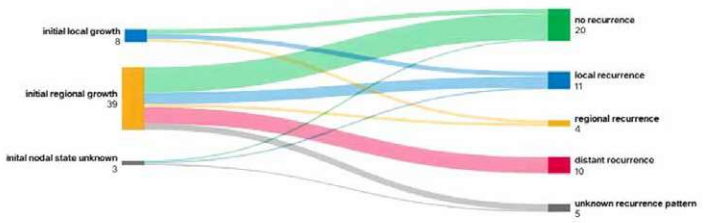


Figure 1. Patterns of recurrence in patients managed with a watchful waiting strategy

### Gastric Ischemic Preconditioning – Effect of Prior Ligation of Left and Right Gastric Arteries on Measured Perfusion During Esophagectomy

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**Background:** Esophagectomy is the mainstay for treatment of esophageal cancer; however, it carries a high morbidity. Patient factors, neoadjuvant treatment, invasiveness, type of esophagectomy and necessity to create a gastric conduit supplied by only one artery are factors associated with anastomotic insufficiency and conduit necrosis. Gastric ischemic preconditioning, achieved by ligation of the left and right gastric arteries before esophagectomy, promotes neovascularization and collateral development.
**Aims:** To compare the perfusion of gastric conduits with (Lig+) and without ischemic preconditioning (Lig-).
**Methods:** Three weeks prior to esophagectomy, ligation of the left and right gastric arteries was performed laparoscopically. During esophagectomy, a standardized dosage of ICG was injected after creation of the gastric conduit. OR videos of patients were retrospectively assessed by a blinded reviewer. Measured were the topmost perfused points in the conduit (Pmax) from the tip in cm, the time interval of ICG to reach Pmax in seconds (t1) starting at the diaphragmatic level, and the time to maximum perfusion of Pmax (t2).
**Results:** Of 51 included OR videos, 11 were excluded (conduit not visualized in standardized fashion). The mean distance from Pmax to the tip of the conduit was 4.15cm (standard deviation ± 3.33cm) in Lig-, and 1.67±1.9cm in Lig+-patients (p=0.03). Mean t1 in Lig- was 20.45±7.96 sec and in Lig+ 17.48±4.38 sec (p=0.28). Mean t2 in Lig- was 31.18±9.03 sec and in Lig+ 22.24±6.36 sec (p=0.01). The time interval from t1 to t2 at Pmax was 10.73±7.74 sec in Lig- and 4.76±2.72 in Lig+ (p=0.03). There were significant differences between the length of non-perfused conduit-tips and the time to maximal perfusion (t2) at Pmax.
**Conclusion:** Gastric ischemic preconditioning improves perfusion to gastric conduits during esophagectomy, which may positively affect anastomotic healing.

### Pathological Complete Response Is Not Always the Best Outcome: Survival Advantage of Minimal Residual Disease After Esophagectomy

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[1]Visceral Surgery and Medicine, Inselspital, Bern; [2]Medical Oncology, Inselspital, Bern; [3]Radiation Oncology, Inselspital, Bern

**Background:** Esophageal cancer (EC) remains one of the most aggressive malignancies worldwide and is associated with high morbidity and mortality. In patients with locally advanced, resectable EC, standard treatment consists of either neoadjuvant chemoradiotherapy according to the CROSS protocol or perioperative chemotherapy following the FLOT protocol, both followed by esophagectomy. Since publication of the CheckMate 577 trial, patients with residual tumor after neoadjuvant chemoradiotherapy routinely receive adjuvant immunotherapy with nivolumab.
**Aims:** To evaluate survival and recurrence outcomes according to pathological tumor stage after esophagectomy.
**Methods:** We retrospectively analyzed all patients who underwent curative-intent esophagectomy for esophageal cancer (adenocarcinoma or squamous cell carcinoma) at our hospital between 2014 and 2024.
**Results:** A total of 235 patients were included, of whom 204 (86.4%) had adenocarcinoma.. Neoadjuvant treatment consisted of the CROSS protocol in 187 (78.9%) patients, the FLOT protocol in 25 (10.5%) patients, and other regimens in 5 (2.1%) patients. 20 (8.4%) patients had no preoperative therapy. Histopathological analysis revealed pathological tumor stages T0 (pathological complete response) in 50 (21.3%) patients, T1 in 50 (21.3%), T2 in 42 (17.7%), T3 in 88 (37.4%), and T4 in 5 (2.1%) patients. Overall survival was poorest in patients with T4 tumors, followed by T3 and T2 stages. Notably, patients with minimal residual disease (T1) demonstrated the most favorable survival outcomes, exceeding those observed in patients with pathological complete response (Figure 1).
**Conclusion:** Patients with minimal residual disease (T1) exhibited superior survival and lower recurrence rates compared to patients with pathological complete response. This may be explained by routine use of adjuvant nivolumab in patients with residual disease, while patients with complete response currently don't receive immunotherapy. These findings, supported by previously reported data from our cohort showing recurrence rates exceeding 30% even after complete response, suggest that the role of adjuvant immunotherapy in this subgroup warrants further investigation.

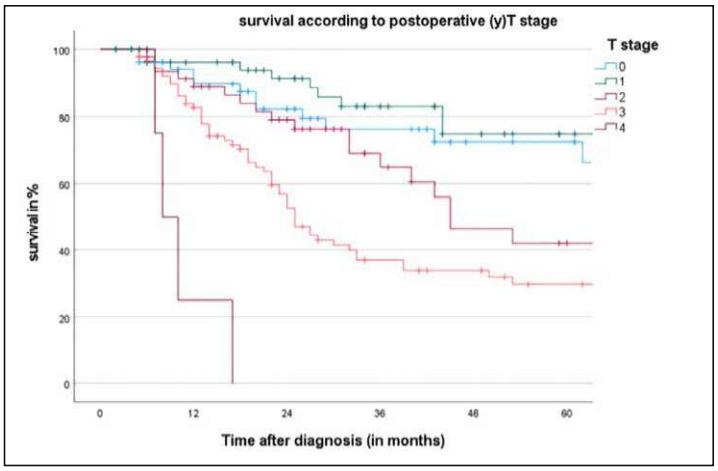


Figure 1. Overall survival according to postoperative histopathological T stage

### International Expert Consensus on the Management of Paraconduit Herniation after Esophagectomy: Results of a Two-Round Delphi Survey

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**Background:** The incidence of paraconduit hernia (PCH) after esophagectomy has increased

with minimally invasive techniques and improved survival. Despite its clinical relevance, management remains controversial due to risks of acute complications, high recurrence rates, and the absence of formal guidelines, resulting in heterogeneous practice. An international Delphi survey was conducted to establish expert-based recommendations for PCH management.
**Aims:** The management of Paraconduit Herniation after Esophagectomy (PCH) is controversial. This survey aims atidentifying recommended strategies for prevention and surgical therapy (including indication, preoperative work-up, technical-surgical details and follow-up) using the Delphi methodology.
**Methods:** We conducted a 2-round, 32-question, web-based International Delphi survey focusing on non-revisional, elective PCH in asymptomatic patients among surgical upper GI experts. Responses were graded on a 5-point Likert scale and analyzed using descriptive statistics. Items from the questionnaire were defined as "recommended" or "discouraged" if positive or negative concordance among participants was >75%.
**Results:** Eighty-one surgeons (median experience 23 years, IQR 14–30) from 20 countries participated in both Delphi rounds (response rate 43%). Recommended strategies (>75% concordance) included preserving the left pleura during index esophagectomy if oncologically safe, preoperative endoscopy and CT, surgery in biologically younger, tumor-free patients with primary, complex, or progressive PCH, and minimally invasive repair (laparoscopic or robotic) with single-stitch hiatus closure and gastropexy, followed by symptom- and CT-based follow-up. Hiatal mesh at index surgery, MRI or endosonography, surgery in frail or recurrent tumor patients, and transthoracic approaches were discouraged. Mesh reinforcement was selectively recommended for recurrent or complex PCH, with suture fixation preferred.
**Conclusion:** This International Delphi survey represents the first expert-led process to identify recommended strategies for the management of PCH. Our work may be useful in clinical practice to guide the diagnostic process, increase procedural consistency and standardization, and to foster collaborative research.

**Technical Video: Repair of Symptomatic Post-esophagectomy Hiatal Hernias**
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[1]Surgery, Ospedale Regionale di Bellinzona e Valli, Bellinzona; [2]Surgery, Ospedale Regionale di Lugano, Lugano

**Background:** Hiatal hernia following esophagectomy represented a technically demanding condition due to distorted anatomy and frequent communication between the peritoneal and pleural cavities. Standardized surgical strategies remained poorly defined. This technical video presented a structured and reproducible approach for the repair of symptomatic post-esophagectomy hiatal hernias.
**Conclusion:** This technical video demonstrated a safe and effective surgical strategy for the management of post-esophagectomy hiatal hernia. Avoidance of sac resection, durable crural repair, prosthetic reinforcement with vascularized coverage, and real-time perfusion assessment together provided a tailored solution for such complex hiatal hernias.
**Case presentation:** The procedure consisted of careful reduction of herniated intestinal contents from the thoracic cavity. Hernia sac resection was intentionally avoided because of direct peritoneal-pleural communication. Hiatal closure was performed using non-absorbable interrupted sutures to achieve a tension-free cruroplasty. Reinforcement was provided with a non-absorbable mesh (UltraPro®), which was completely covered using a vascularized falciform ligament flap to minimize the risk of prosthetic exposure or erosion. Indocyanine green (ICG) fluorescence imaging was systematically employed to confirm tissue perfusion and viability after reconstruction. This technique was applied in five consecutive patients with symptomatic post-esophagectomy hiatal hernia. Mean operative time was 98 minutes. No intraoperative or postoperative complications occurred. All patients achieved complete symptom resolution. At a median follow-up of 6 months, no recurrences were observed.

**The First da Vinci Single Port-Assisted Total Gastrectomy in Switzerland – A Video Vignette**
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Visceral Surgery, Cantonal Hospital of Lucerne, Lucerne

**Background:** Multiport robotically assisted total gastrectomies (RTG) are feasible and safe. The da Vinci Single-Port (SP) platform was introduced in Europe in 2024 and may add a next dimension to minimally invasive gastroesophageal surgery.
**Aims:** Our video presents the first total gastrectomy in Switzerland with the da Vinci SP system.
**Methods:** A 28-year-old female patient with body-mass index of 24kg/m$^2$ presented a diffuse-type adenocarcinoma of the stomach, staged uT2 cN1 M0. A fine-needle catheter was placed during staging laparoscopy. She received neoadjuvant chemoimmunotherapy with FLOT and Durvalumab, followed by a da Vinci SP-assisted total gastrectomy.
**Results:** A 4cm Pfannenstiel incision was made to place the SP access port. An additional 12mm trocar was placed in the left middle abdomen and a liver retractor below the xiphoid. The tumor was localized in the distal stomach. We performed a total gastrectomy with D2 lymphadenectomy. Dissection was done with two robotic Maryland Bipolar Forceps as well as an ultrasonic sealing and linear stapling device via the assistant trocar. After specimen extraction via the Pfannenstiel incision, intraoperative frozen section analysis confirmed tumor-free resection margins. A Roux-Y-reconstruction was performed. Final histopathology showed a 13cm gastric adenocarcinoma (ypT4a ypN3a (8/57) L1 V0 Pn0 R0). The postoperative course was complicated by Clostridium enterocolitis. The patient was discharged on postoperative day 8 on a normal oral diet. At the 6-week follow-up, she was in good general condition, showed a well-healed scar and was ready to proceed with adjuvant treatment.
**Conclusion:** Da Vinci SP-assisted total gastrectomy with one additional trocar is feasible and safe in slim patients, with encouraging short-term outcomes. Patients benefit from the aesthetically pleasing result and rapid mobilisation with minimal wound pain from the Pfannenstiel incision. To our knowledge, this is the first case using the da Vinci SP platform in RTG for advanced gastric cancer in Switzerland.

**Risk Factors for Peritoneal Recurrence after Curative Resection of Gastric Adenocarcinoma**
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[1]Faculty of Biology and Medicine, University of Lausanne, Lausanne; [2]Visceral Surgery, CHUV, Lausanne

**Background:** Recurrence occurs frequently after perioperative chemotherapy and curative-intent gastrectomy for gastric adenocarcinoma, and peritoneal recurrence (PR) is associated with poor outcomes.
**Aims:** This study aimed to identify risk factors for PR after curative gastrectomy.
**Methods:** This retrospective analysis included consecutive patients who underwent curative-intent gastrectomy for gastric adenocarcinoma between January 2007 and December 2023. Clinicopathological, surgical, treatment-related variables and long-term outcomes were analyzed. Independent predictors of PR were identified using multivariable logistic regression. Overall survival (OS) and disease-free survival (DFS) were estimated using the Kaplan-Meier method, with pairwise comparisons performed using the log-rank test.
**Results:** Overall, 157 patients were included (98 men, 62.4%; mean age 61.9± 13.8 years). After a median follow-up of 41 months from the date of surgery (95% CI 25.4-56.6), 41 patients (26.1%) developed PR; 26 isolated (16.6%) and 15 concurrent with distant metastases (9.6%; liver, lungs, etc.). In multivariable analysis, advanced pathological T stage (OR 3.87, 95% CI 1.54-9.74; p=0.004), R1 resection (OR 4.56, 95% CI 1.34-15.60; p=0.015), and severe postoperative complications Dindo-Clavien > III (OR 3.63, 95% CI 1.06-12.42; p=0.040) were independent predictors of PR. Median overall and disease-free survival were shorter in patients with isolated PR and mixed (peritoneal and distant) recurrence compared with those with distant metastases only (OS: 13 vs 22 vs 59 months, p=0.002 for both comparisons; DFS: 7 vs 7 vs 16 months, p=0.004 for isolated PR vs distant; p=0.009 for mixed vs distant recurrence).
**Conclusion:** PR is associated with substantially reduced survival after curative-intent gastrectomy. Advanced pT stage, R1 resection, and severe postoperative complications independently increase the risk of peritoneal recurrence. These findings support the need for tailored multimodal treatment strategies in high-risk patients, along with intensified postoperative surveillance. In selected cases, second-look laparoscopy may also be considered.

**Achieving Symptom Control in the Treatment of Gastroparesis: From Pills to Pacing**
C. Hanreich, N. Moser, P. Aeschbacher, Y. Borbély
Department of Visceral Surgery and Medicine, Inselspital, Bern

**Background:** Gastroparesis is a chronic disorder of the stomach characterized by delayed emptying without mechanical obstruction. Affected patients experience nausea, vomiting, and a feeling of fullness. Achieving sufficient symptom control remains challenging.
**Aims:** The aim of this retrospective study was to analyse the use and effectiveness of current treatment options employed in a step-up approach: 1.Dietary changes, 2.pharmacological treatment (prokinetic drugs including domperidone and prucalopride, and laxatives), 3.pyloric interventions (endoscopic balloon dilation, gastric per-oral endoscopic myotomy (G-POEM), laparoscopic surgical pyloromyotomy), and 4.gastric electrical stimulation (GES, EnterraTM).
**Methods:** All patients treated for gastroparesis at a tertiary hospital by a dedicated team between 01/2025 and 01/2026 were included. Diagnosis was confirmed by gastric emptying scintigraphy. Exclusion criteria were previous upper gastrointestinal tract surgery, concomitant hiatal hernia or gastroesophageal reflux disease (GERD), and intestinal failure. Main outcome was sufficient symptom control at the latest available follow-up defined as improved or contained symptoms without need for treatment escalation.
**Results:** Fifty patients were included. Median age was 39 years (IQR 25-57), 66% were female. Reasons for gastroparesis was idiopathic in 80%, diabetes in 8%, and rheumatologic or neurologic disease in 12%. Most frequent symptoms were feeling of fullness (82%) and nausea (74%). Sufficient symptom control following conservative treatment was achieved in 13 patients (26%). Eighteen patients (36%) underwent at least one pyloric intervention [G-POEM (n=5), dilatation (n=10), laparoscopic pyloromyotomy (n=5)], with five patients (10%) achieving sufficient symptom control. Fifteen patients (30%) received a GES device, of which two-thirds (n=10) achieved sufficient symptom control. Twenty patients (40%) had at least two interventions during their treatment course.
**Conclusion:** Adequate symptom control often requires escalation beyond conservative treatment. Many patients need multiple interventions, emphasizing the chronic nature of gastroparesis. These findings highlight the importance of an individualized, multimodal treatment approach and the need to further investigate predictors of treatment response.

### Real World Analysis of Machine Perfusion in Liver Transplantation: An International Cohort Study

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**Background:** Machine perfusion represents the most significant breakthrough in liver transplantation (LT) since the discovery of cyclosporin. Yet, the optimal perfusion strategy remains unsettled. Randomized trials demonstrate that hypothermic oxygenated perfusion (HOPE) improves graft survival and function and reduces ischemic cholangiopathy, whereas normothermic machine perfusion (NMP) decreases post-transplant injury. Real-world comparisons are lacking and challenging due to heterogeneity in donor-recipient risk profiles and regional differences.

**Aims:** To compare real-world outcomes of HOPE and NMP in LT.

**Methods:** We analyzed consecutive NMP-preserved LTs from seven North American centers between 2021 and 2024. We compared NMP to the European HOPE-REAL cohort, comprising HOPE-treated LTs from 22 centers between 2012 and 2021. Analyses were stratifyied by graft type and risk category and adjusted for donor age, donor risk index, and balance of risk score using entropy balancing.

**Results:** A total of 470 NMP and 1202 HOPE-treated grafts were analyzed, revealing major differences in risk profiles (Figure 1). In NMP, death-censored graft survivals at 1, 2, and 3 years were >95% in donation after brain death (DBD) and >94% in donation after circulatory death (DCD) grafts. Comparable outcomes were observed in the HOPE cohort with >93%, in DBD, and >87% in DCD after up to 3 years, despite significantly higher donor age and longer functional warm ischemia in the HOPE DCD cohort (Figure 2). After risk adjustment, death-censored graft survival remained similar between both modalities (Table 1). Non-anastomotic biliary stricture rates after DCD-LT were comparable (8.5% vs. 12.4%), independent of whether continuous or end-ischemic NMP was performed.

**Conclusion:** This first transatlantic real-world report demonstrates excellent outcomes with both NMP and HOPE despite higher graft risk in Europe. Machine perfusion is the new standard of care in LT, while further understanding is needed regarding the distinct benefits of each modality across risk profiles.

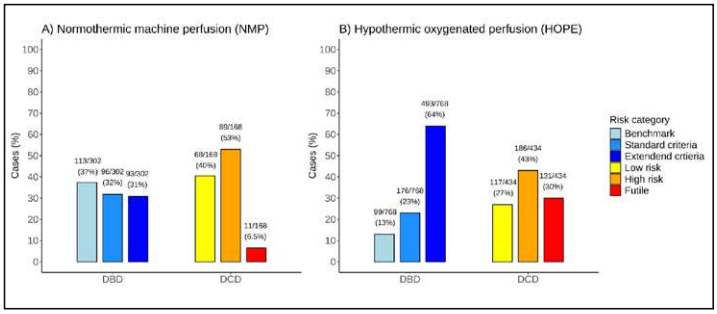


Figure 1. Graft risk in NMP and HOPE stratified by graft type. Benchmark case was defined as primary transplant with MELD <20 and BAR score <9, extended criteria as either BMI >30kg/m², donor age >65 years, CIT >12h. DCD grafts were categorized as defined

| Risk category | Death-censored graft survival | |
|---|---|---|
| | HR (95%-CI)* | p-value |
| **DBD** | | |
| Benchmark | 0.18 [0.02-1.51] | 0.11 |
| Standard criteria | 0.38 [0.11-1.30] | 0.12 |
| Extended criteria | 0.69 [0.25-1.95] | 0.49 |
| **DCD** | | |
| Low risk | 0.46 [0.15-1.39] | 0.17 |
| High risk | 0.49 [0.16-1.44] | 0.19 |
| Futile | not estimable | not estimable |

*Cox proportional hazards regression model comparing NMP vs. HOPE after adjusting for imbalance in donor age, donor risk index, and balance of risk score within risk categories using entropy balancing. **Abbreviations:** HR (Hazards Ratio), CI (Confidence Interval), DBD (Donation after Brain Death), DCD (Donation after Circulatory Death).

Table 1. Risk-adjusted comparison of death-censored graft survival between NMP and HOPE

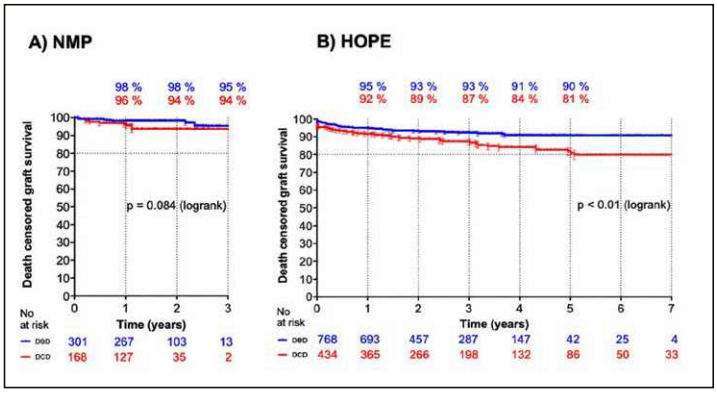


Figure 2. Death-censored graft survival in liver transplantation following NMP and HOPE stratified by graft type. Abbreviations: NMP (Normothermic Machine Perfusion), HOPE (Hypothermic Oxygenated Perfusion), DBD (Donation after Brain Death), DCD (Donation

### Partial Hepatectomy After Liver Transplantation: Systematic Review and Pooled Analysis of Indications, Techniques and Outcomes

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**Background:** Partial hepatectomy after orthotopic liver transplantation (OLT) is a graft-saving option that may be used to avoid or delay re-transplantation in case of post-transplant complications, or hepatocellular carcinoma (HCC) recurrence.

**Aims:** To assess the indications, techniques and outcomes of partial hepatectomy in OLT recipients.

**Methods:** A PRISMA-compliant systematic review was performed on PubMed, Scopus, and Web of Science. Original studies reporting data of partial hepatectomy in OLT recipients were eligible for inclusion. Pooled analysis was used to report clinical outcomes.

**Results:** Sixteen studies embodying a total of 135 patients were included in the systematic review. The most common indication for partial hepatectomy was recurrent HCC, followed by biliary complications of OLT. The pooled mean (SD) interval between OLT and partial hepatectomy was 47.0 (50.1) months and varied according to the indication for resection. The pooled

analysis revealed a rate of major hepatectomy of 40.2%. Resections were almost always performed by laparotomy, with minimally invasive liver surgery (MILS) used only in 7 cases (8.8%). After partial hepatectomy, postoperative morbidity and major morbidity were 48.0% and 17.0% respectively, while postoperative mortality was 7.4%. After a mean (SD) follow-up of 47.8 (29.4) months, additional long-term morbidity and re-transplantation rates were 20.3% and 11.1% respectively.
**Conclusion:** In carefully selected OLT recipients, partial resection of the graft is feasible, safe, and associated with favorable long-term prognosis. The use MILS should be further explored. Prospective data with more detailed stratification of patients based on the perioperative risks and expected long-term results are needed.

**Guiding Treatment Decisions in Neuroendocrine Liver Metastasis: A Multinational Comparative Analysis of Liver Transplantation and Systemic Therapies**
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**Background:** Liver transplantation (LT) is considered a potential curative option for neuroendocrine liver metastases (NELM), yet its survival benefit compared to modern systemic therapies (ST) remains a subject of debate.
**Aims:** To rigorously compare overall survival (OS) between LT and ST in patients with NELM who met the Milan criteria, utilizing a large international database.
**Methods:** A multinational, 17-center retrospective cohort study was conducted involving specialized hepatobiliary centers. Patients with pathology-proven NELM undergoing either LT or ST as their primary liver-directed strategy were included. To minimize selection bias, a 1:1 propensity score matching (PSM) was performed based on key prognostic variables: age, primary tumor location, tumor grade, and presence of extrahepatic disease. The primary outcome was OS calculated from the date of NELM diagnosis.
**Results:** From a total cohort of 1,281 patients, 81 in the LT group and 99 in the ST group met the Milan criteria. PSM resulted in a balanced cohort of 136 patients (68 per group). In the matched analysis, the median OS was 215 months (95% CI: 176–NA) for LT compared to 166 months (95% CI: 106–NA) for ST. This difference was not statistically significant (Hazard Ratio [HR]: 1.24; 95% CI: 0.65-2.36; p=0.5). The 10-year OS probability was 67% for LT and 57% for ST. Subgroup analyses, including stratification by Ki-67 index (<10%) and exclusion of 90-day mortality, confirmed no significant survival advantage for the transplant cohort.
**Conclusion:** In this large multicenter analysis, LT did not demonstrate a statistically significant survival benefit over contemporary systemic therapies for patients meeting Milan criteria. While LT remains a valid option for specific refractory cases, these findings suggest that non-surgical management with modern systemic agents offers comparable long-term outcomes for well-selected patients.

**Interdisciplinary Step-Up Strategy for Superinfected Walled-Off Necrosis: Sinus Tract Endoscopic Necrosectomy Versus Laparoscopic-Assisted Necrosectomy**
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[1]Viszeralchirurgie, Luzerner Kantonsspital, Lucerne; [2]Gastroenterologie, Luzerner Kantonsspital, Lucerne; [3]Viszeralchirurgie, Ospedale Regionale di Bellinzona e Valli, Bellinzona

**Background:** Acute infected necrotizing pancreatitis remains associated with substantial morbidity and mortality. The step-up approach combining minimally invasive drainage with endoscopic transgastric or percutaneous necrosectomy, improves outcomes compared with open surgery. Laparoscopic-assisted necrosectomy (LAPN) may be performed in cases of superinfected walled-off necrosis (WON) following percutaneous drainage. A newly implemented interdisciplinary approach includes sinus tract endoscopy-guided necrosectomy (STEN), using flexible endoscopy through a surgically created sinus tract, enabling less invasive, more targeted debridment, improved visualization of complex necrotic cavities, and facilitating repeatable debridement.
**Aims:** This study aimed to assess the introduction of STEN compared with LAPN in the management of superinfected WON.
**Methods:** A retrospective analysis of patients with superinfected WON treated with a percutaneous step-up approach between 2019 and 2025 was conducted. Patients underwent CT-guided percutaneous drainage followed by either STEN or LAPN. Demographic characteristics and clinical outcomes were collected. The primary endpoint was the non-inferiority of STEN compared with LAPN, assessed using a composite outcome comprising major complications and 6-month mortality. Secondary outcomes included overall complication rates, need for reinterventions, and length of hospital stay.
**Results:** Fifteen patients were included. All patients were managed using a step-up approach: 9 underwent STEN and 6 underwent LAPN. In the STEN group, 5 patients (55.6%) met the primary endpoint, all due to major complications, with no mortality observed. In the LAPN group, the primary endpoint occurred in 3 patients (50%), including one death and two major complications. The difference in the composite outcome remained well below the predefined 15% non-inferiority margin, confirming the non-inferiority of STEN compared with standard LAPN.
**Conclusion:** Both STEN and LAPN are effective in treating superinfected WON within a step-up approach. Despite the limited sample size, STEN achieved non-inferior outcomes compared with LAPN. Larger prospective studies are warranted to further define the role of STEN in the management of infected WON.

**Stereotactic Body Radiotherapy as a Rescue Modality for Definitive Treatment of Therapy-Refractory Fistulas after Pancreatic Surgery**
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**Background:** Postoperative pancreatic fistula (POPF) Grade B/C, according to ISGPS 2016 criteria, poses a significant challenge due to severe complications such as sepsis, hemorrhage, and organ failure. When standard treatments are unsuccessful, treatment options become limited.
**Aims:** This series investigates the use of MR-guided stereotactic body radiotherapy (SBRT) as a potential rescue therapy for refractory POPF.
**Methods:** Between 2020 and 2025, five patients with refractory Grade B/C POPF and severe complications-including sepsis, abscesses, superinfection, or high-output fistulas-received MR-guided SBRT after failing conventional approaches. The treatment comprised 5 fractions of 4-8 Gy each. Success was defined as the permanent removal of drainage without any subsequent deterioration.
**Results:** All five patients were male, with surgical procedures including proximal (n=1), distal pancreatic resection (n=3), or necrosectomy (n=1). The median drain output significantly decreased from 47.5 ml/day to 2 ml/day. Drains were removed after a median of 44 days. No gastrointestinal toxicity was observed; only one patient reported mild fatigue. The interval until rehospitalization markedly decreased from a median of 14 days pre-treatment to zero days post-treatment. Rehospitalizations before SBRT were caused by abscesses or drain malfunctions, but none occurred afterward.
**Conclusion:** This is the first series to evaluate MR-guided SBRT as a treatment for refractory POPF. The findings suggest that this non-invasive approach could reduce morbidity and offers a promising alternative when traditional methods fail. Further research with larger cohorts is necessary to confirm these outcomes.

## How I do it

**Robotic Mesh-augmented Hiatoplasty and Anatomical Reconstruction of The Gastroesophageal Junction for Hiatal Hernia And Reflux Disease – How We Do It**
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**Background:** Robotic-assisted surgery offers distinct advantages in the treatment of complex gastroesophageal junction (GEJ) pathologies, including large hiatal hernias and revisional surgery for reflux disease. Although classical Nissen fundoplication remains the historical standard for reflux control, its widespread application is limited by adverse effects such as postoperative dysphagia and gas-bloat syndrome. Alternative antireflux strategies that focus on anatomical restoration of the GEJ may provide improved alimentary comfort while maintaining durable reflux control. Furthermore, outcomes after hiatal hernia repair remain suboptimal, with long-term recurrence rates reported to reach up to 50% even in experienced centers. The role of mesh augmentation in hiatal hernia repair remains controversial; however, absorbable biosynthetic materials may reduce recurrence while avoiding the long-term complications associated with permanent synthetic meshes.
**Aims:** The objective of the current video is to provide a stepwise, reproducible protocol for robotic hiatoplasty with facultative absorbable biosynthetic mesh reinforcement in keyhole technique combined with anatomical reconstruction of the gastroesophageal junction. This comprises His angle restoration according to Lortat-Jacob, posterior modified Hill gastropexy, and anterior Dor fundoplication, while outlining the theoretical and practical advantages compared with traditional fundoplication.
**Methods:** High-definition robotic video sequences from representative cases at our tertiary referral center will be annotated to demonstrate critical steps: crural dissection, extensive mediastinal esophageal mobilization, stepwise hiatal closure with facultative Phasix mesh augmentation, restoration of His angle configuration, modified posterior gastropexy and anterior Dor fundoplication. Relevant technical nuances and aspects of postoperative management are integrated.
**Results:** Long-term outcomes from our institutional cohort (2018–2024; n = 192), including functional and anatomical recurrence rates as well as postoperative proton pump inhibitor use up to five years after surgery, are presented alongside the illustrative video material.
**Conclusion:** This video tutorial provides a step-by-step guide for robotic hiatoplasty and anatomical reconstruction of the GEJ, representing a refined alternative to classical fundoplication, aimed at optimizing functional outcomes while similarly reducing recurrence rates.

**Fully Robotic Total Gastrectomy with D2 Lymphadenectomy: Step-by-Step**
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**Background:** This video presents a detailed, step-by-step overview of a totally robotic total gastrectomy with lymphadenectomy, performed using the da Vinci Xi robotic system on a patient diagnosed with gastric adenocarcinoma. The aim is to share valuable insights and experiences from this surgical procedure.

**Conclusion:** The totally robotic approach to gastrectomy with D2-lymphadenetomy is a safe and feasible technique for treating gastric cancer and allows for intracorporeal oesophageal anastomosis.
**Case presentation:** The patient was positioned in reverse Trendelenburg. We utilized a total of four 8 mm robotic trocars and one 12 mm assistant trocar. The procedure began with the dissection of the gastric greater curvature and division of the gastrocolic ligament to facilitate access to the lesser sac. The right gastroepiploic vessels were identified and ligated at their origin to allow for retrieval of lymph nodes. Next, we separated the lesser omentum from the hepatoduodenal ligament, paying close attention to an accessory left hepatic artery that originated from the left gastric artery. Following the ligation of the right gastric vessels, we circumferentially dissected the duodenum and transected it approximately 2 cm distal to the pylorus. An extended lymphadenectomy was then performed, to harvest lymph nodes near the common hepatic artery, proper hepatic artery, celiac axis, left gastric artery and left hepatic artery. We then dissected the lymphatic tissue adjacent to the distal splenic artery and splenic hilum. The distal oesophagus was transected using a laparoscopic stapler trough the assistant trocar. We performed a fully robotic end-to-side eosophagojejunal anastomosis using an endo-oral circular stapler. To restore gastrointestinal continuity following total gastrectomy, a side-to-side jejunojejunal anastomosis was completed. Histopathologic results indicated a complete tumor regression with 23 nodes harvested.

### Roux-en-Y Gastric Bypass with the DEXTER® Robotic Surgery System

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**Background:** Roux-en-Y gastric bypass is a well-established procedure in bariatric surgery providing long-term weight loss. The standard laparoscopic approach is safe and associated with very low conversion and complication rates. Robotic-assisted surgery offers enhanced visualization and instrument precision, making it ideal for managing complexes cases. The DEXTER® Robotic Surgery System, with its sterile console design and ability to switch between robotic-assisted and laparoscopic modalities without redocking, facilitates an efficient and easy transition from traditional laparoscopy to robotic surgery.
**Aims:** This case series aims to demonstrate the feasibility and short-term outcomes of robotic-assisted Roux-en-Y gastric bypass using DEXTER.
**Methods:** Ten patients underwent robotic-assisted Roux-en-Y gastric bypass between April and December 2025 in a primary obesity center, performed by two experienced bariatric surgeons using DEXTER. Detailed surgical steps are shown in the accompanying video. Perioperative data and short-term (3 months) patient outcomes were retrospectively analyzed.
**Results:** The median patient age was 38.7 years; the median BMI was 41.3 kg/m². The median skin-to-skin operative time was 152 minutes. Robotic handsewn jejunojejunostomy was performed in two cases, with operative times of 145 and 165 minutes. In the remaining eight cases, jejunojejunostomy was performed using a laparoscopic stapler, with enterotomy closure performed using DEXTER. One of these cases required additional adhesiolysis. The median length of hospitalization was 3 days. One non robotic related postoperative complication of Clavien–Dindo (C-D) grade ≥ III occurred: the patient experienced a staple-line insufficiency of the pouch (C-D III).
**Conclusion:** Roux-en-Y gastric bypass is feasible and effective using DEXTER. Further clinical experience and larger studies are needed to investigate long-term patient outcomes and define the role of DEXTER in bariatric surgery.

### Laparoscopic Right Hemicolectomy With Complete Mesocolic Excision and D3 Lymphadenectomy (CME+D3) for Carcinoma Ascending Colon (Medial to Lateral Approach)

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**Background:** Recent studies indicate poor long-term outcomes in right-sided colon cancer, with high local recurrence (e.g., 14.7% in the CLASSIC trial ). To improve results, complete mesocolic excision (CME) and CME with D3 lymphadenectomy (CME+D3) were introduced, though CME+D3 lacks proven survival benefits and carries higher complication risks.
**Conclusion:** Complete mesocolic excision with D3 lymphadenectomy is a safe and effective surgical technique that enables high-quality oncologic resection without adding significant risk. It has been shown to improve survival outcomes in patients with stage II and III right-sided colon cancer.
**Case presentation:** This video shows CME+D3 in a laparoscopic right hemicolectomy for ascending colon carcinoma in a 53-year-old man with hypertension, polycythemia, and 2-month right lower abdominal pain. CECT revealed 3 cm thick, 7.5 cm long circumferential wall thickening with exophytic growth, lumen narrowing, and ileocaecal nodes; labs were normal. Surgery used a medial-to-lateral approach with an extracorporeal stapled ileo-transverse anastomosis. Recovery was uneventful: orals on POD1, drain out on POD3, discharged on POD5. European CME+D3 modifies Japanese D3 by resecting more bowel/nodes. A meta-analysis (Eur J Surg Oncol) found better oncological clearance, lower recurrence, improved DFS/OS vs. standard, with 8.6% positive D3 nodes and 2.2% skip metastases, and similar complications.

### TAPP Repair for a Primary Abdominal Intercostal Hernia

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**Background:** Primary abdominal intercostal hernias (AIH) are exceptionally rare defects characterized by the protrusion of abdominal contents through weakened intercostal spaces without prior trauma or surgery history. Diagnosis can be challenging and often delayed because of their uncommon presentation and nonspecific symptoms. Although various strategies for repair have been reported, minimally invasive procedures remain exceptional.
**Conclusion:** This video presents a rare case of primary AIH and highlitghes the importance of accurate diagnosis, abdominal wall anatomy knowledge, and minimally invasive approaches in managing these uncommon defects. In addition to its rarity and educational value, this work exemplifies the expansion of minimally invasive surgery to rare hernia cases.
**Case presentation:** We report the case of a 62-year-old man who presented with intermittent right upper quadrant pain persisting for several years. His medical history included untreated obstructive sleep apnea, allergic asthma with chronic cough, and class I obesity. The patient did not have a personal history of trauma or accidents. Previous cholecystectomy failed to relieve the patient's symptoms. Clinical examination was unremarkable, with pain exacerbated by trunk torsion and localized to the right costal margin. Computed tomography revealed a primary AIH beneath the 10th rib, with detachment of the internal oblique and transversus abdominis muscles and preservation of the external oblique layer. A transabdominal preperitoneal (TAPP) repair was performed using a minimally invasive laparoscopic approach. A polypropylene mesh was placedin the preperitoneal space and secured using surgical glue. The postoperative course was uneventful, and the patient was discharged on POD2.

### Laparoscopic Ventral TAPP Repair of a Subxiphoid Incisional Hernia

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**Background:** Laparoscopic hernia repair is increasingly preferred over open techniques because it is associated with reduced postoperative pain and fewer wound-related complications. Subxiphoid incisional hernias are rare and typically develop following median sternotomy for cardiac surgery, posing distinct anatomical and technical challenges. Although ventral transabdominal preperitoneal (TAPP) repair is a safe and minimally invasive option for abdominal wall hernias, experience with this technique in the subxiphoid region remains limited.
**Conclusion:** Effective repair of subxiphoid incisional hernias requires defect closure and sufficient mesh overlap while preserving abdominal wall and diaphragmatic biomechanics. Ventral TAPP repair is a feasible and minimally invasive technique when performed with detailed anatomical knowledge and surgical expertise.
**Case presentation:** This video demonstrates the ventral TAPP repair of a subxiphoid incisional hernia classified as M1 W1 (3 × 2 cm) according to the European Hernia Society (EHS). A 65-year-old male presented with a symptomatic upper abdominal bulge three months after open mitral valve replacement, reporting pain during physical activity and with coughing and sneezing. Surgical repair using a ventral TAPP approach was indicated. The procedure was performed laparoscopically with the camera trocar placed approximately 6 cm cranial to the umbilicus, slightly left paramedian to avoid the ligamentum teres hepatis. Working trocars were positioned bilaterally in the upper abdomen. After peritoneal incision, preperitoneal dissection was carried cranially along the posterior rectus sheath to the hernia defect. Careful dissection was performed to expose the abdominal portion of the diaphragm while remaining strictly in the preperitoneal plane (Fig. 1). Following reduction of the hernia sac, cranial dissection was extended to expose the xiphoid process and central tendon of the diaphragm, ensuring a mesh overlap of at least 5 cm. The defect was closed tension-free using a barbed suture (Fig. 2). A 12 × 15 cm macroporous mesh was placed without fixation (Fig. 3), followed by peritoneal closure.

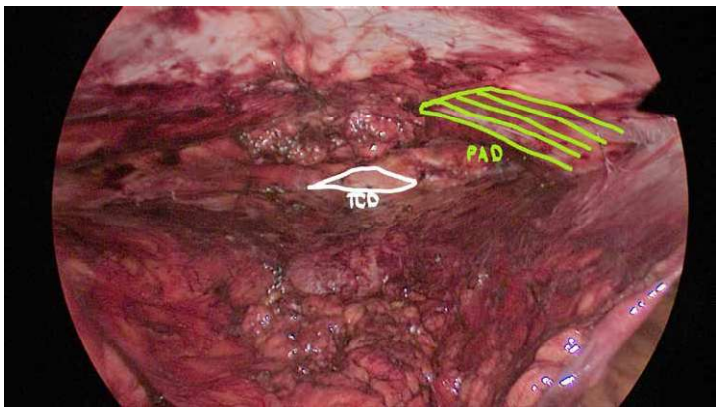

**Figure 1. Anatomy**

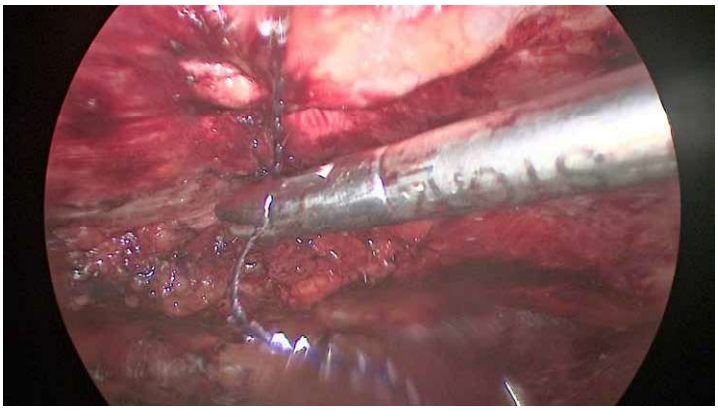

Figure 2. Defect closure

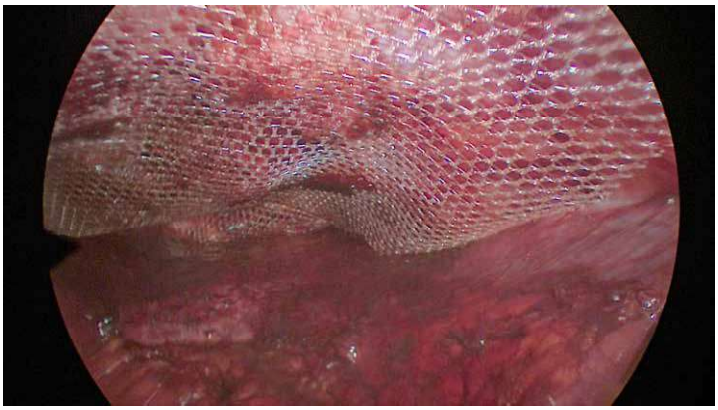

Figure 3. Mesh placement

**Robotic TAPP Repair of a Left Incisional Flank Hernia – A Step-by-step Video Presentation**

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**Background:** Flank hernias present unique challenges due to limited preperitoneal working space, and frequent intramuscular adhesions and complex altered anatomy. Robotic assistance may overcome these limitations by enabling precise dissection, suturing, and mesh placement in lateral TAPP repair.
**Conclusion:** In incisional hernias with expected muscle scarring, preperitoneal dissection is preferred over the intramuscular plane for atraumatic access and therefore reducing the risk of nerve injury. The robotic approach enables precise preperitoneal adhesiolysis, defect closure, and mesh placement, demonstrating that robotic TAPP repair is a safe and reproducible technique for lateral abdominal wall hernias. The innovation lies in expanding the indications of ventral TAPP to complex flank hernias, which are traditionally treated by open or hybrid approaches. The video highlights key anatomical landmarks and technical pitfalls specific to robotic flank TAPP that may support standardization and broader adoption of this approach. By providing a clearly structured, reproducible technique, this enhances safety, ergonomics, and educational transferability.
**Case presentation:** A 75-year-old patient presented after an open left partial nephrectomy with an incisional flank hernia which was preoperatively documented in a video and CT. Additional prior surgeries included laparoscopic appendectomy and bilateral open inguinal hernia plasty. This video demonstrates a step-by-step approach to robotic lateral transabdominal preperitoneal (TAPP) repair of a left flank hernia using the Da Vinci® system. With the patient in a right lateral position 4 trocars were placed. Adhesiolysis was necessary to free parts of the intestine from the hernia. After opening the peritoneum horizontally, the preperitoneal plane was dissected, the hernia repositioned, and the edges of the hernia defect were exposed. The defect was closed using a continuous, non-absorbable, double-layered suture to achieve a anatomically correct reconstruction. A self-gripping mesh was then placed in the preperitoneal space with adequate overlap, followed by meticulous peritoneal closure. There were no intra- or postoperative complications.

**Robotic Totally Extraperitoneal Repair (rTEP) for Bilateral Inguinal Hernia: A Video Report of the Surgical Technique**

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**Background:** The totally extraperitoneal (TEP) approach is a well-established minimally invasive technique for inguinal hernia repair. However, its application using a robotic platform remains scarcely described, particularly for bilateral hernias and in ambulatory settings. This video vignette presents a case-based demonstration of robotic TEP (rTEP) repair, highlighting technical feasibility and operative efficiency.
**Conclusion:** This video demonstrates that robotic TEP repair for bilateral inguinal hernia is feasible, safe, and time-efficient, despite being a scarcely described technique. The robotic platform enhances precision in the preperitoneal space while preserving the advantages of a totally extraperitoneal approach. The accompanying video provides a reproducible, step-by-step technical reference that may facilitate adoption of rTEP in specialized minimally invasive centers.
**Case presentation:** We report the case of a patient with symptomatic bilateral inguinal hernia who underwent elective robotic totally extraperitoneal repair. Preperitoneal access was obtained without peritoneal violation. A standardized rTEP technique was performed, including bilateral inguinal dissection, complete parietalization of the cord structures, and placement of large preperitoneal meshes. The procedure was completed without intraoperative complications or conversion. Total operative time was 80 minutes for bilateral repair. No peritoneal breach, bleeding, or technical difficulty occurred. Postoperative recovery was uneventful, and the patient was discharged on the same day following an ambulatory pathway.

## Joining Forces – Successful Transition From Pediatric to Adult Urology as a Key to Quality of Life and Continuous Care

**Long-Term Sequelae of Posterior Urethral Valves: The Need for Structured Age-Appropriate Transitional Urological Care**

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**Background:** Posterior urethral valves (PUV) represent the most common congenital cause of urinary tract obstruction and obstructive uropathy-related chronic kidney disease in the paediatric population. Despite early surgical intervention, a significant proportion of patients develop persistent or progressive lower urinary tract symptoms (LUTS), which may manifest or worsen in adulthood. Long-term sequelae remain under-recognized in adult urological practice. The purpose of this clinical case is to highlight the long-term urological and renal complications in an adult patient previously treated for PUV, and to underscore the importance of structured transitional care.
**Conclusion:** This case illustrates the potential for significant late complications in adults with a history of PUV, including recurrent bladder outlet obstruction and progressive renal damage. Lifelong follow-up and coordinated transition from paediatric to adult urology are crucial to prevent delayed recognition and mitigate long-term morbidity.
**Case presentation:** We report the case of a 29-year-old male with a history of endoscopic PUV ablation performed in two stages during childhood, who presented to the emergency department with mixed LUTS, including urgency, urinary incontinence, and weak urinary stream. Laboratory analysis demonstrated advanced renal dysfunction (serum creatinine: 222 µmol/L). Ultrasonography revealed a markedly distended bladder (>1 L) and bilateral grade IV hydronephrosis. Due to unsuccessful transurethral catheterisation, a suprapubic catheter was placed. Bladder decompression resulted in post-obstructive diuresis, complicated by transient electrolyte disturbances (hyperkalaemia, hypernatraemia), managed with intravenous fluid therapy. Following correction of electrolyte imbalances, diuresis normalised progressively. Follow-up renal imaging, including ultrasonography and CT scan, showed resolution of right-sided hydronephrosis, while persistent left-sided hydronephrosis was associated with cortical thinning, parenchymal atrophy, and ongoing bladder wall thickening. Retrograde urethrography identified a 2.25 cm bulbar urethral stricture. Anterograde studies were not feasible due to absence of spontaneous voiding.

## Acute Care Surgery

**Traumatic Diaphragmatic Pericardial Hernia: A Case Report**

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**Background:** Diaphragmatic pericardial hernia (DPH) is a rare condition in which abdominal organs herniate into the pericardial sac through a diaphragmatic defect. Causes include trauma, congenital, or iatrogenic factors, and symptoms vary widely, often delaying diagnosis.
**Conclusion:** DPH is a rare condition with cardiac and gastrointestinal manifestations. Early diagnosis and surgical treatment are crucial to prevent severe complications, and a multidisciplinary approach is key to optimal outcomes.
**Case presentation:** We report the case of a 61-year-old man with a history of a subxiphoid stab wound sustained several years earlier. At the time of the initial trauma, CT showed pneumomediastinum, diaphragmatic elevation, and pneumopericardium without echocardiographic evidence of cardiac injury. The patient refused surgery. Several years later, he presented with acute epigastric pain, vomiting, and dyspnea. Lab tests showed elevated troponin and D-dimers, with ECG changes suggestive of NSTEMI. A CT scan revealed an incarcerated diaphragmatic pericardial hernia containing small bowel (Figure 1). The patient underwent surgery with laparoscopic reduction of the hernia and closure of the diaphragmatic defect (Figure 2 and 3). Reduction led to immediate hemodynamic improvement, with no bowel ischemia. The patient developed postoperative ileus requiring nasogastric decompression. Subsequent infection with pericar-

dial effusion and pulmonary involvement was treated with antibiotics and ventilation. Bacterial pericarditis was later confirmed, and the patient was discharged on day 23 on antibiotic therapy. This case aims to demonstrate the diagnostic complexity of DPH, highlighting the challenges in recognizing this rare condition, especially with atypical symptoms mimicking cardiac events. This case report follows the SCARE 2023 criteria. This report highlights the diagnostic difficulty of DPH, which can mimic cardiac conditions. Although NSTEMI was initially suspected, a CT angiogram, prompted by elevated D-dimers, revealed a DPH containing small bowel. This case emphasizes the need for thorough evaluation of patients with combined cardiac and abdominal symptoms, especially after trauma.

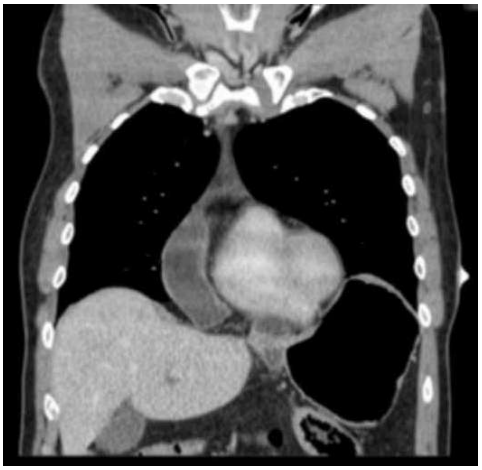

**Figure 1. The CT scan revealed anterior diaphragmatic hernia containing small bowel in direct contact with the heart**

**Figure 2. Incarceration of small bowel into the diaphragmatic hernia**

**Figure 3. Final result after suture of the diaphragm**

**Isolated Gallbladder Perforation Following Low-Energy Blunt Abdominal Trauma**

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Chirurgie, Hôpital Riviera Chablais, Rennaz

**Background:** Traumatic gallbladder perforation is a rare entity, usually associated with high-energy abdominal blunt or penetrating trauma and associated injury. Isolated mechanical perforation following low-energy blunt trauma is uncommon and frequently overlooked due to nonspecific clinical presentation and initially inconclusive imaging. Early recognition remains challenging, particularly in patients with confounding factors such as acute alcohol intoxication.
**Conclusion:** This interesting case illustrates that isolated mechanical gallbladder perforation can occur after low blunt abdominal trauma and may present with subtle or misleading clinical and radiological features. Acute alcohol intoxication and gallbladder distension may increase vulnerability to mechanical rupture. Persistent abdominal pain after blunt trauma should lead to prompt imaging review. Early surgical cholecystectomy remains the therapeutic approach in gallbladder perforation.
**Case presentation:** We wanted to report an unusual case of isolated gallbladder perforation following low energy blunt abdominal trauma and to highlight diagnostic pitfalls and surgical management. We present a case of a 43 year old male with a history of alcohol dependence who was admitted after a fall from a half meter platform with a blunt abdominal impact on his left side of his abdomen. Clinical evaluation, laboratory investigation, contrast enhanced abdominal computed tomography, surgical exploration and postoperative follow-up were analysed. On admission, the patient was hemodynamically normal but presented with diffuse abdominal pain, resistant to morphine, generalized guarding and a positive Murphy's sign. Laboratory tests showed mild hepatocellular cytolysis without cholestasis. Abdominal CT revealed pericholecystic infiltration, discontinuity of the gallbladder wall "holl sign", biliary extravasation, and an intraluminal hematoma of the gallbladder without free intraperitoneal fluid or associated visceral injuries. Exploratory laparoscopy identified a contained subperitoneal rupture of the gallbladder with bile dissection between the gallbladder wall and visceral peritoneum. A cholecystectomy with intraoperative cholangiography was performed. Postoperative recovery was uneventful, with no bile leak.

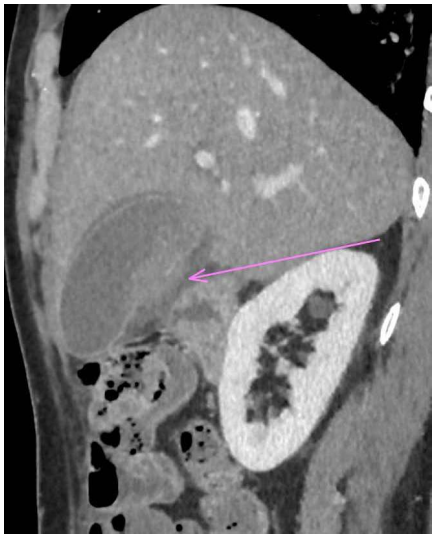


**Figure 1. Contrast-enhances sagittal CT scan demonstrating focal discontinuity of the gallbladder wall "hole sign", consistent with gallbladder perforation**

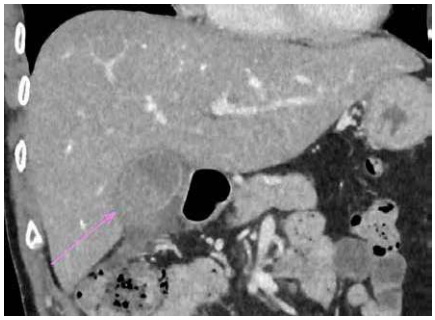


**Figure 2. Contrast-enhances coronal CT scan showing a hydropic gallbladder with intraluminal fluid compatible with an intraluminal hematoma**

**Figure 3. Intraoperative view of bile dissecting the planes between the gallbladder wall and the visceral peritoneum**

**Indiana Jones and The Temple of The Impacted Gallstone: A Video Vignette of Laparoscopic Management of a Gallstone Ileus**

V. Viccaro, L. W. Widmer
Surgery, Fribourg Cantonal Hospital, Fribourg

**Background:** Gallstone ileus is a rare cause of mechanical small bowel obstruction resulting from the passage of a gallstone into the gastrointestinal tract through a cholecystoenteric fistula, usually secondary to recurrent or chronic cholecystitis. Stones typically lodge in the terminal ileum due to its narrower lumen and reduced peristalsis. Surgical management remains the standard of care.
**Conclusion:** Surgical enterolithotomy remains the gold standard for gallstone ileus. Laparoscopic surgery presents an option in management and an enterotomy closure using a Heineke-Mikulicz strictureplasty-like suture is proposed in this video.
**Case presentation:** We present a video case report of a 72-year-old woman presenting with a 48-hour history of obstipation and vomiting. Her medical history included laparoscopic placement of a perisplenic mesh after trauma, supra-umbilical incisional hernia repair with preperitoneal mesh, hysterectomy and two ischemic strokes. Computed tomography showed a small bowel obstruction caused by a gallstone impacted in the ileum, along with signs of cholecystoduodenal fistula (Rigler's triad, Figure 1). Imaging four months prior had shown the gallstone within the gallbladder and no sign of pneumobilia. Management included a nasogastric tube followed by urgent laparoscopic exploration. After limited adhesiolysis, the small bowel was revised from the ileocecal valve, and the gallstone was identified 3.9 meters proximally. A longitudinal enterotomy allowed extraction of the stone, and was then closed with a transverse running suture, following the Heineke-Mikulicz strictureplasty principle to prevent luminal narrowing. The nasogastric tube was removed on postoperative day 1. The patient was discharged on day 10 after a prolonged stay due to candidemia requiring intravenous antifungal therapy. At 6-week follow-up, she had fully recovered from surgery and showed no signs of cholecystitis. Given her comorbidities, the cholecystoduodenal fistula was left untreated.

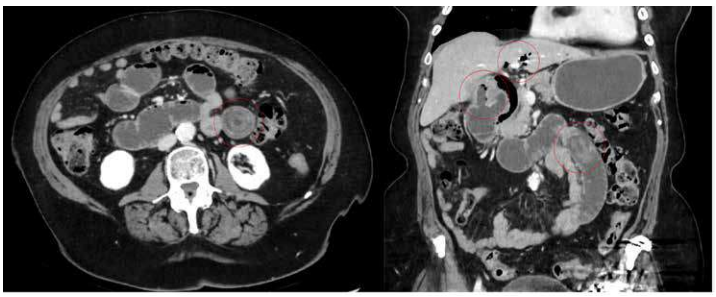


**Figure 1. Rigler's Triad (impacted gallstone, cholcystoenteric fistula, pneumobilia)**

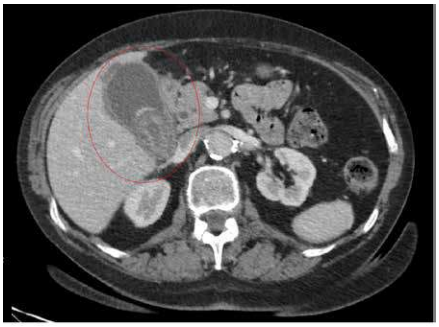


**Figure 2. Prior CT with cholecystolithiasis**

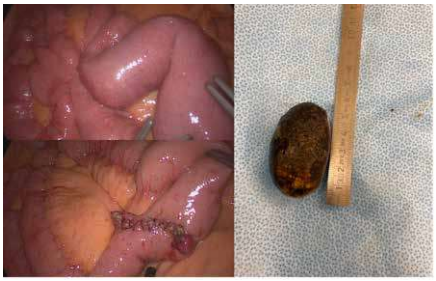


**Figure 3. Intraoperative impacted gallstone, final transverse suture, gallstone**

**Meta-analysis of Randomised Clinical Trials Comparing Appendicular Stump Closure**

K. Altan[1], D. Kleindienst[2], F. Hauswirth[2], M. K. Müller[1], P. Probst[3]
[1]Departement of Surgery, Cantonal Hospital Thurgau, Frauenfeld; [2]Departement of Surgery, Cantonal Hospital Thurgau, Münsterlingen; [3]Department of Surgery, Cantonal Hospital Thurgau, Frauenfeld

**Background:** Secure closure of the appendicular stump is a crucial step in laparoscopic appendectomy. Commonly used techniques include endoloop ligation, clip application, and stapler closure. The optimal method remains a matter of ongoing debate.
**Aims:** To compare clinical outcomes among stapler, clip, and endoloop techniques for appendiceal stump closure.
**Methods:** Via the Evidence Map of Appendicitis we searched Pubmed, Web of Science, CENTRAL and EMBASE. All RCT comparing clip versus endoloop, stapler versus endoloop, or stapler versus clip were included. Outcomes focused on surgical site infection (SSI), length of hospital stay and, duration of operation. Meta-analyses with a random-effects model were performed. Certainty of evidence was assessed using the GRADE approach.
**Results:** A total of 15838 articles were screened. In the comparison of clip versus endoloop closure, 11 randomised trials including 405 patients were analysed. No difference was found in SSI (OR 1.25, 95% CI 0.69–2.26; low certainty) or length of hospital stay (MD –0.12 days, 95% CI –0.31 to 0.07; moderate certainty). Operative time was shorter with clips (MD –7.6 minutes, 95% CI –8.7 to –6.5; moderate certainty). For stapler versus endoloop closure, four trials including 229 patients were available. Stapler use was associated with a lower SSI rate (OR 0.36, 95% CI 0.14–0.93; low certainty) and a shorter operative time (MD –4.2 minutes, 95% CI –6.9 to –1.6; moderate certainty). Length of hospital stay did not differ (MD –0.09 days, 95% CI –0.38 to 0.20; moderate certainty). For stapler versus clip closure, evidence was insufficient to draw conclusions for any outcome.
**Conclusion:** Clip and stapler techniques are associated with shorter operative times than endoloop closure, and stapler use may reduce surgical site infections compared with endoloops. However, the certainty of the evidence is low to moderate. Further high-quality randomised trials evaluating additional clinically relevant outcomes are needed.

**Evidence Map of Colonic Diverticulitis – A Living Systematic Review with Meta-Analyses**

N. Schaffner[1,2], M. Perrin[2], H. Strothmann[3], D. Kovacevic[2], P. Anthony[2], M. Pfister[2], E. Kalkum[4], F. Hauswirth[3], M. K. Müller[2,3], P. Probst[2]
[1]Department of Surgery, GZO Wetzikon, Wetzikon; [2]Department of Surgery, Cantonal Hospital Thurgau, Frauenfeld; [3]Department of Surgery, Cantonal Hospital Thurgau, Münsterlingen; [4]Study Center of the German Society of Surgery, University of Heidelberg, Heidelberg

**Background:** Colonic diverticulitis is one of the most common diseases of the gastrointestinal tract with a lifetime incidence of 10-25% in patients with colonic diverticulosis. For many years, antibiotics and surgery have been the two predominant treatment options. In addition, many different approaches with regard to peri-operative management have been developed and are being studied. As a result, a large and complex field for research has evolved. However, an overview of the evidence and a structured analysis of research gaps is missing.
**Aims:** The aim of this project is to create a systematic and living Evidence Map of colonic diverticulitis.
**Methods:** PubMed, CENTRAL, Embase and Web of Science were systematically searched for all randomised controlled trials (RCT) and systematic reviews (SR) dealing with the treatment of colonic diverticulitis. RCTs and SRs on identical subjects were grouped into research topics. From RCTs, data on morbidity, such as surgical site infection, re-admission, re-intervention or re-operation were extracted. Additional outcomes including pain, quality of life, length of hospital stay, and absence from work were also extracted. Whenever possible, outcomes for each research topic were meta-analysed. Furthermore, trial quality was assessed using the Cochrane risk of bias 2.0 tool.
**Results:** Out of over 3900 articles, 61 RCTs and 96 SRs were included. The studies were grouped into 35 different research topics (e.g. non-surgical compared to surgical treatment strategies or comparing antibiotics to non-antibiotic management). 13 Evidence gaps were discovered and 6 meta-analyses were performed.
**Conclusion:** The Evidence Map of Colonic Diverticulitis is the ultimate go-to source for evidence on the treatment of colonic diverticulitis. It is constantly updated and freely accessible via www.EVIglance.com and as a mobile phone app. Clinical decision-making and evidence-based patient information are supported by the primary data provided, as well as by living meta-analyses.

**Antibiotic Treatment for Acute Uncomplicated Colonic Diverticulitis – Systematic Review and Meta-Analysis**

G. N. Weber Estay[1], N. Schaffner[1], P. Antony[2], M. Pfister[2], E. Kalkum[3], F. Hauswirth[2], M. K. Muller[2], P. Probst[2]
[1]Faculty of Medicine, Department of Surgery, University of Heidelberg, Heidelberg; [2]Department of Surgery, Cantonal Hospital Thurgau, Münsterlingen; [3]Study Center of the German Society of Surgery (SDGC), University of Heidelberg, Heidelberg

**Background:** Antibiotic therapy has traditionally been used to treat acute uncomplicated colonic diverticulitis. However, its efficacy is increasingly being questioned, particularly regarding patient benefit and the necessity of inpatient treatment.
**Aims:** To evaluate the effectiveness and optimal use of antibiotics in acute uncomplicated colonic diverticulitis.
**Methods:** PubMed, CENTRAL, Web of Science, and EMBASE were systematically searched. All randomised clinical trials (RCTs) on antibiotic therapy for acute uncomplicated colonic diverticulitis were included. Outcomes were treatment failure, re-interventions, and length of hospital stay, analysed using random-effects meta-analysis. Risk of bias was assessed using Cochrane RoB 2.0, and certainty of evidence was rated with GRADE.
**Results:** From 3901 records, ten RCTs were included. Six RCTs including 2478 patients compared antibiotics with omission of antibiotics. No difference was found in treatment failure (OR 0.46, 95% CI 0.13–1.58; low certainty) or length of hospital stay (MD 0.16 days, 95% CI -0.21 to 0.54; moderate certainty), while re-interventions were less frequent with antibiotics (OR 0.61, 95% CI 0.37–0.99; moderate certainty). Two RCTs including 282 patients compared prolonged with shortened antibiotic therapy and showed no differences in treatment failure (OR 0.79, 95% CI 0.38–1.63; low certainty), re-interventions (OR 0.89, 95% CI 0.52–1.52; low

certainty), or length of hospital stay (MD -1.05 days, 95% CI -2.51 to 0.41; moderate certainty). Two other RCTs including 197 patients compared oral with intravenous antibiotic therapy and indicated no difference in re-interventions (OR 0.95, 95% CI 0.13–6.85; low certainty).
**Conclusion:** Antibiotics may slightly reduce re-interventions in acute uncomplicated colonic diverticulitis but show no clear benefit for treatment failure or length of stay. No preference was identified for oral versus intravenous therapy or short versus standard courses. Overall certainty of evidence ranged from low to moderate, and further high-quality RCTs are needed.

**Non-Antibiotic Treatment for Acute Uncomplicated Diverticulitis (AUD): A Survey of Current Practice in Switzerland and Consensus Proposal for a Treatment Algorithm**
V. Sitta, G. Salina, S. G. Popeskou, D. Christoforidis
Visceral Surgery, Ente Ospedaliero Cantonale, Lugano

**Background:** Despite strong evidence based on randomized controlled trials, the adoption of non-antibiotic management for acute uncomplicated diverticulitis (AUD) in daily clinical practice remains limited.
**Aims:** Critical literature review of the evidence supporting non-antibiotic treatment of AUD, assessment of current clinical practice in Switzerland, and proposal of a pragmatic risk-stratified treatment algorithm of AUD, with or without antibiotics.
**Methods:** A national survey was conducted among Swiss surgeons and emergency physicians using an online questionnaire. Survey and literature results were discussed during a consensus online meeting. Clinical, laboratory, and radiological risk factors for progression to complicated disease were extracted from the literature, discussed in a Delphi process, and incorporated into a treatment algorithm.
**Results:** RCTs report low failure rates for non-antibiotic treatment but rely on highly selected patient cohorts. Reported predictors of disease progression include elevated CRP (>140mg/L), severe pain (VAS>7), comorbidity burden, symptom duration >5 days, and presence of fluid collections or inflammation of a long colic segment on CT-scan. Less than 10% of 136 physicians responding to the survey adopt a non-antibiotic approach (Tab. 1). Worrisome features of AUD reaching highest agreement for necessity of antibiotics included immunosuppression (90%), presence of SIRS (86%), extended peritoneal irritation (77%), and elevated inflammatory markers (67%). Worrisome features were discussed during a consensus meeting involving 25 physicians, and divided into "Major" (frailty, failure of conservative treatment at presentation) and "Minor" (clinical presentation, inflammation, and CT-features) (Fig. 1). An agreement was reached for antibiotic use only for patients with at least one major or at least two minor worrisome features (Fig. 2).
**Conclusion:** The limited uptake of non-antibiotic management for AUD in Switzerland reflects a gap between guideline recommendations and real-world patient complexity. The proposed treatment algorithm may facilitate safer implementation of non-antibiotic strategies. Prospective validation in a pragmatic multicenter trial is warranted.

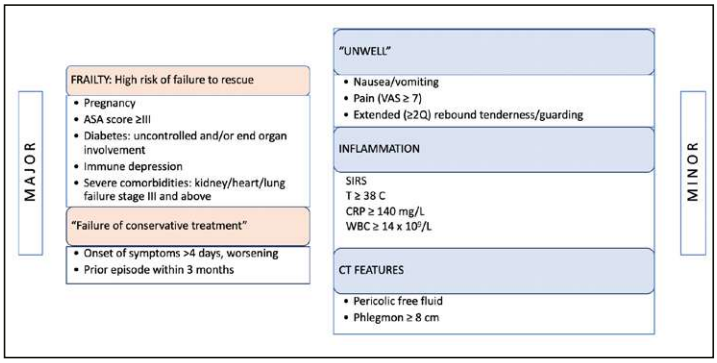



Table 1. Classification of worrisome features warranting antibiotic treatment in AUD

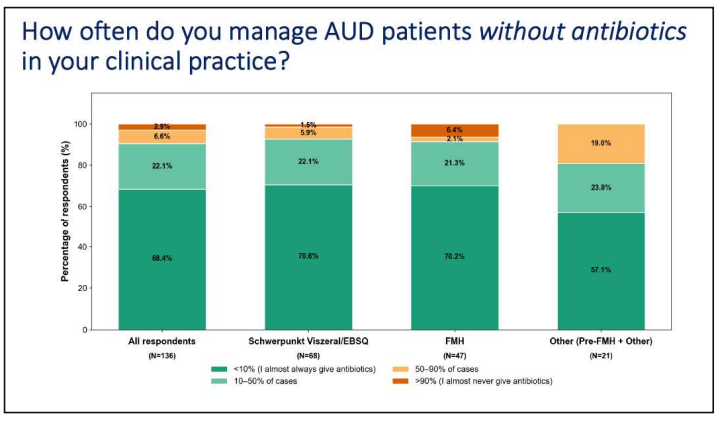



Figure 1. Online survey results showing frequency of antibiotic treatment for AUD in daily clinical practice

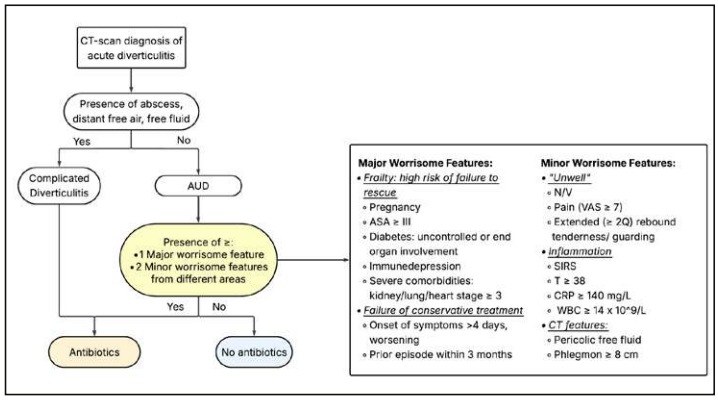



Figure 2. Proposed treatment algorithm for antibiotic prescription in AUD

**Robotic Management of a Diverticular Sigmoido-vesical Fistula Using Ureteric ICG Guidance and Total Intracorporeal Anastomosis**
G. Staccini, D. Christoforidis, S. G. Popeskou
General Surgery, EOC, Lugano

**Background:** Diverticular colovesical fistulas represent a complex surgical condition due to severe inflammation and distortion of pelvic anatomical planes, with a significant risk of ureteral injury. Robotic surgery offers enhanced visualization and dexterity in these challenging cases. Intraureteral indocyanine green (ICG) fluorescence has emerged as an adjunct to improve ureteral identification and surgical safety.
**Aims:** To illustrate a fluorescence-guided robotic technique for the treatment of diverticular sigmoido-vesical fistula, highlighting the role of intraureteral indocyanine green in preventing ureteral injury during complex inflammatory dissection.
**Methods:** We report a robotic approach for the treatment of a diverticular sigmoido-vesical fistula using the da Vinci Xi system. Preoperative imaging and multidisciplinary planning were performed to assess disease extent and anatomical alterations. After urological consultation, retrograde intraureteral ICG instillation was carried out to enable real-time ureteral visualization under near-infrared imaging. Dissection was performed in a fluorescence-guided manner, followed by segmental sigmoid resection with total intracorporeal colorectal anastomosis and robotic bladder repair. Enhanced Recovery After Surgery (ERAS) principles were applied.
**Results:** ICG fluorescence allowed clear identification of the ureters throughout the dissection, facilitating safe mobilization in inflamed tissues. A total intracorporeal colorectal anastomosis was successfully constructed with adequate perfusion assessment. The bladder defect was repaired robotically and confirmed to be watertight. No intraoperative or postoperative complications occurred. The patient had an uneventful recovery and was discharged on postoperative day three.
**Conclusion:** Robotic management of diverticular sigmoido-vesical fistulas combined with intraureteral ICG fluorescence is feasible and safe. Fluorescence-guided dissection enhances anatomical orientation, reduces the risk of ureteral injury, and improves precision in complex inflammatory pelvic surgery.

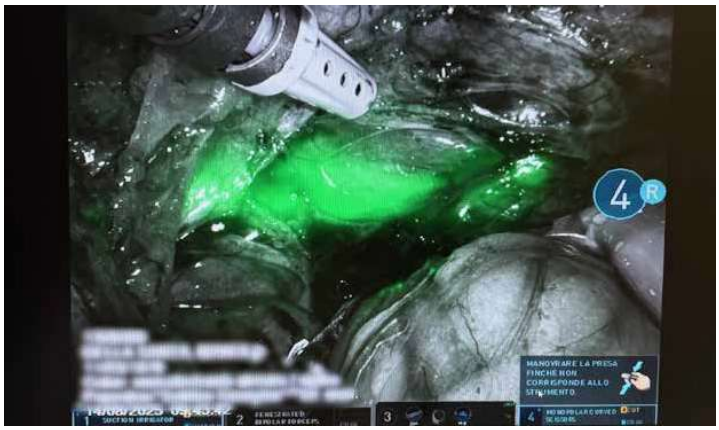


Figure 1. Cattura

**Cecostomy Catheter for Antegrade Colonic Irrigation as a Reversible Step-Up Intervention in Refractory Chronic Constipation: A Case Series**
J. Vidanovic, P. Aeschbacher, L. Brügger, Y. Borbély, A. Kohler
Viszeralchirurgie, Inselspital University hospital of Bern, Bern

**Background:** Chronic constipation refractory to medical management may necessitate irreversible surgical interventions such as colectomy, which carry variable efficacy and significant morbidity. A reversible, minimally invasive alternative is needed to bridge conservative therapy and definitive surgery.
**Aims:** To evaluate the safety, feasibility, and clinical efficacy of cecostomy catheter implantation for antegrade colonic irrigation in patients with severe constipation refractory to medical treatment.

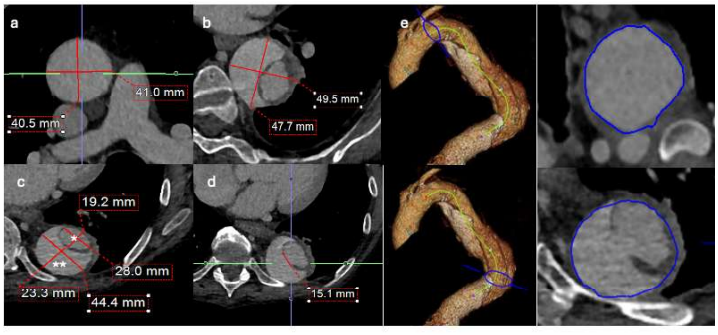
**Methods:** We retrospectively analyzed a case series of seven female patients (median age 45 years, IQR 31–53), with constipation refractory to medical therapy. Perioperative parameters and complications in addition to pre- and postoperative functional outcomes were assessed using the Cleveland Constipation Score (CCS), Gastroparesis Cardinal Symptom Index (GCSI), and a 10-point quality-of-life (QoL) scale. Follow-up averaged 3.8 months. Descriptive statistics were applied.
**Results:** CCS improved from median 21 (IQR 17-25) to 12 (IQR 7-18). Six of seven patients reported reduced gastroparesis symptoms, one remained unchanged. QoL increased from median 1 (IQR 1-4) to 5 (IQR 4-8). All patients reported they would recommend the procedure to others with similar symptoms. Complications included three cases of transient pain and three accidental catheter dislodgements. No infections, ileus, or reoperations occurred. In two patients the cecostomy catheter was explanted - both subsequently underwent stoma formation.
**Conclusion:** Cecostomy catheter implantation is a safe, reversible, and effective intervention for refractory constipation, significantly improving symptom burden and QoL. Notably, it also ameliorated gastroparesis-related symptoms in most patients. As a low-risk, step-up procedure, it offers a valuable intermediate option before irreversible surgery. Limitations include small sample size and short-term follow-up.

## Free Communication II – SGG

### Baseline Descending Aortic Diameter Drives Long-Term Failure of Conservative Management in Uncomplicated Type B Aortic Dissection

S. Jungi[1], D. Becker[1], H. von Tengg-Kobligk[2], V. Makaloski[1], D. Kotelis[1]
[1]Universitätsklinik für Gefässchirurgie, Inselspital, Bern; [2]Universitätsinstitut für Diagnostische, Interventionelle und Pädiatrische Radiologie, Inselspital, Bern

**Background:** Failure of conservative management in patients with initially uncomplicated acute type B aortic dissection (TBAAD) remains clinically relevant.
**Aims:** This study evaluated whether commonly cited imaging-based morphologic features are associated with long-term failure of conservative management.
**Methods:** This retrospective single-center cohort study included consecutive patients treated for uncomplicated TBAAD between 2000 and 2018 with high-quality baseline computed tomography angiography and ≥1 year of imaging follow-up. Baseline morphologic parameters were assessed with centerline-based analysis and included descending thoracic aortic diameter (DTAD), ascending aortic diameter, true and false lumen dimensions, and primary entry tear (PET) characteristics (Fig. 1). Failure of conservative management was defined as the need for surgical or endovascular intervention >3 months after initial presentation. Cox proportional hazards models evaluated associations between morphologic parameters and subsequent intervention.
**Results:** Eighty-nine patients (median age 65 years; 65.2% male) were included with a median follow-up of 7.6 years. During follow-up, 33 patients (37.1%) required aortic intervention, mainly due to aneurysmal degeneration or rapid growth. Baseline DTAD was significantly larger in patients requiring intervention (median 41 mm vs. 37 mm; p=0.026). DTAD ≥40 mm was independently associated with intervention (adjusted hazard ratio [HR] 2.15; 95% confidence interval [CI] 1.05–4.42; p=0.037). DTAD analyzed as a continuous variable remained associated with intervention risk (HR 1.09 per mm; 95% CI 1.02–1.16; p=0.011). Other morphologic features were not associated with aortic growth or need for intervention.
**Conclusion:** Baseline descending thoracic aortic diameter was the only morphologic imaging feature consistently associated with long-term failure of conservative management in uncomplicated TBAAD.




a) Measurement of maximum diameter of ascending aorta
b) Measurement of maximum diameter of dissected descending aorta
c) Measurement of true (*) and false (**) lumen diameter
d) Measurement of size of primary entry tear
e) Measurement of distance between LSA and primary entry tear

Figure 1

### Sex Relater Outcomes after Endovascular Repair of Complex and Thoraco-abdominal Aneurysms: the SERENA Study

R. D'amico[1], A. Wanhainen[2], K. Mani[2], C. F. Prendes[2]
[1]Vascular Surgery, Universitätsspital Basel, Basel; [2]Uppsala University Hospital, Uppsala, Sweden

**Background:** Short-term outcomes after complex abdominal aortic aneurysms (cAAAs) and thoraco-abdominals (TAAAs) appear to be worse in women, yet evidence is inconsistent regarding the role of female sex on long-term aortic events and mortality.
**Aims:** The aim of this study was to evaluate long-term outcomes after complex endovascular aortic repair according to sex.
**Methods:** Single-center, retrospective comparative cohort study. All patients undergoing complex endovascular repair for cAAAs or TAAAs between 2010–2023 were included. The primary endpoint was 5-year aortic-related events; secondary endpoints were 5-year mortality and reinterventions. Kaplan-Meier and Cox regression analysis were used to assessed long-term outcomes.
**Results:** A total of 403 patients (300 men and 103 women) with a mean age of 73.5 ± 7.3 years were included. Women had more TAAAs (52% vs. 21.6%; p < .0001) and more urgent repairs (21.8% vs. 9.6%; p=<.001). Thirty-day aortic related events and reintervention rates were higher in women (36.9% vs 17.3%; p = <.001% and 19.4% vs 9.7%; p=.037). Sex was an independent predictor of short-term aortic-related events (OR 2.10, 95% CI 1.08–4.11). Mean follow-up was 83.0 ± 3.4 months. The five year freedom from aortic-related events was 56% in women vs 79% in men (Log-Rank p =.<001), with sex being the strongest predictor of adverse aortic-related events (HR 2.31, 95% CI 1.30 - 4.11). The five-year overall survival rate was 53% in women vs 65.2% in men (log-rank p =.013). Female sex was independent risk-factor for long-term mortality (HR 1.71, 95% CI 1.15–2.54). Long-term reintervention rates were not significantly higher in women (Log-rank p = .073) and sex was not identified as an independent risk factor.
**Conclusion:** Female sex independently predicts both short- and long-term aortic-related events and mortality after complex EVAR.

### Synergistic Reduction of Radiation Exposure in FEVAR: Early Monocentric Outcomes Using the BeFlared Bridging Stent using an Ultra-Low Dose (ULD) Protocol

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Gefässchirurgie, Luzerner Kantonsspital, Lucerne

**Background:** Fenestrated and Branched endovascular aneurysm repair (f/bEVAR) is a technically demanding procedure associated with high fluoroscopy times and significant radiation exposure for both the patient and the operating team.
**Aims:** This study aimed to evaluate the early clinical outcomes and radiological efficiency of the new BeFlared bridging stent (Bentley, Hechingen, Germany) – which enables stent deployment and flaring in a single step using a step-balloon – in combination with the institutional "Ultra Low-Dose EVAR" protocol in use at our institution (Luzerner Kantonsspital).
**Methods:** This monocentric observational study included 15 consecutive patients treated by FEVAR. All procedures were performed using the BeFlared bridging stent. A dedicated Ultra-Low-Dose Protocol was applied in all cases, utilizing 2D-3D fusion imaging and optimal collimation to minimize exposure. Primary endpoints were technical success, early safety, and radiological parameters including Dose Area Product (DAP) and fluoroscopy time.
**Results:** Technical success was 100%. The single-step deployment mechanism of the BeFlared stent contributed, in conjuction with the Ulta-Low-Dose Protocol, to lower the median DAP. Stent-related re-interventions were not observed within the first 6 weeks.
**Conclusion:** The combination of the novel BeFlared bridging stent and a dedicated Ultra-Low-Dose Protocol proved to be safe and effective in this monocentric series (n=15). The simplified handling of the stent appears to act synergistically with radiation-sparing measures, leading to a relevant reduction in radiation exposure. Larger cohorts are required to confirm these observations.

### Early Lessons Learned After Our First Implantations of an Off-the-Shelf Single-Branch TEVAR

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[1]Vascular Surgery, Inselspital, University Hospital Bern, Bern; [2]Vascular Surgery and Kidney Transplantation, University Hospital Basel, Basel

**Background:** Thoracic endovascular aortic repair (TEVAR) involving the proximal descending thoracic aorta often requires coverage of the left subclavian artery (LSA), which may increase the risk of stroke or upper limb ischemia. Off-the-shelf single-branch TEVAR devices offer an alternative to surgical debranching or custom-made grafts, particularly in urgent settings.
**Aims:** To evaluate early clinical outcomes, technical feasibility, and intraoperative challenges during initial implantations of an off-the-shelf single-branch TEVAR device.
**Methods:** A retrospective single-center case series was conducted including consecutive patients treated with single-branch TEVAR between January and September 2025. Patient characteristics, procedural details, intraoperative events, and early postoperative outcomes were analyzed. Follow-up included in-hospital and three-month outcomes.
**Results:** Twelve patients were included (mean age 68 years) and 67% were female (Figure. 1). Indications comprised thoracic aortic aneurysm (50%), aortic dissection (33%), intramural hematoma with aneurysm (8%), and penetrating aortic ulcer (8%) (Figure. 2). Technical success was achieved in all cases. Mean procedure time was 110 minutes, and mean hospital stay was 7 days. Cerebrospinal fluid drainage was used in one third of patients. Two intraoperative device- or access-related complications occurred and were successfully managed endovascularly or surgically. Femoral access closure failure occurred in four patients and was

treated with additional closure devices. One patient experienced a transient posterior stroke with complete neurological recovery, and one patient developed transient paraparesis following a secondary endovascular procedure. No reinterventions or 30-day mortality occurred. LSA branch patency was 100%, and three-month follow-up was uneventful apart from one minor access-site hematoma.

**Conclusion:** Early experience with off-the-shelf single-branch TEVAR demonstrates high technical success and favorable short-term outcomes. Immediate device availability represents a major advantage in urgent cases. Awareness of device-specific and access-related complications is essential during the initial learning phase. Further studies with longer follow-up are required to assess long-term durability and branch patency.

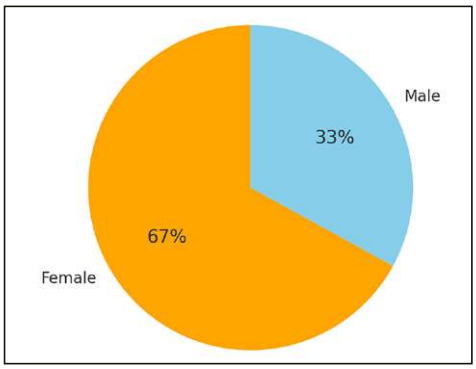


**Figure 1. Gender distribution**

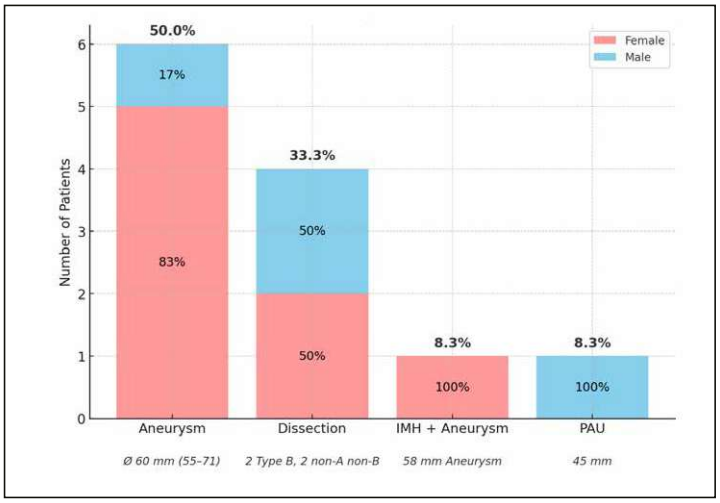


**Figure 2. Indications**

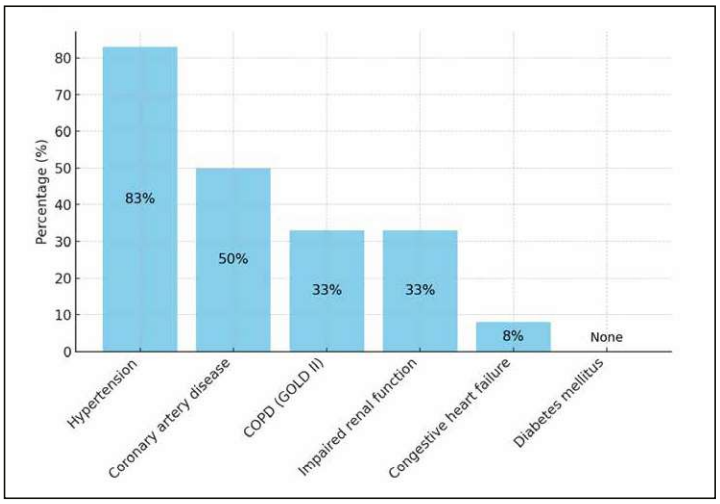


**Figure 3. Patient comorbidities**

### Type II Endoleak After EVAR: Sac Growth and Reintervention in Long-Term Follow-Up

S. Ruddakies, S. Hofer
Vascular Surgery, Cantonal Hospital of Graubünden, Chur

**Background:** The clinical significance of type II endoleak (T2EL) after endovascular aneurysm repair (EVAR) remains controversial. Although typically considered harmless, T2EL has been associated with postoperative aneurysm sac enlargement.

**Aims:** To evaluate aneurysm sac diameter changes and rate of reinterventions in patients with T2EL after EVAR in a single-center cohort.

**Methods:** We performed a retrospective single-center review of patients undergoing infrarenal EVAR between 2014 and 2024. Patients with ≥1.5 years of follow-up with CT angiography were included. Sac growth or shrinkage was defined as a ≥5 mm increase or decrease in diameter. Aneurysm sac changes and reinterventions due to isolated T2EL were analyzed further.

**Results:** The cohort included 195 patients with a mean follow-up of 54 months. Overall, sac shrinkage occurred in 116 patients (59.5%), sac growth in 31 (15.9%), and no relevant change in 48 (24.6%). Sac growth within the first postoperative year occurred in 2.6%. Patients without any endoleaks (n=63, 80.8%) and minimal growth (n=1, 1.3%). Patients with isolated T2EL (n=87) had less shrinkage (n=45, 51.7%) and increased sac growth (n=18, 10.7%). Of those, 14 patients (16.1%) underwent reintervention, mainly due to proximal or distal sealing zone dilation. No secondary ruptures occurred. Coiling was performed in 4 (4.6%) cases, 2 of which showed sac shrinkage afterwards.

**Conclusion:** Isolated T2EL is associated with significantly higher aneurysm sac growth compared to patients without endoleak. In these patients reintervention was necessary in 16.1%. The absence of rupture suggests that sac growth related to T2EL may be managed safely with strict CT surveillance to detect complications such as progressive sealing zone dilation and shortening.

### Open Conversion Using a Hybrid Thoracoabdominal Graft After Failed Endovascular Repair of a Thoracoabdominal Aortic Aneurysm

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**Background:** Open conversion after failed endovascular repair of thoracoabdominal aortic aneurysms remain a major surgical challenge, particularly in patients with extensive prior stent grafting and limited remaining endovascular options. Hybrid thoracoabdominal prostheses combine surgical graft replacement with stented segments, allowing treatment without thoracotomy or extracorporeal circulation.

**Conclusion:** This case illustrates the complexity and risks of open conversion after failed endovascular thoracoabdominal aneurysm repair. The thoracoabdominal hybrid graft represented the only viable therapeutic option and allowed technically successful reconstruction. The fatal outcome resulted from a cascade of postoperative complications rather than device-related failure. Hybrid prostheses remain a valuable salvage option in selected patients but require meticulous perioperative management and careful patient select.

**Case presentation:** A 63-year-old male with end-stage renal disease on hemodialysis presented with a Crawford type II thoracoabdominal aortic aneurysm previously treated by thoracic endovascular aortic repair and four-vessel branched abdominal endovascular repair. Follow-up imaging demonstrated two type III endoleaks: one due to disconnection between thoracic and abdominal stent grafts and a second caused by a graft defect in the branched main body. No further endovascular treatment options were available. An open conversion using a custom-made thoracoabdominal hybrid graft with branches to the coeliac trunk and superior mesenteric artery was performed. The renal arteries were sacrificed due to end-stage renal disease. Intraoperatively, splenic injury necessitated splenectomy. Postoperatively the patient developed peritonitis and presumed ischemic bowel disease requiring right hemicolectomy and cholecystectomy followed by creation of a terminal ileostomy. Sonication of the explanted graft revealed low-grade infection with Cutibacterium acnes. Despite targeted antimicrobial therapy the patient developed hospital-acquired pneumonia complicated by aspiration leading to in-hospital cardiac arrest and severe hypoxic-ischemic encephalopathy. Neurological recovery did not occur and the patient died during the same hospital stay.

### Electrosurgical Transcatheter Aortic Septotomy for Endovascular Repair of a Thoracoabdominal Post-dissection Aneurysm With a 4 mm Narrow True Lumen

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**Background:** Post-dissection thoracoabdominal aneurysms are predominantly treated endovascularly. In patients with a narrow true lumen, endovascular treatment is technically challenging. We present a case with a severely narrowed (4 mm) true lumen between the celiac artery (CA) and the superior mesenteric artery (SMA).

**Conclusion:** Transcatheter electrosurgical aortic septotomy is a valuable technique to facilitate endovascular exclusion of thoracoabdominal post-dissection aneurysms in patients with a severely narrowed true lumen.

**Case presentation:** A 62-year-old female presented with an asymptomatic, progressively enlarging post-dissection thoracoabdominal aneurysm measuring 61 mm. Eight years earlier, she had suffered an acute complicated type B aortic dissection with limb malperfusion, which was treated with juxtarenal open aortic repair using a bifurcated graft and femoral thrombectomy. One year later, a distal aortic arch aneurysm was treated with a partial arch replacement and bypass to the left subclavian artery. Over subsequent years, the remaining thoracoabdominal aorta continued to enlarge gradually. The anatomy was highly complex due to a severely narrowed true lumen with a progressively decreasing diameter, measuring only 4 mm between the celiac trunk (CT) and the superior mesenteric artery (SMA) (Fig. 1). Endovascular repair was planned. Initially, partial debranching with a carotid-subclavian bypass was performed because of a short proximal landing zone. Subsequently, transcatheter electrosurgical aortic septotomy was carried out to obtain access to the CT and SMA from the false lumen, followed by thoracic endovascular aortic repair (TEVAR) in the false lumen. After computed tomography angiography (CTA), a custom-made four-branch endograft (4-branch BEVAR) was manufactured. Completion of the endovascular exclusion using the 4-branch BEVAR was successfully performed via a femoral approach without complications. Postoperative CTA demonstrated

complete exclusion of the thoracoabdominal post-dissection aneurysm with no evidence of an endoleak (Fig. 2).

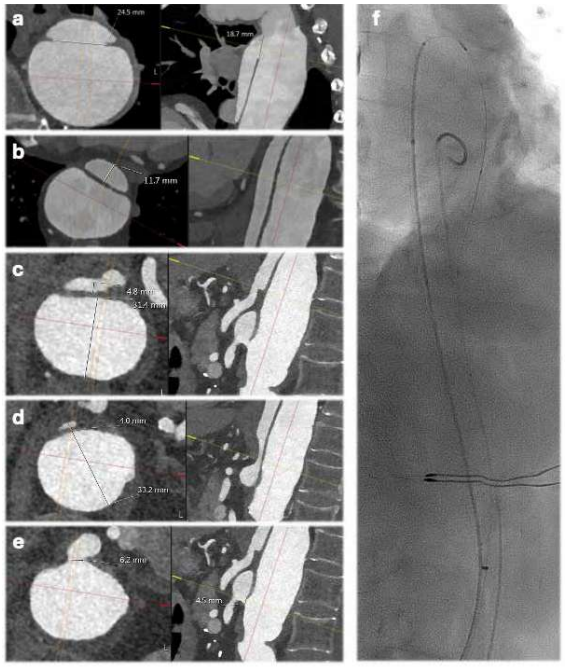


Figure 1


Figure 2

**Hybrid Approach for Type Ib Endoleak after Complex Endovascular Aortic Aneurysm Repair of a Crawford type II thoracoabdominal aortic aneurysm**

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**Background:** Despite the availability of iliac branched devices (IBDs), many patients are unsuitable for their use due to unfavorable anatomy (e.g. short common iliac artery, iliac artery tortuosity, aneurysmatic internal iliac artery (IIA), lack of landing zone in internal iliac artery). Therefore, alternative techniques to maintain pelvic perfusion remain crucial.
**Conclusion:** This case highlights how an hybrid approach offers a valuable treatment option in anatomically challenging situations where preservation of branch vessel perfusion is critical. This approach allows for durable aneurysm or endoleak exclusion mitigating the risks associated with direct overstenting of the IIA.
Other possible approaches for an iliac pathology would be:

- IIA occlusion and Overstenting: This would be the simplest way, using an Amplatzer in the IIA and extending the Stent-Graft. But maintaining iliac perfusion was critical in this patient due to their extensive aortic coverage.
- Bell-bottom technique: Was not possible anymore since the patient already had a stent the almost reached the iliac bifurcation and we are not a fan of this tenchique since it includes having a distal seal in an aneurysmatic vessel.
- IBD: Contraindicated due to significant kinking of the external iliac artery, the insufficient length of the internal iliac artery and the already positioned stent at the level of the iliac bifurcation.

**Case presentation:** A 76 female patient presented with a Type Ib endoleak originating from the right iliac artery detected on a CT scan. The patient received a staged endovascular repair of a Crawford Type II thoracoabdominal aortic aneurysm (TAAA). During the follow up a Type Ib endoleak originating from the right iliac artery had been found. Therefore an hybrid approach was chosen, consisting of Internal/External Iliac Artery Bypass and Stent Graft Extension.

## Pediatric Plastic Surgery

**Assessment of Paediatric Skin Barrier Function Using Non-Invasive Technology: Establishing Reference Values for Long-Term Burn Healing**

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**Background:** Long-term evaluation of burn wound healing in children is still predominantly based on subjective clinical assessment and visual scar scoring. The absence of objective, standardized reference values limits reproducibility, comparability and personalization of follow-up. Recent non-invasive technologies allow quantitative assessment of skin physiology and may offer a reliable alternative for objective monitoring.
**Aims:** To establish age and pigmentation adjusted reference values for key skin barrier parameters in healthy paediatric patients using non-invasive measurement technology, providing a benchmark for objective long-term evaluation of burn healing.
**Methods:** A prospective study was conducted in 153 healthy paediatric subjects aged 0–18 years. Skin barrier function was assessed using a standardized non-invasive device measuring trans-epidermal water loss (TEWL), melanin index and erythema index. Measurements were performed at four anatomical sites frequently involved in paediatric burns (palm, arm, back and thigh), with three repeated measurements per site. Participants were stratified by age group and skin phototype according to the Fitzpatrick scale. Statistical analysis included non-parametric comparisons and linear regression models.
**Results:** TEWL values showed a strong anatomical dependency, with significantly higher values at the palm compared to trunk sites ($p < 0.001$, Figure 1). No clinically relevant differences were observed across age groups. Skin phototypes alone did not reliably discriminate TEWL values (Figure 2). However, a significant inverse association was identified between melanin index and TEWL at both palmar and trunk sites, independent of age ($p = 0.012$ and $p = 0.018$, respectively, Figure 3).
**Conclusion:** This study demonstrates the feasibility and clinical relevance of non-invasive skin barrier assessment technology in paediatric populations. The established reference values provide a standardized, objective framework for long-term evaluation of skin healing after burns and support the integration of quantitative skin physiology measurements into future paediatric burn follow-up and personalized scar management strategies.

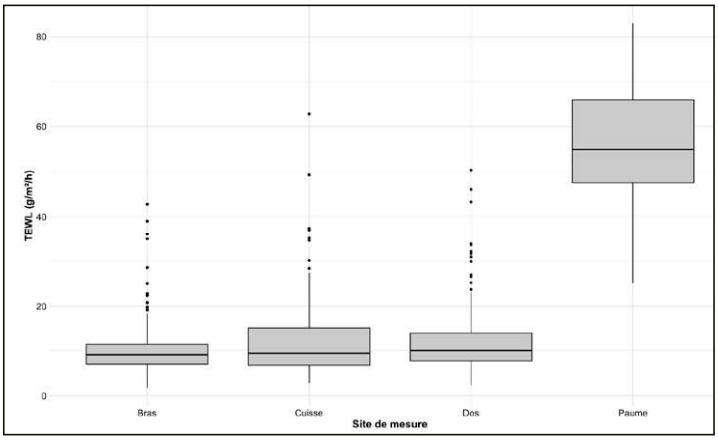


**Figure 1. Distribution of TEWL according to measurement site**

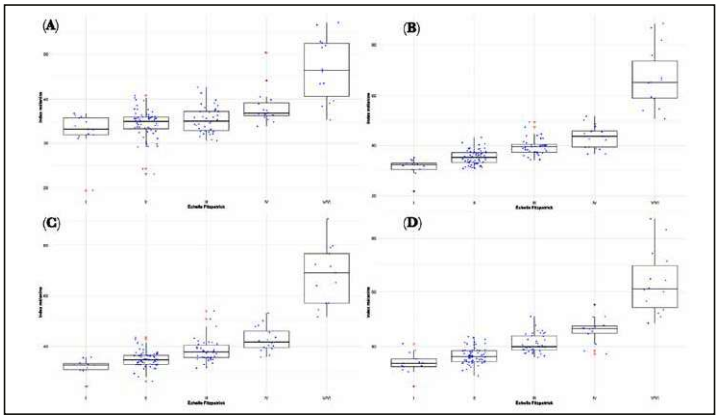


**Figure 2. Distribution of melanin values according to the Fitzpatrick scale, (A) palm; (B) arm, (C) back, (D) thigh**

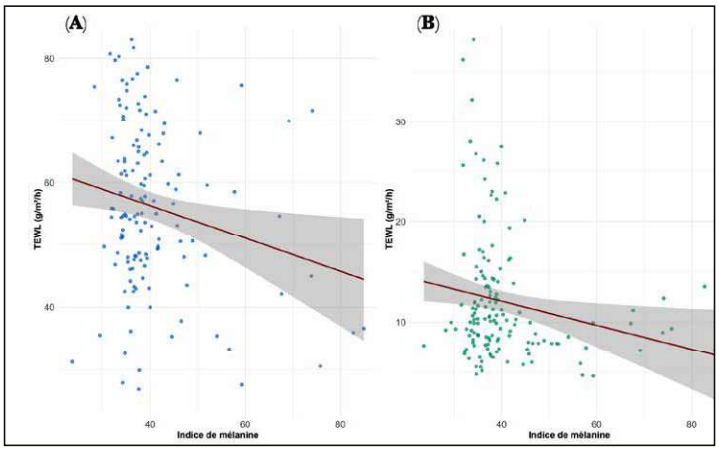


**Figure 3. Relationship between TEWL of the palm of the hand and melanin index (B) Relationship between TEWL of exposed areas (arms, back, thighs) and melanin index**

### Disaster Medicine: Surgical Management of a Mass Influx of Burn Patients

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**Background:** Managing a sudden influx of patients in an emergency setting is highly challenging, involving infrastructure constraints, organizational demands, equipment availability, and the delivery of appropriate medical care. In burn patients, the challenges lie not only in the acute phase but also in long term follow up.
**Aims:** To describe the organizational, surgical, and multidisciplinary strategies implemented to manage a sudden mass influx of burn patients in a tertiary pediatric and adult burn center.
**Methods:** This study describes the arrival and management of multiple burn patients in a tertiary referral center (CHUV). In the resuscitation area, pediatric and adult care pathways may be separated or merged depending on injury severity. Acute phase management follows a unified "burn pathway," with pediatric and adult intensive care units separated but adjacent. Adult and pediatric operating rooms are located in two connected buildings, with two dedicated decontamination showers available (and a third adult shower if required). Four adult intensive care beds and two pediatric intensive care beds are prepared for critically burned patients.
**Results:** Twenty two burn patients arrived at CHUV on January 1, 2026. Within the first 48 hours, four critically burned children were managed by pediatric intensive care and pediatric plastic surgery teams, while five severely injured adults were treated by adult teams. A crisis unit coordinated all local, national, and European collaborations. Pediatric surgical treatments during the resuscitation phase included shower based mechanical cleansing, debridement, dermal abrasion, autologous skin grafting, fish/bovine derived xenografts, autologous cell spray application, autologous cultured skin grafts produced by the CHUV cell production center, split thickness flap coverage, and the use of hydrofiber dressings, biosynthetic cellulose, and oxygen enriched wound components.
**Conclusion:** Survival of critically burned patients requires complex, high performance resuscitation, highly skilled surgical teams, and mastery of a wide range of advanced therapeutic materials.

### End-of-Growth Evaluation of Children Born With Orofacial Clefts: Questionnaire Comparing the Satisfaction of Patients, Parents, and Professionals

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**Background:** Outcome satisfaction in cleft lip (CL), cleft palate (CP), and cleft lip and palate (CLP) management is crucial but may differ among patients, parents, and professionals. No previous study has compared satisfaction among these three groups with a common instrument. Ignoring such differences risks misaligned care and expectations.
**Aims:** Assess and compare satisfaction, at the end-of-growth, among adolescents with CL, CP, or CLP, their parents, and professionals; explore associations with subjective social status (SSS).
**Methods:** Observational cross-sectional study of adolescents (14–20 years) born with a cleft treated at CHUV, their parents and five professionals (pediatric surgeon, maxillofacial surgeon, otolaryngologist, speech therapist, psychologist); SSS was measured using the MacArthur scale; satisfaction using the Cleft Evaluation Profile (CEP) and Cleft Hearing, Appearance and Speech Questionnaire (CHASQ). Patients and parents completed all questionnaires; professionals completed CEP and CHASQ.
**Results:** Preliminary analysis includes unilateral CLP (uCLP) patients collected between 01.07.2024 and 30.06.2025. Ten patients with uCLP and 14 parents. Median SSS was 7.4 (IQR 2.5) for patients and 6.0 (IQR 1.0) for parents. CEP medians were similar for parents (6.1 [IQR 0.6]) and patients (6.1 [IQR 0.8]), slightly higher than professionals (5.7 [IQR 0.7]). CHASQ scores were highest for parents (9.2 [IQR 0.7]), followed by patients (8.2 [IQR 1.3]) and professionals (8.1 [IQR 1.5]). Significant differences were observed across groups for CHASQ total ($p=0.03$) and cleft-related items ($p=0.04$), notably median difference between parents and professionals for CHASQ total (0.92, $p=0.01$) and between patients and parents (-1.22, $p=0.04$) and parents and professionals (1.36, $p=0.01$) for cleft-related items. Among patients, SSS strongly correlated with CHASQ ($p<0.03$).
**Conclusion:** Adolescents' perspectives must be solicited after a long follow-up. Their views may differ from parents and professionals, influencing care priorities. SSS may help to identify patients at risk of low satisfaction and psychosocial impact. Professionals should consider potential misalignment with family expectations.

### Successful Treatment of Traumatic Wounds Using Decellularized Intact Fish Skin

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**Background:** Decellularized intact fish skin (Kerecis® Omega3) is a processed acellular dermal matrix, maintaining a porous microarchitecture analogous to human skin and retaining long-chain omega-3 fatty acids. As a scaffold, it supports cellular infiltration and wound bed granulation, with growing clinical use in complex wounds.
**Aims:** To describe two traumatic soft-tissue defects treated with decellularized fish skin combined with negative-pressure wound therapy (NPWT), illustrating a strategy that expedited wound closure while avoiding invasive reconstructive approaches.
**Methods:** Patient 1 is a 3-year-old boy who sustained a deep heel soft tissue laceration by a lawnmower. Operative exploration revealed a voluminous soft tissue defect down to the calcaneum with minor involvement of the long plantar ligament. After debridement, subcutaneous tissue and skin were partially approximated, leaving a 3 × 3 cm residual defect. On post-traumatic day (PTD) 28,a Kerecis® Omega3 patch was applied and covered with NPWT. Patient 2 is a 14-year-old girl who sustained multiple bilateral lower-limb fractures and extensive soft-tissue trauma after a 25m fall. Following staged osteosynthesis and multiple operative revisions, a substantial lateral malleolar soft-tissue defect with dead space persisted. At PTD 80, the wound was treated with Kerecis® Omega3 and serial NPWT with osteosynthesis material still in situ.
**Results:** In Patient 1, by PTD 35, the defect filled to skin level with healthy granulation tissue, allowing spontaneous epithelialization and return to normal activities with physiotherapy. In Patient 2, by PTD 99, the wound also filled with healthy granulation tissue, enabling transfer to inpatient rehabilitation with outpatient-based wound care. In both patients, progressive granulation avoided escalation to flap-based coverage.
**Conclusion:** In these two traumatic cases, Kerecis® Omega3 used adjunctively with NPWT promoted rapid granulation and wound bed restoration, supporting early rehabilitation with satisfactory cosmetic and functional outcomes. Prospective comparative studies are required to define optimal indications and protocols in acute trauma.

### Pediatric Foot Soft-Tissue Reconstruction With Fish-Skin Acellular Dermal Matrix: A Case Series

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**Background:** Traumatic soft-tissue defects of the foot in pediatric patients represent a major reconstructive challenge due to limited local tissue availability, high functional demands, and the need to preserve long-term mobility. Degloving injuries and ischemic necrosis frequently result in tendon or bone exposure, making primary closure or immediate skin grafting inadequate.

Although flap reconstruction is an established option, it is associated with increased surgical complexity and donor-site morbidity, particularly in children. Artificial dermal substitutes have emerged as an alternative to optimize wound bed preparation. Kerecis® Omega3 Wound, an acellular fish-skin-derived matrix, has shown promising results in adult wound care, but pediatric data remain limited.

**Conclusion:** Kerecis® Omega3 Wound appears to be a feasible and effective adjunct for complex pediatric foot soft-tissue defects, allowing wound stabilization and functional recovery.

**Case presentation:** We retrospectively reviewed four pediatric patients aged 8 to 17 years treated at our university hospital between October 2023 and December 2025. Three patients presented traumatic degloving injuries and one presented ischemic foot necrosis. All patients underwent debridement, necrosis excision, and negative pressure wound therapy prior to Kerecis® application. One patient required foot and ankle amputation due to extensive bone necrosis, and two underwent secondary fifth-toe amputation. Kerecis® Omega3 Wound (7 x 20 cm, meshed and not meshed) was applied two to three times in all cases, followed by split-thickness skin grafting. One postoperative infection led to partial graft loss. At follow-up, the amputated patient achieved near-normal physical activity, one developed complex regional pain syndrome, and two achieved progressive weight-bearing with improving pain. Representative intraoperative and postoperative outcomes are illustrated in Figure 1.


**Figure 1. Intraoperative application (1a, 2a, 3a, 4a) and final postoperative outcome (1b, 2b, 3b, 4b) of Kerecis® Omega3 Wound for each patient. Traumatic degloving injuries (Patient 1-3) and ischemic necrosis (Patient 4)**

## Acellular Dermal Matrix Derived From Codfish Skin as an Alternative to Autologous Grafts in Vestibuloplasty for Bilateral Cleft Lip and Palate: Two Case Reports

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[1]Department of Pediatric Surgery, CHUV – Lausanne University Hospital, Lausanne; [2]Department of Oral and Maxillofacial Surgery, CHUV – Lausanne University Hospital, Lausanne

**Background:** In patients with bilateral cleft lip and palate (BCLP), the vestibule is often shallow in the premaxillary region; this can compromise gingival quality and lead to inadequate projection of the upper lip. Vestibuloplasty can restore the space between teeth and upper lip, and autologous grafts remain the gold standard for vestibular reconstruction. However, the need for a donor site introduces morbidity and potential complications. Tissue engineering provides relevant alternatives for tissue replacement by reproducing the structural, mechanical, and biological characteristics of native tissues. Acellular dermal matrix derived from codfish skin (Kerecis® Omega3 Wound) have emerged as a new class of promising biomaterials for soft tissue regeneration.

**Conclusion:** The acellular dermal matrix derived from codfish skin (Kerecis® Omega3 Wound) is a biocompatible and effective alternative to autologous grafts for vestibuloplasty. It offers promising results for mucogingival reconstruction.

**Case presentation:** We report two patients with BCLP – a 7-year-old boy and a 19-year-old female – both with a history of multiple surgical interventions, complaining of a lack of upper lip projection and an insufficient vestibular depth in the premaxillary region. Both underwent vestibuloplasty using Kerecis® Omega3 Wound as a substitute for autologous grafts. In both patients, the graft was well tolerated and showed early signs of vascularization. Improvement in vestibular depth, enhanced upper lip projection, and good functional mobility were achieved after six-month of follow-up. Both patients experienced uneventful recovery and reported high satisfaction with the aesthetic results.

## Surgical Management of Ecthyma Gangrenosum of the Genitoperineal Region in a 4-Year-Old Girl with Acute Lymphoblastic Leukaemia

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**Background:** Ecthyma gangrenosum (EG) is a rare but severe infectious skin condition characterised by rapid progression to gangrenous ulceration, which may be mutilating. The most common aetiology is Pseudomonas sepsis, leading to ischaemic necrosis caused by bacterial invasion of dermal blood vessels. EG predominantly occurs in immunocompromised patients, particularly those with haematological malignancies, and typically affects skin folds or the perineal and gluteal region. As a cutaneous manifestation of a potentially fatal systemic infection, EG requires immediate medical attention, including systemic antimicrobial therapy and local surgical management.

**Conclusion:** EG is a fulminant soft tissue infection in immunocompromised patients that requires prompt recognition and immediate multidisciplinary management. This case demonstrates an effective surgical strategy for managing extensive genitoperineal wounds using diverting colostomy and NPWT while maintaining a high level of comfort, with excellent functional and aesthetic results.

**Case presentation:** We report the case of a 4-year-old girl with acute lymphoblastic leukaemia and chemotherapy-induced neutropenia who developed Pseudomonas aeruginosa sepsis and EG of the genitoperineal region. Immediate systemic antibiotic therapy with meropenem was initiated and continued for 24 days. To minimise stool contamination of the affected area, a diverting colostomy with a mucous fistula was performed on day six. Owing to an excellent response to systemic therapy, surgical necrosectomy was delayed until complete demarcation of necrotic tissue had occurred (Fig.1). Necrosectomy resulted in a 10 × 6 cm full-thickness defect (Fig.2), which was temporarily managed with negative pressure wound therapy (NPWT) combined with partial primary closure of the labial portion, allowing early mobilisation with well-controlled pain. After clearance of blood cultures and sufficient granulation of the wound bed, temporary coverage with donor skin was performed, followed by definitive closure using a meshed split-thickness skin graft for a remaining defect measuring 4.3 × 4.7 cm, five weeks after symptom onset. Graft take was excellent, with a highly satisfactory functional and aesthetic outcome (Fig.3).

**Figure 1**

**Figure 2**

**Figure 3**

**Another Source of Near-fatal Bleeding – Late-onset Hemothorax Six Weeks after Uneventful Minimal Invasive Repair of Pectus Excavatum**

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[1]Kinderchirurgie, Ostschweizer Kinderspital, St.Gallen; [2]Faculty of Medicine, University of Basel, Basel

**Background:** The minimal invasive repair of pectus excavatum (MIRPE) and its' modifications represent the gold standard for surgical repair of chest wall deformities. Severe complications during and/or after MIRPE are rare but also underreported in the literature.
**Conclusion:** Accidental lesion of the internal mammary or intercostal vessels during pectus surgery represent a rare but potentially serious complication. Only a few cases with delayed and near-fatal bleeding as acomplication after MIRPE are reported in the literature, many of them never demonstrated a clear source of bleeding. Watchful waiting was finally successful in our case. However, immediate intervention (IMA coiling by interventional radiologist or thoracoscopic surgical repair) is mandatory in case of persistent bleeding. Pectus surgeons have to be aware of this possible risk and therefore we stress the need to report on such rare complications.
**Case presentation:** We report on a 14-year-old adolescent who underwent an uneventful repair of his asymmetric funnel chest. 5 weeks postoperatively the patient presented with shortness of breath and dizziness. Clinical examination and imaging showed a spontaneous massive right-sided hemothorax. After chest tube placement and initial drainage of 600ml bloody pleural effusion, Angio-CT imaging was performed without evidence of active bleeding, but suspicion of a lesion to the right-sided internal mammary artery. After evacuation of 1600ml bloody effusion with the patient still in stable condition, the chest tube was removed within 24 hours. The further clinical course was uneventful.

## Education & Training

**Prospective Validation of a Structured Virtual Reality Simulation Curriculum for Laparoscopic Cholecystectomy Training in Novice Surgeons**

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**Background:** Virtual reality simulation training (VRST) improves basic laparoscopic skills; however, evidence supporting structured, procedure-specific VR curricula remains limited. In particular, the transfer of VRST to operative performance in laparoscopic cholecystectomy (Lap-C) among novice surgeons has not been consistently demonstrated.
**Aims:** This study aimed to prospectively validate a structured, proficiency-based VRST curriculum for Lap-C and to compare its effectiveness with standard deliberate practice on the same simulator.
**Methods:** In a single-blinded prospective study, novice surgical trainees (<3 years of clinical experience) attending a basic laparoscopic training course were allocated either to a structured, procedure-specific VRST curriculum or to standard deliberate practice. Laparoscopic performance was assessed during a standardized porcine Lap-C. Blinded raters evaluated performance using the Global Operative Assessment of Laparoscopic Skills (GOALS) and a numerical rating scale (NRS). Inter-rater reliability was analyzed using intraclass correlation coefficients (ICC).
**Results:** Seventy-one participants were analyzed (intervention n = 19; control n = 52). The structured VRST group achieved significantly higher total GOALS scores compared with controls (median 17.6 vs. 14.0; p = 0.013). All GOALS subdomains – depth perception, bimanual dexterity, efficiency, tissue handling, and autonomy – were significantly improved in the intervention group. Subjective performance ratings were also higher following structured VRST (median NRS 6.7 vs. 4.8; p = 0.036). Inter-rater reliability for the total GOALS score was good (ICC = 0.80).
**Conclusion:** A structured, procedure-specific VR simulation curriculum significantly enhances laparoscopic cholecystectomy performance in novice surgeons compared to standard practice. These findings support the integration of structured VRST curricula into early surgical training to improve procedural proficiency and technical skill acquisition.

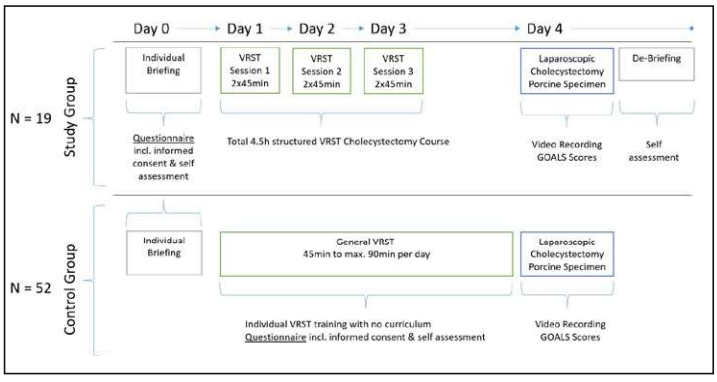


Figure 1

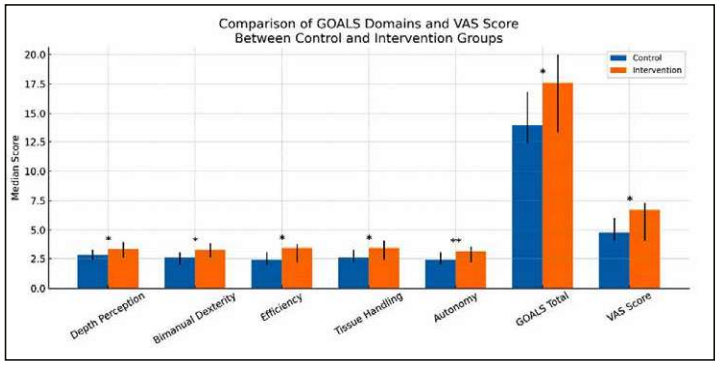


Figure 2

**Surgeon and Assistant Workload in Laparoscopic versus Robot-Assisted Surgery: Final Results From the ERGOROB Study**

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**Background:** Ergonomic challenges in minimally invasive surgery may contribute to musculoskeletal disorders and reduced performance. Although surgeons' workload has been studied, effects on assistants remain unclear.
**Aims:** To compare perceived workload among surgeons and assistants during robot-assisted versus laparoscopic surgery.
**Methods:** In this prospective, single-center study (May 2024–August 2025), procedures performed with both approaches were analyzed. Subjective workload was assessed postoperatively using a REDCap survey capturing the 6 NASA-Task Load Index dimensions and linked to clinical data from patient charts. Mixed-effects regression models evaluated associations between surgical approach, role (surgeon vs assistant), operative duration, and workload. A propensity score was estimated from surgical team and patient covariates and included as a single adjustment term.
**Results:** Of 234 eligible operations, 118 (59 laparoscopic; 59 robot-assisted) had complete team surveys, yielding 347 individual responses. Data were analyzed separately for surgeons and assistants. Surgeons (n=209) were predominantly male (73%) and older than assistants (n=138, mean 42 vs 29 years), who were mostly female (70%). Assistants reported more back pain than surgeons (25% vs 7%; p<0.0001). Workload differed by role and surgical access (interaction p=0.001). Surgeons reported lower physical demand (Δ -20, p<0.001), effort (Δ -5; p=0.05), and overall workload (Δ -5; p=0.05) in robot-assisted surgery. This reduction was confirmed in a propensity-score-adjusted model with a lower overall workload (Δ, -8.4; p=0.002). Among assistants, robot-assisted surgery was associated with higher mental (Δ +9.5; p=0.003) and temporal demand (Δ +13.4; p = 0.001) and a higher overall workload (Δ +7.1; p=0.012). However, after propensity-score adjustment, the higher overall workload was not statistically significant (Δ +5.4; p=0.09).
**Conclusion:** Robot-assisted surgery was associated with lower surgeon workload despite longer operative times, but assistant workload was not improved after adjustment. Identifying and addressing the factors that may limit ergonomic benefits for assistants could be valuable in supporting long-term team well-being.

**Can a Single-day Surgical Innovation Intervention Produce Measurable Gains In Innovation Competencies Among Undergraduate Learners?**

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**Background:** Modern surgical practice increasingly depends on innovation, interdisciplinary collaboration, and engagement with medical technology, particularly in complex fields such as surgical oncology. However, undergraduate training offers limited structured exposure to surgical innovation processes and early-stage MedTech development. As a result, students may lack confidence in identifying unmet surgical needs, developing solutions, and communicating innovative ideas. Short, immersive interventions such as hackathons may offer a scalable approach to simulate real-world surgical innovation environments, yet evidence of their impact within surgical contexts remains limited.
**Aims:** To evaluate whether a single-day, student-led surgical oncology innovation hackathon can produce measurable gains in innovation-related competencies among undergraduate learners.
**Methods:** The hackathon delivered keynote talks and industry expert mentorship to three-person multidisciplinary teams working on surgically themed problem statements. Pre- and post-event questionnaires assessed confidence in generating innovative ideas, interdisciplinary teamwork, prototype development, pitching ideas, applying technology to surgical problems, and identifying unmet needs in cancer surgery. Responses were recorded using five-point Likert scales. Pre- and post-event responses were analysed using Mann-Whitney U testing with Bonferroni correction (p < 0.0071).

**Results:** Fifty-four participants completed the pre-event questionnaire and forty-seven completed the post-event questionnaire, including students from medicine, engineering, and computer science. Significant improvements were observed in confidence in idea generation (median 3-4, z = -4.18, p < .00001), prototype development (median 3-4, z = -4.364, p < .00001), pitching and presenting ideas (median 3-4, z = -2.757, p = .00578), applying technology to surgical problems (median 3-4, z = -3.554, p = .00038), and identifying unmet needs in cancer surgery (median 3-4, z = -4.235, p < .00001). Improvements in teamwork were not significant. Overall satisfaction was high (85.1%).
**Conclusion:** A single-day surgical innovation hackathon produced measurable gains in innovation competencies among undergraduate learners, supporting its role as a scalable intervention for developing future surgeons' engagement with innovation and MedTech.

### Failure to Rescue in Surgery: When Systems Fail and Surgeons' Traits Matter – A Qualitative Study

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**Background:** Complications are inherent to surgery and can unfortunately lead to loss of patients. Death following a potentially manageable complication is referred to as failure to rescue (FTR) and is used as a surgical quality metric. But beyond its metric function, FTR is a traumatic event for patients, families and surgical teams. Despite its high stakes and emotional weight, FTR is rarely discussed, limiting opportunities for learning, support, and curriculum development.
**Aims:** To explore how surgeons make sense of FTR and derive implications for surgical education and culture.
**Methods:** Using a constructivist grounded theory approach and convenience sampling, we conducted semi-structured interviews with practicing or recently retired surgeons with a minimum of 5 years of experience in their senior years. Interviews were audio-recorded, transcribed verbatim, and iteratively coded using software-assisted analysis, constant comparison, and progressive categorization; recruitment continued until thematic sufficiency.
**Results:** Fourteen surgeons were interviewed, including 12 men (86%) and 2 women (14%), aged 34 to 68 years. Specialties included abdominal surgery (64%), orthopedics/traumatology (29%), and vascular surgery (7%). Five themes were developed: (1) Trapped in a flawed system: Surgeons perceived FTR as inevitable within systemic and institutional constraints; (2) Hierarchical barriers continue to predominate, hindering adequate reaction and shared decision-making; (3) Imperfect heroes: Surgeons saw themselves as passionate, resilient, and driven, yet vulnerable to narcissism, horizontal violence, and performative behaviors; (4) Coping with failure: FTR events were painful yet contributed to improved clinical expertise; and (5) Strategies and Tools for Rescue, characterized by sharing personal strategies and proposing system-level improvements.
**Conclusion:** FTR emerged as a profound "surgeon experience" that shapes individual emotional well-being and professional development. Traits valued in surgery were described as potentially delaying escalation and help-seeking approaches. Educational and cultural efforts that foster humility, reduce hierarchical barriers, and strengthen peer support may shift FTR from a tragedy toward collective learning.

### Phase I Evaluation of Adaptive Learning as a Cognitive Readiness Component in a Proficiency-Based Simulator Curriculum for Laparoscopic Cholecystectomy

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**Background:** Proficiency-based surgical training increasingly combines cognitive preparation with simulator-based technical assessment. Adaptive learning platforms offer individualized knowledge reinforcement, but their added value within structured simulator curricula remains unclear.
**Aims:** The aim of this study was to evaluate whether adaptive learning improves knowledge acquisition and cognitive readiness within a proficiency-based simulator curriculum prior to technical assessment using the Global Operative Assessment of Laparoscopic Skills (GOALS).
**Methods:** This Phase I evaluation compared adaptive learning-supported instruction with standard instructional methods embedded in a proficiency-based simulator curriculum. Outcomes included overall knowledge acquisition and performance in higher-order cognitive domains, particularly clinical reasoning and guideline-based decision-making, which are considered prerequisites for safe progression to simulator-based technical assessment.
**Results:** Adaptive learning did not lead to a significant increase in overall knowledge acquisition compared with standard instruction. However, learners exposed to adaptive learning demonstrated superior performance in higher-order cognitive tasks, specifically clinical reasoning and guideline-concordant decision-making. These domains reflect essential cognitive competencies required before advancing to technical skills assessment using GOALS.
**Conclusion:** While adaptive learning does not replace standard instruction for broad knowledge acquisition, it selectively enhances higher-order cognitive competencies relevant to surgical safety and decision-making. Integrating adaptive learning as a cognitive readiness and safety-focused component within proficiency-based surgical curricula appears justified. Adaptive learning should complement – rather than replace – intensive simulator-based technical training to optimize structured progression toward operative competence.

### Sustainable Impact of Repeated Short-term Humanitarian Surgical Missions: Feasibility of Inguinal Hernia Repair In Rural Nigeria Over 15 years

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**Background:** Groin hernias represent one of the most prevalent surgical conditions worldwide, yet access to timely and safe repair remains severely limited in many low-resource settings. In rural Nigeria, unmet surgical need results in prolonged disability, loss of productivity, and preventable complications. However, there is a knowledge gap on the sustainability and impact of repeated short-term humanitarian missions.
**Aims:** To evaluate long-term trends in surgical volume, anesthesia practices, local ownership, and averted DALYs of groin hernia repair during a 15-year humanitarian outreach program in rural Nigeria.
**Methods:** We conducted a longitudinal, mission-based cohort analysis of all inguinal and femoral hernia repairs performed during 24 short-term surgical missions between 2011 and 2025 at St.Mary's Hospital, Okpoga, Nigeria. Collected variables included patient demographics, hernia type and severity, surgical technique, anesthesia modality, and surgeon origin. Outcomes were analyzed over time to assess changes in case volume, task-shifting, and autonomy of local teams. Disability-adjusted life years (DALYs) averted were estimated using Fox-Rushby method.
**Results:** Across 24 missions, 2,175 patients (median age 43 years; 21.5% female) underwent inguinal or femoral hernia repair, accounting for the majority of 3,246 surgical procedures performed. Mesh-based repair was the predominant technique. Local or local-plus-ketamine anesthesia was used in over 60% of cases, with a sustained feasibility across missions. The proportion of procedures led by Nigerian surgeons increased from 5% in 2011 to approximately 50% in 2025. We expect an increase in DALYs averted by local surgeons across the missions. Final results will be availble for the congress.
**Conclusion:** This 15-year experience show that structured, repeated humanitarian surgical missions can foster durable increases in local surgical capacity. Beyond short-term service delivery, the program supported a shift toward autonomous, continuous, essential surgical care. These findings highlight the potential of long-term humanitarian partnerships to generate sustained system-level change in rural surgical services.

### Challenges and Opportunities of Being a Parent and Being a Surgeon – A Systematic Literature Review

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**Background:** Parenthood increasingly coincides with surgical training and early career practice. Although numerous studies address individual aspects of parenting in surgery, evidence remains fragmented, limiting understanding of how institutional structures, workplace culture, and gender norms jointly shape experiences of surgeon-parents.
**Aims:** To systematically review the literature on how parenthood influences surgical careers, well-being, and professional identity, with particular attention to institutional factors and gender-based differences.
**Methods:** A systematic literature review was conducted following PRISMA guidelines. PubMed and Embase were searched from inception through December 2025. Studies addressing experiences of parenthood among surgeons in training or practice were included. Data extraction and quality appraisal were performed independently by two reviewers using established critical appraisal tools. Owing to methodological heterogeneity, a qualitative thematic synthesis was undertaken.
**Results:** Twenty-five studies were included. Parenthood in surgery was consistently associated with structural barriers, cultural stigma, and inconsistent access to parental leave and childcare support. Female surgeons more frequently delayed childbearing, reported pregnancy-related discrimination, assumed disproportionate childcare responsibilities, and experienced higher rates of adverse health and career outcomes, including pregnancy complications, infertility, and burnout. Male surgeons pursuing parental leave or primary caregiving roles also encountered stigma and limited institutional support. Across studies, awareness and implementation of parental leave policies were highly variable, and institutional resources were poorly communicated. Lactation-related challenges and discrimination were documented across multiple surgical specialties. Despite substantial challenges, some studies reported positive effects of parenthood, including enhanced empathy and professional growth.
**Conclusion:** Parenthood intersects with surgical careers through mechanisms shaped primarily by institutional structures, workplace culture, and gender norms rather than individual choice. Persistent misalignment between surgical training models and caregiving responsibilities contributes to health risks, burnout and workforce attrition. Addressing these challenges requires coordinated policy implementation and cultural change to support a sustainable, equitable and diverse surgical workforce.

### Ergonomic Evaluation of the DEXTER® Robotic Surgery System: The ERGODEX Trial

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**Background:** The effects of robotic surgery on surgeon well-being remains largely unexplored. The DEXTER® Robotic Surgery System was recently introduced into clinical practice and is now used routinely across Swiss hospitals.
**Aims:** This study aimed to evaluate surgical ergonomics during the use of DEXTER and to assess the relevance of ergonomic performance for surgeon well-being and patient safety, particularly in high-volume surgery with prolonged OR exposure.
**Methods:** This prospective, non-randomized multicentre trial evaluated surgical ergonomics during routine use of DEXTER in high-volume surgery at three clinical sites in Switzerland and the United States. Surgeons were video-recorded at the console, and image analysis was used to determine average posture and joint angles. Results were compared with previously collected data from 33 procedures performed on a closed-console robotic system using the same methodology.
**Results:** A total of 30,848 photos from 27 surgeries including 8 cholecystectomies, 7 inguinal hernia repairs and 12 hysterectomies from 3 different surgeons were evaluated. Posture metrics and comparisons with current recommendations for a safe and healthy workspace are summarized in Table 1. Table 2 compares posture evaluation between an open- (DEXTER) and closed-console concept. Mean sound level with DEXTER was 59.5dB (range 53.9-84.5dB), statistically lower than with a closed-console system (64.35dB; p value<0.0001).
**Conclusion:** The application of ergonomic measurements during a real-life setting for robotic surgery helped reveal ergonomic advantages and challenges faced when using new robotic technology. An open console may facilitate communication by providing a significantly quieter OR space. It can also improve the high-risk neck posture seen in a closed-console setting, making it favourable from an ergonomic standpoint. These findings support the development of personalized ergonomic training to promote surgeon well-being and long-term occupational health. In addition, surgeons' stress levels were evaluated. Subsequent research will focus on the association between heart rate variability and surgeons' professional experience.


**Figure 1. Measurement of posture during robotic-assisted surgery using the DEXTER Robotic Surgery System**

| Dexter Robotic System | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Knee | Hip | Shoulder | Neck | Elbow | Back | Forearm |
| Mean (°) | 105.28 | 100.73 | 31.08 | 22.18 | 120.50 | 4.48 | 5.38 |
| Median (°) | 106.24 | 101.20 | 28.48 | 22.73 | 118.01 | 4.32 | 5.13 |
| Range (°) | 92.66-115.48 | 93.53-106.3 | 16.34-50.59 | 11.54-30.08 | 101.9-143.29 | 1.89-9.3 | 2.08-14.82 |
| Recommendation (°) | ≥ 90 | 110-120 | N/A | 10-15 | ≥ 90 | 0-10 | N/A |
| Within Recommendation | Yes | No | N/A | No | Yes | Yes | N/A |

**Table 1. Evaluation of posture during a variety of surgeries using the DEXTER Robotic Surgery System**

| Posture (mean °) | Closed Console | Open Console | P value |
|---|---|---|---|
| Knee | 102.24 | 105.28 | 0.3828 |
| Hip | 99.38 | 100.73 | 0.2767 |
| Shoulder | 23.62 | 31.08 | 0.0002* |
| Neck | 33.37 | 22.18 | 0.0001* |
| Elbow | 105.05 | 120.50 | 0.0001* |
| Back | 5.37 | 4.48 | 0.2169 |
| Forearm | 5.56 | 5.38 | 0.8046 |

**Table 2. Comparison of posture between a robotic system with an open console concept and one with a closed console concept**

### Mentorship in Surgery – An International Analysis and Needs Assessment

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**Background:** Mentorship positively influences career trajectory, job satisfaction, and personal development amongst physicians. In surgery, mentorship may be particularly important due to the hierarchical, technical and apprenticeship-based nature of surgical training. Despite broad recognition of its importance, formal mentorship programs remain inconsistently implemented and underreported.
**Aims:** The aim of this international study is to examine the current state of mentorship in surgical disciplines in Switzerland and Europe, conduct a needs assessment and explore strategies to address the growing shortage of young talent and promote long-term retention in surgery.
**Methods:** A 10-part online questionnaire was developed by a team of specialized surgeons, psychologists, and trainees. The survey was disseminated via national mailing lists of Swiss College of Surgeons, the Forum of Young Surgeons and the Swiss Academy of Medical Sciences. Data was collected over six months using a REDCap database.
**Results:** A total of 523 records were obtained. Participants represented a range of specialties, with 20% having completed board certification in visceral surgery, 15% in general surgery, 12% in plastic and reconstructive surgery and 8% in trauma and orthopedic surgery. Overall, 97% of respondents agreed or strongly agreed that mentorship is valuable, with consistent support across all career levels. Despite this, 69% expressed dissatisfaction with current mentorship opportunities, while 82% supported the idea of a national mentorship platform in their specialty. Participants ranked surgical skills, clinical judgement, and academic productivity as key areas of mentorship priority.
**Conclusion:** Mentorship is valued by surgeons independent of career stage and specialty. Our findings highlight a strong demand for structured mentorship and broad willingness among surgeons to participate as mentors or mentees. Given this strong support, a national mentorship program holds significant potential to strengthen collaboration, attract young talent and foster academic and clinical growth and excellence in surgery.

## Free Communication III – SGG

### NornirNet: A Deep Learning Framework to Distinguish Benign from Malignant Type II Endoleaks after Endovascular Aortic Aneurysm Repair using Preoperative Imaging

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**Background:** Type II endoleak (T2EL) is the most common complication after endovascular aortic aneurysm repair (EVAR). While pre-emptive embolization of side branches may reduce T2EL and reintervention rates, its clinical benefit remains unconfirmed. Current guidelines recommend considering pre-emptive embolization only in selected cases.
**Aims:** This study proposes a deep learning framework for preoperative prediction of T2EL occurrence and severity using volumetric computed tomography angiography (CTA) data.
**Methods:** A retrospective analysis was conducted on 277 patients who underwent standard

EVAR (2010–2024). Preoperative CTA scans were processed for volumetric normalization and fed into a 3D convolutional neural network (CNN), which was trained to classify patients into three categories: no T2EL, benign T2EL, or malignant T2EL. The model was trained on 175 cases, validated on 72, and tested on an independent cohort of 30 patients. The CNN's performance was evaluated by comparing its predictions with follow-up CTA data. Performance metrics included accuracy, precision, recall, F1-score, and area under the receiver operating characteristic curve (AUC).

**Results:** Median follow-up time was 55.5 months [28.03-91.6]. During this time a total of 82 (29.6%) T2EL were recorded: 38 (46.3%) displayed significant sac enlargement. The CNN achieved an overall accuracy of 76.7% (95% CI: 0.63–0.90), macro-averaged F1-score of 0.77, and AUC of 0.93. Class-specific AUCs were 0.93 for no T2EL, 0.91 for "benign", and 0.96 for "malignant" cases, confirming high discriminative capacity across outcomes. Most misclassifications occurred between adjacent categories.

**Conclusion:** This study introduces the first end-to-end 3D CNN capable of predicting both presence and severity of T2EL directly from preoperative CTA, without manual segmentation or handcrafted features. These findings suggest that preoperative imaging encodes latent structural information predictive of endoleak-driven sac reperfusion, potentially enabling personalized pre-emptive embolization strategies and tailored surveillance after EVAR.

**Vascular Graft and Endograft Infections: A Delphi Consensus Document on Terminology, Definitions, Treatment, Outcomes, Follow Up, and Reporting Standards**

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**Background:** There is a lack of consensus on certain terminology and definitions related to vascular graft and endograft infections (VGEIs) and secondary aorto-enteric erosion and or fistula and their treatment, outcome reporting, follow up, and reporting standards.

**Aims:** The objective of this study was to complete a Delphi consensus study on these VGEI related issues.

**Methods:** The Delphi methodology was used with a panel of 43 international experts (specialists in vascular or cardiovascular surgery, infectious diseases, nuclear medicine, and radiology). Four Delphi rounds were planned using an online questionnaire initially with 31 statements. Panellists rated the statements on a five point Likert scale. Comments on statements were analysed, statements were revised, and the results were presented in iterative rounds. Consensus was defined as ≥75% of the panel rating a statement as strongly agree or agree, and consensus on the final assessment was defined as Cronbach's $\alpha > 0.80$.

**Results:** All 43 panellists fulfilled all four rounds, resulting in 100% participation. Cronbach's $\alpha$ increased through the rounds: round 1, 0.88; round 2, 0.89; round 3, 0.90; and round 4, 0.90. A final fifth round was performed among all surgeons (n = 27) defining secondary aorto-enteric erosion and or fistula, with 100% participation. Agreement was reached for 29 final statements: two on need for consensus, two on definition of multidisciplinary team, three on microbiology diagnosis, six on treatment, three on secondary graft-enteric partial erosion, secondary graft-enteric fistula, and secondary aorto-enteric fistula, three on treatment outcomes, nine on follow up, and one on reporting standards including 11 items.

**Conclusion:** Consensus was achieved for 29 statements, which were developed to establish a common perception of VGEI and secondary aorto-enteric erosion and or fistula, with the potential to improve research in this field and ultimately patient care.

**Vascular Graft Infection, What Else!**

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**Background:** Vascular graft infections are a known severe complication following aortic surgery. Persistent symptoms after replacement of infected graft material should raise concern. Further diagnostics need to be forced in these cases.

**Conclusion:** Histopathological tissue analysis may help to discover alternative pathologies, mimicking vascular graft infection and should be considered actively in cases with no apparent local sign of infection.

**Case presentation:** A 65y old male patient presented with malaise, weight loss, diffuse abdominal pain and elevated inflammatory markers. Two years prior, the patient had undergone infrarenal aorto-iliac graft implantation due to occlusive disease. A CT scan revealed a new periaortic collection. CT-guided sampling yielded negative microbiological and histological exams. Blood cultures were negative as well. A [18F]-FDG PET/CT confirmed increased metabolic activity. According to the MAGIC criteria with one major (perigraft fluid) and two minor (suspicious metabolic activity on PET/CT and abnormally elevated inflammatory markers) criteria, a vascular graft infection was diagnosed. We performed a partial explantation of the graft material, extensive debridement, microbiological sampling, in-situ reconstruction with a physician-made bovine pericardium and coverage with omentoplasty. Antimicrobial therapy was initiated. Tissue and graft samples were negative. The patient's symptoms worsened and inflammatory markers remained elevated, even under antibiotic therapy. A follow-up CT scan revealed again a new periaortic collection. Thus, a second surgical revision, showing no infection, was performed with once more extensive microbiological as well as histopathological sampling. Finally, histopathological examination revealed the diagnosis of an epitheloid angiosarcoma. After discussion at an interdisciplinary sarcoma board, palliative chemotherapy was initiated.

**Lipid Oxidation In Chronic Thromboembolic Pulmonary Hypertension: A Clue To Residual Pulmonary Hypertension After Surgery?**

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**Background:** Chronic thromboembolic pulmonary hypertension (CTEPH) is characterized by two distinct vascular lesions: proximal thromboembolic obstructions and secondary distal microvasculopathy. These lesions lead to elevated pulmonary vascular resistance (PVR > 2 Wood Units, WU), ultimately resulting in right heart failure and death if left untreated. Pulmonary endarterectomy is the guideline-recommended surgical intervention for obstructive lesions in operable patients. However, up to 50% of patients exhibit residual pulmonary hypertension after surgery, due to persistent microvascular lesions.

**Aims:** The aim of this project was to identify molecular pathways in pre-operative plasma samples associated with non-response to surgery, in order to explore potential predictive biomarkers and therapeutic targets for microvasculopathy.

**Methods:** We included 34 patients who met the following criteria: availability of pre-operative plasma samples, underwent pulmonary endarterectomy, and had a right heart catheterization at the one-year follow-up visit. A plasma proteomic analysis was performed on these pre-operative samples. Patients were classified as Responders (PVR ≤ 2 WU at one-year post-surgery) or Non-Responders (PVR > 2 WU).

**Results:** Responders and Non-Responders exhibited comparable pre-operative hemodynamic parameters. Proteomic analysis of pre-operative plasma samples revealed distinct molecular profiles between the two groups. Enrichment analysis of differentially expressed proteins identified dysregulated pathways related to lipid transport and remodeling in Non-Responders. Pre-operative circulating lipid analysis showed comparable total cholesterol, LDL, HDL, and triglyceride levels between the two groups. However, pre-operative circulating oxidized LDL levels were significantly higher in Non-Responders, whereas plasma total antioxidant capacity was significantly lower.

**Conclusion:** Our findings suggest that lipid remodeling, and in particular elevated pre-operative circulating oxidized LDL, is associated with non-response and residual pulmonary hypertension after surgery. Further studies are required to clarify the contribution of elevated oxidized LDL to the development of microvasculopathy in CTEPH.

**The fate of Bronchial Artery Aneurysm over the last 25 years: A Comprehensive Review and Pooled analysis**

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**Background:** Bronchial artery aneurysms (BAAs) and pseudoaneurysms (BAPs) are rare but potentially life-threatening vascular abnormalities, often discovered incidentally or during evaluation for hemoptysis.

**Aims:** This pooled analysis aims to systematically evaluate the clinical characteristics, diagnostic modalities, treatment strategies, and outcomes of reported BAA/BAP cases. We further sought to identify factors associated with rupture and prognosis.

**Methods:** A comprehensive search of PubMed, Embase, Web of Science, and the Cochrane Library was performed in accordance with a modified PRISMA framework. Eligible studies included case reports and case series, published from 2000 to the present, that described patients with BAA/BAP and provided sufficient clinical data.

**Results:** From an initial yield of 457 studies, 134 studies with 151 patients were included for systematic review. Among 151 patients, 80% were symptomatic with solitary, predominantly mediastinal aneurysms. Rupture occurred in 27%. Ruptured aneurysms were significantly smaller, with a median size of 10 mm (IQR 6.25–22.5 mm) than unruptured ones with 21 mm (IQR 14–34 mm) (Figure 1, Table 1). Endovascular repair was the main treatment (83.7%), with overall technical and clinical success rates of 94.6% and 95.2%, respectively. Technical success did not differ by treatment type or any clinical variable (all $p > 0.05$) (Table 2). Complication rates were low and similar between endovascular and open repair (3.5% vs. 5.2%, $p = 1.000$).

**Conclusion:** BAAs and BAPs carry a substantial risk of rupture. Endovascular embolization remains the first-line treatment due to its high success and low morbidity rate. Improved reporting, standardized definitions of clinical success, and further multicenter registries could help refining treatment algorithms and long-term follow-up strategies for this rare condition.

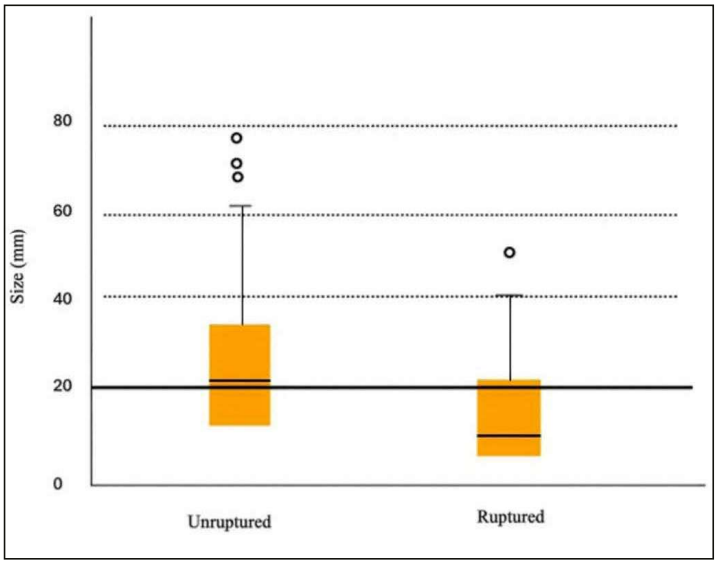


Figure 1. Size

| VARIABLE | STATISTICAL TEST | P-VALUE | OR |
|---|---|---|---|
| MALE | $\chi^2 = 0.011$ | 0.918 | |
| SYMPTOMATIC | $\chi^2 = 10.920$ | 0.001 | 14.704 (CI: 1.925-112.341) |
| NUMBER OF ANEURYSMS | $\chi^2 = 4.818$ | 0.307 | |
| PSEUDOANEURYSM | $\chi^2 = 2.763$ | 0.096 | 2.322 (CI: 0.844–6.385) |
| MEDIASTINAL | $\chi^2 = 2.076$ | 0.354 | |
| ANEURYSM SIZE | Mann–Whitney U = 498.500 | 0.001 | |

Table 1. Univariate analysis of risk of rupture

| VARIABLE | STATISTICAL TEST | P-VALUE | SIGNIFICANT? |
|---|---|---|---|
| MALE | $\chi^2 = 0.185$ | 0.667 | No |
| NUMBER OF ANEURYSMS | $\chi^2 = 1.850$ | 0.763 | No |
| PSEUDOANEURYSM | $\chi^2 = 2.485$ | 0.115 | No |
| MEDIASTINAL | $\chi^2 = 0.583$ | 0.750 | No |
| RUPTURE | $\chi^2 = 0.859$ | 0.354 | No |
| ENDOVASCULAR | $\chi^2 = 0.893$ | 0.345 | No |
| ANEURYSM SIZE | Mann–Whitney U = 112.000 | 0.580 | No |

Table 2. Univariate analysis of technical success

### Patient Selection Criteria and Outcomes After Treatment of Asymptomatic Lesions Endangering Vascular Reconstruction Patency

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**Background:** Restenosis following lower limb vascular reconstruction remains common and represents a major determinant of long-term patency and clinical outcomes. The absence of standardized criteria has resulted in substantial variability in clinical practice regarding the treatment of asymptomatic restenosis.
**Aims:** To evaluate short-term outcomes after endovascular treatment of stenosis in patient with asymptomatic or non disabling claudication threatening lower limb vascular reconstruction patency.
**Methods:** We performed a single-center retrospective observational study including adults with non disabling claudication who underwent endovascular reintervention to prevent occlusion of a prior lower limb bypass graft or stent between January 2023 and December 2024. Outcomes included technical success (residual stenosis <30%), perioperative complications, and primary patency. Hemodynamic follow-up included toe-brachial index (TBI) and plethysmography. Primary patency was estimated using Kaplan-Meier analysis.
**Results:** Forty-two patients were included (76.2% men; mean age 71.3 years). Reintervention was performed for stenoses threatening reconstruction patency (≥75% in 75.1%), most commonly located within the reconstruction (66.7%). All procedures were endovascular; drug-coated balloon angioplasty was used in 95.2% and stent placement in 52.4%. Technical success was 100%. Medical and surgical complication rates were 4.8% and 9.6%, respectively, with no acute occlusion or amputation. Mean follow-up was 6.4 months. One death occurred during follow-up. At 6 months, one significant restenosis (>70%) was observed (2.4%). Kaplan–Meier estimated primary patency at 6 months was 90.5% (95% CI, 77–97%).
**Conclusion:** Preventive endovascular reintervention for asymptomatic or mildly symptomatic stenoses threatening lower limb vascular reconstruction patency appears safe and effective at short-term follow-up. Prospective studies are needed to define optimal thresholds for treatment and long-term benefit.

## Pediatric Visceral Surgery

### Laparoscopic Stapler Duodenoduodenostomy for Congenital Duodenal Obstruction: A Six-Year Single-Center Experience

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**Background:** Laparoscopic stapler duodenoduodenostomy is an established minimally invasive technique for the treatment of congenital duodenal obstruction, including duodenal atresia and stenosis. Compared with open surgery, this approach has been shown to be safe and to provide advantages such as reduced surgical trauma, faster time to full enteral feeding and shorter hospital stay.
**Aims:** This study reports a single-center experience with laparoscopic stapler duodenoduodenostomy over a six-year period, focusing on perioperative management and short-term outcomes.
**Methods:** A retrospective analysis was performed of all patients who underwent laparoscopic duodenoduodenostomy for duodenal atresia or stenosis at our institution between November 2019 and December 2025.
**Results:** Sixteen patients underwent laparoscopic duodenoduodenostomy. A side-to-side duodenal anastomosis using the JustRight™ Hologic 5-mm stapler was performed in all cases. One patient with intestinal malrotation and an associated Meckel's diverticulum required diagnostic laparoscopy followed by open diverticulum resection and small bowel anastomosis before completion of the duodenal stapled anastomosis. Most procedures were performed within the first days of life while one patient with duodenal stenosis underwent surgery at 18 months of age. Gestational age ranged from 35 + 1 to 40 + 4 weeks, and nine patients were male. Associated anomalies were present in seven cases. Mean body weight was 2.6 kg, ranging from 1.6 to 9.0 kg. Full enteral feeding was achieved after a mean of 11 days (range 4–16 days). Intraoperative complications included one stapler-related duodenal perforation and one stapler exchange, without postoperative consequences. Postoperative contrast studies revealed that anatomical correct duodenoduodenostomy could be achieved and ruled out anastomotic leakage or stenosis. Follow-up between 1 and 24 months showed no late complications.
**Conclusion:** Laparoscopic stapler duodenoduodenostomy can be safely performed in neonates and infants, with excellent short-term outcomes and intestinal recovery. The minimally invasive approach represents an effective alternative to open surgery.

### Comparison of STEP and LILT Procedures in Pediatric Patients With Short Bowel Syndrome: A Systematic Review and Meta Analysis

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**Background:** The most used intestinal lengthening methods for Short Bowel Syndrome (SBS) are the Serial Transverse Enteroplasty Procedure (STEP) and the Longitudinal Intestinal Lengthening and Tailoring (LILT; Bianchi) procedure. An updated systematic review and meta-analysis comparing these two methods is lacking.
**Aims:** We aimed to summarize and meta-analyze the current literature comparing the STEP with the LILT procedure.
**Methods:** We compared STEP versus LILT in children aged between 0 and 18 years. A systematic review of the current literature since 2003 was performed, including studies comparing STEP and LILT procedure. We searched the following databases: MEDLINE (1946 to present, via Ovid), Embase (1947 to present, via Ovid) and Cochrane Central Register of Controlled Trials (CENTRAL; 1991 to present). For risk of bias assessment, we used the ROBINS-I tool.
**Results:** We identified 5855 potential articles, excluding 2028 in de-duplication and 3794 during the title and abstract screening. We assessed 33 articles for eligibility. We finally included and extracted data from five studies. All studies reported on weaning from parenteral nutrition. LILTs lead to more effective weaning from parenteral nutrition (64.5%; 20/31) compared to STEP (43.5%; 20/46). Overall mortality was low with 5.2% (4/77) of patients and not attributable to the surgical technique chosen. Both surgical methods had a similar postoperative complication rate. Redo surgery rate was 12.9% (4/31) after LILT and 36.4% (16/44) after STEP.
**Conclusion:** Patients operated by the LILT procedure seem to have a higher chance of weaning from parenteral nutrition and a lower redo surgery rate. However, this might be attributed to a systematic bias in selecting patients for this procedure.

### Laparoscopic Versus Open Repair for Pediatric Inguinal Hernia

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**Background:** There is a need for a high-quality systematic review with meta-analyses to evaluate the laparoscopic approach versus the open approach for inguinal hernia repair in children, as available evidence is based on different interpretations or calculations of the same RCTs. This abstract is based on a post-peer review version of a Cochrane Review. Upon completion and approval, the final version is expected to be published in the Cochrane Database of Systematic Reviews.
**Aims:** To compare the benefits and harms of laparoscopic versus open repair in pediatric inguinal hernia.
**Methods:** Through systematic searching we identified RCTs in children (<18) comparing mesh-free laparoscopic vs open inguinal hernia repair. Our critical outcome was recurrence, assessed by clinical examination +/- verified by diagnostic imaging. Important outcomes comprised intraoperative complications, complications according to Clavien-Dindo 3a, 3b-4 and 5, postoperative acute pain within 24 hours and chronic pain persisting for more than six months after surgery.
**Results:** We included 12 randomized controlled trials analyzing 1247 children undergoing either laparoscopic or open inguinal hernia repair. Pooled analysis showed no clear difference in recurrence between laparoscopic and open repair (OR 0.64, 95% CI 0.26 to 1.61, p=0.35; 9 studies, 1099 participants; low-certainty evidence). There were no intraoperative injuries reported across studies, preventing estimation of effect size (5 studies, 450 participants; low-certainty evidence). Clavien-Dindo 3a and 5 could not be pooled as there were no events in either group (7 studies, 573 participants; low-certainty evidence). For postoperative acute pain, no differences were detected at 24 hours (4 studies, 220 participants).
**Conclusion:** Laparoscopic and open inguinal hernia repair in children appears to result in comparable recurrence rates. Laparoscopic repair may reduce minor complications (Clavien-Dindo 1-2) and acute postoperative pain. Future high-quality trials with standardized outcome reporting are needed.

### Sacral Ratio Correlates With Spinal and Sacral Anomalies in Children With Anorectal Malformation

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**Background:** Sacral ratio (SR), measured on conventional x-ray, is widely used for spinal and sacral assessment and as a prognostic factor in children with anorectal malformation (ARM). SR is considered normal above 0.7, while values below 0.5 are generally associated with poor functional outcomes. Despite its frequent use, the relationship between SR and spinal or sacral anatomy has not investigated. Our Institution has been performing routine spinal cord and pelvic MRI in ARM patients since 1995.
**Aims:** To evaluate the correlation between SR and spinal cord and sacral anomalies diagnosed on MRI in children with ARM.
**Methods:** Retrospective study of children with ARM managed in our Institution from 2000 to 2025. Patients investigated by x-ray of spine and spinal cord and pelvic MRI were included. SR was measured by two observers on the best x-ray available. Spinal cord and sacral anomalies were assessed on MRI.
**Results:** 102 ARM patients out of 214 were included. Spinal cord anomalies were present in 21.6%, and sacral anomalies in 27.5%. Interobserver agreement for SR was excellent (mean difference 0.01 ± 0.08; CCC 0.91). Among patients with neither spinal cord nor sacral anomalies, SR was 0.70 ± 0.16. In patients with spinal cord anomaly SR was significantly lower compared to children without spinal cord anomaly (0.53 ± 0.18 vs 0.70 ± 0.15, p<0.0001). In patient with sacral anomaly SR was significantly lower compared to children without sacral anomaly (0.56 ± 0.19 vs 0.71 ± 0.15, p< 0.0001). These results allowed us to propose a new prediction score combining SR and ARM type, which shows strong discriminatory power for spinal cord (AUC 0.93) and sacral anomalies (AUC 0.85).
**Conclusion:** SR measured on x-ray correlates with spinal cord and sacral anomalies. SR may be used to identify patients who would benefit from an MRI.

### Comparison of "Suction Only" vs. "Peritoneal Lavage" in Laparoscopic Appendectomy for Children With Complicated Appendicitis

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**Background:** The role of peritoneal lavage during laparoscopic appendectomy for complicated appendicitis in children remains controversial. While lavage aims to reduce bacterial load, its clinical benefit compared with suction alone is unclear and may increase operative time and resource use.
**Aims:** This study evaluated whether suction-only (SO) laparoscopic appendectomy is associated with higher postoperative complications compared with peritoneal lavage (PL) in children with complicated appendicitis. Additionally, potential advantages regarding operative time, hospital stay, and antibiotic duration were identified.
**Methods:** We conducted a single-centre retrospective study of children undergoing laparoscopic appendectomy for complicated appendicitis between January 2023 and December 2024. Patients received either SO or PL based on surgeon preference. The primary outcome was postoperative complications; secondary outcomes included operative time, intravenous antibiotic duration, and length of hospital stay. Multivariable logistic regression and propensity score–adjusted analyses were used to identify independent risk factors and adjust for baseline differences.
**Results:** Ninety-nine children were included (SO: n = 35; PL: n = 64). Baseline characteristics and disease severity were similar between groups. Postoperative complications occurred in 3 (9%) SO and 9 (14%) PL patients (p = 0.75); intra-abdominal abscess rates did not differ. Surgical technique was not independently associated with complications in multivariable (OR 0.46; 95% CI 0.06–3.92) or propensity-adjusted analyses (OR 0.72; 95% CI 0.17–3.00). Secondary outcomes favored SO: operative time (56 vs. 85 min, p < 0.001), intravenous antibiotic duration (3.8 vs. 4.9 days, p = 0.004), and hospital stay (4.6 vs. 6.5 days, p < 0.001).
**Conclusion:** In children with complicated appendicitis, suction-only laparoscopic appendectomy was not associated with higher postoperative complication rates compared with peritoneal lavage and offered shorter operative time, reduced antibiotic exposure, and shorter hospitalization. Suction only appears to be a safe and resource-efficient alternative in complicated pediatric appendicitis.

### Omphalocele Minor in a Neonate With Fistulation: A Case Report and Insights on Management From a Systematic Review of Case Reports

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**Background:** Omphalocele is a rare congenital anomaly, characterized by failure of abdominal wall closure during embryological development. The reported prevalence is 2.6 in 10,000 live births. The literature categorizes omphalocele according to the size of the defect as major (>5cm) or minor (< 5 cm). Exomphalos with fistulation is a rare entity, with fewer than 30 cases reported worldwide. Thus, we present a preterm infant with a fistulized omphalocele minor and discuss the management plans of similar cases.
**Conclusion:** Our case report and systematic review highlight the demographics, symptomatology, and management of exomphalos minor with fistulation. It can be concluded from our review that most cases are males from the southeast countries and that prompt surgical management is necessary.
**Case presentation:** A preterm male neonate (34+4 weeks, 2.2 Kg) born to a diabetic mother presented with a minor omphalocele exhibiting a mucosal-lined opening draining meconium, indicative of a fistula. Surgical exploration on day two of admission revealed a Meckel diverticulum with a patent vitellointestinal duct (PVID). Resection of the Meckel diverticulum with end-to-end ileo-ileal anastomosis was performed. The postoperative course was uneventful, and the patient was discharged on the 14th day. A systematic review was conducted from inception to April 2025, adhering to PRISMA guidelines to include case reports of neonates with minor exomphalos and fistulation. The initial search yielded 673 studies, with 20 case reports (25 patients) meeting the inclusion criteria. The mean gestational age was 38.18 ± 1.53 weeks, and the mean birth weight was 2.84 ± 0.65 Kg. Meckel diverticulum was associated in 40% of cases, and other system anomalies in 44%. Standard treatment was surgical fistulectomy with end-to-end anastomosis (44%) or diverticulectomy with fistulectomy and anastomosis (36%). One case was managed conservatively initially, then converted into open surgery. (Fig.1) Postoperative outcomes were generally favorable (80% uneventful), with one mortality reported.

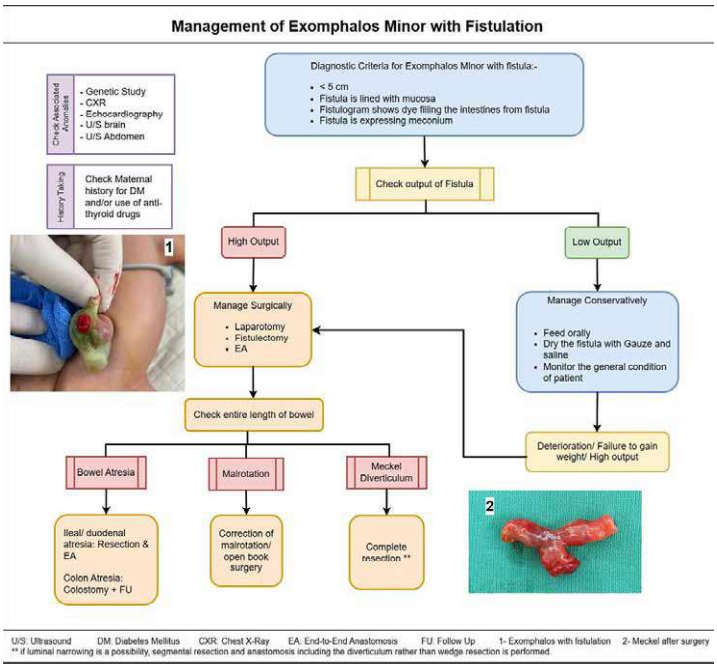


**Figure 1. A flow diagram summarizing the management plan for omphalocele minor with fistulation**

**Minimally Invasive Pediatric Inguinal Hernia Repair Using the Hydrodissection-Assisted Lasso Technique with a Tuohy Needle: A Case Series**

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**Background:** Pediatric inguinal hernia (PIH) repair is among the most frequently performed surgical procedures in children and may be accomplished using either by an open or minimally invasive approach.
**Aims:** The aim of this case series was to assess the feasibility of the minimally invasive LASSO (laparoscopically assisted simple suture obliteration) technique and to evaluate advantages, recurrence rates as well as short- and long-term complications.
**Methods:** From January 2025 to January 2026, 28 pediatric patients with PIH underwent repair using a single-port laparoscopic-assisted LASSO technique. Under laparoscopic guidance, a Tuohy needle was introduced at the level of the internal inguinal ring. Extraperitoneal closure of the hernia defect was achieved with a nonabsorbable suture, which was passed circumferentially around the internal ring by advancing the needle on one side and retrieving it on the opposite side along the same, subcutaneous tract, utilizing hydrodissection to facilitate safe tissue separation. Suture thickness was selected depending on patients age and weight (prolene 4/0 or 3/0).
**Results:** All 28 inguinal hernia repairs were successfully completed using the LASSO technique. Twenty-one patients underwent unilateral repair, while seven patients underwent bilateral repair; notably, five of these bilateral cases were initially diagnosed as unilateral hernias. The mean operative time was 30 minutes for unilateral procedures and 41.4 minutes for bilateral procedures. No intraoperative or postoperative complications were observed. During the follow-up period, no hernia recurrences were.
**Conclusion:** The hydrodissection-assisted LASSO technique using a Tuohy needle is a safe, effective, and minimally invasive option for pediatric inguinal hernia repair. An important advantage of this approach is the ability to detect and simultaneously repair contralateral patent processus vaginalis in patients presenting with a clinically unilateral hernia. Given its technical simplicity, favorable operative times, high patient satisfaction, and absence of recurrence in this series, this technique represents a valuable alternative to conventional open PIH repair.

**Conservative Management "Paint and Wait" of Giant Hepato-Omphalocele: A Case Report**

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**Background:** Giant hepato-omphalocele is defined as an omphalocele larger than 8 cm containing most of the liver and intestinal loops, representing a major surgical challenge due to reduced abdominal domain and risk of abdominal compartment syndrome. Omphalocele results from abnormal migration of the lateral body folds during embryologic development and is covered by a membranous sac composed of amnion and Wharton's jelly.
**Conclusion:** Giant hepato-omphalocele requires individualized management. Conservative treatment using the "Paint and Wait" technique allows safe epithelialization, gradual visceral reduction, and delayed definitive repair, avoiding life-threatening complications associated with early primary closure.
**Case presentation:** A term newborn was delivered by cesarean section with appropriate weight for gestational age. The patient presented moderate neonatal depression with rapid recovery (APGAR 4 at 1 minute, 8 at 5 minutes). A giant hepato-omphalocele was diagnosed, associated with cardiomegaly and restrictive respiratory insufficiency, requiring admission to the neonatal intensive care unit under joint neonatology and pediatric surgery care. Physical examination revealed an abdominal wall defect measuring approximately 14 cm, covered by a thin intact membrane with a centrally located umbilical cord. The sac contained the liver and multiple intestinal loops. Due to limited abdominal cavity and risk of hepatic venous compression and abdominal compartment syndrome, primary closure was considered unsafe. Conservative management was therefore selected. The patient was treated using the "Paint and Wait" technique, with topical application of sclerosing agents to promote progressive epithelialization. After complete skin coverage, an external abdominal binder was applied to allow gradual visceral reintegration. Definitive surgical closure was planned after adequate abdominal domain development.

**Figure 1. Anterior View of a Giant Hepato-Omphalocele**

## Posters / Visual Abstracts

**Extensive Necrotic Ileal Intussusception in an Adult with Prior Gastrectomy and Metastatic Gastric Cancer: A Rare Surgical Emergency**

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**Background:** Adult intussusception is an uncommon cause of mechanical small bowel obstruction and is frequently associated with an underlying pathological lead point. Unlike paediatric cases, adult presentations are often non-specific, leading to delayed diagnosis and an increased risk of bowel ischaemia and necrosis. Early recognition using contrast-enhanced computed tomography (CT) is essential, as radiological findings guide urgent surgical management and influence operative strategy.
**Conclusion:** This case illustrates the critical role of contrast-enhanced CT in the early diagnosis of adult intussusception and in identifying radiological signs of bowel ischaemia and necrosis. Recognition of mesenteric involvement, reduced mural enhancement, and upstream dilatation should prompt urgent surgical intervention. Early imaging-driven decision-making is essential to prevent catastrophic complications and optimise outcomes in this rare life-threatening condition.
**Case presentation:** A 48-year-old woman with a history of total gastrectomy and partial oesophagectomy with Roux-en-Y reconstruction for gastric adenocarcinoma presented with acute abdominal pain and peritoneal signs. Contrast-enhanced CT demonstrated mechanical small bowel obstruction due to ileo-ileal intussusception involving the alimentary limb, with concomitant invagination of the adjacent mesentery. Marked signs of bowel compromise were present, including reduced mural enhancement, bowel wall thickening, and pelvic effusion. Arterial and venous mesenteric stenoses were identified, secondary to invagination, with associated features of digestive ischaemia. There was marked dilatation of the upstream alimentary and biliary limbs. Emergency surgical exploration confirmed extensive necrotic ileal intussusception of 60cm perforation of necrotic ileum with perforation of the jejunojejunostomy requiring resection of 100cm of common limb including the anastomosis leaving 3 bowel stumps. Given severe contamination and uncertain bowel viability, damage-control surgery with open abdomen management was performed. A planned second-look laparotomy at 30 hours confirmed bowel viability, allowing a new Roux-en-Y reconstruction with two small bowel anastomoses.

Figure 1. Contrast-enhanced abdominal CT Mechanical small bowel obstruction due to ileo-ileal intussusception involving the alimentary limb, with associated invagination of the adjacent mesentery. Marked signs of bowel ischaemia were present, including reduced mura

Figure 2. Intraoperative picture showing bowel and mesenteric intussusception

Figure 3. Intraoperative picture showing resection of 100 cm of bowel involving the base of the loop

**Preoperative Semaglutide Before Robotic Major Liver Resection in Obese Patients – Preliminary Results**

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**Background:** Obesity and hepatic steatosis are increasingly prevalent in hepatopancreatobiliary (HPB) surgery and are associated with prolonged operative time and higher morbidity. In minimally invasive major hepatectomy, these factors can further increase technical complexity. Pharmacological weight loss with GLP-1 receptor agonists may optimize surgical candidates, but data in major HPB surgery remain limited. Moreover, preliminary translational studies in rodents, support a potential role of GLP-1 in liver regeneration.
**Aims:** The aim of this pilot study, is to evaluate the impact of preoperative semaglutide (GLP-1) therapy on weight loss, hepatic steatosis, and perioperative outcomes in obese patients undergoing robotic major liver resection.
**Methods:** All consecutive high-BMI patients (median BMI 38 kg/m²) scheduled for robotic major liver resection between February and September 2025 received preoperative semaglutide for a median of 4 weeks. Endpoints included percentage weight loss, MRI-documented steatosis, perioperative outcome and feasibility.
**Results:** Ten patients were included and compliance with GLP-1 was >100%. Median preoperative weight loss was 7.2% (IQR 4.1–10%), corresponding to 11.4 kg. All patients showed signs of steatosis in MRI, with a major proportion of severe steatotic patients (n=6). After GLP-1 repeated MRI prior to surgery documented a descrease of steatosis in n=5/10 patients. n=7 patients underwent double vein embolization prior to hepatectomy and GLP-1 treatment was started after the intervention. Postinterventional GLP-1 treatment did not impair liver regeneration and completion hepatectomy could be performed in all patients. Indications included hepatocellular carcinoma (n=5), colorectal liver metastases (n=3), and cholangiocarcinoma (n=2). Overall, Robotic right hemihepatectomy was performed in n=8 patients, left hemihepatectomy in n=1, and parenchyma-sparing resection (≥3 Segments) in n=1. Only one patient experienced a major complication (Clavien–Dindo ≥IIIa).
**Conclusion:** Preoperative GLP-1 therapy is feasible, safe, and well tolerated in obese patients undergoing robotic major liver resection. It induces clinically relevant weight loss, reduces hepatic steatosis, and facilitates technically demanding procedures without impairing liver regeneration.

**The Rare Case of a Sertoli Cell Tumor of the Adrenal Gland in a Man With Pathological Dexamethason Inhibition Test: A Case Report**

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**Background:** Sertoli cell tumors are rare sex cord–stromal tumors accounting for approximately 1% of testicular neoplasms. Extragenital manifestations are extremely rare - only one case of a Sertoli cell tumor arising in the adrenal gland has been reported. We present the second known case of an adrenal Sertoli cell tumor in a male patient, presenting with a pathological dexamethasone suppression test.
**Conclusion:** Adrenal Sertoli cell tumors represent an extremely rare entity lacking specific management guidelines. In this case, robotic-assisted adrenalectomy proved safe and feasible. We saw a good short-term oncological and clinical outcome. Further reports are needed to clarify hormonal associations and establish standardized follow-up and treatment strategies.
**Case presentation:** An 82-year-old otherwise healthy man was referred for evaluation of an incidentally detected left adrenal mass. The patient was asymptomatic with no clinical signs of catecholamine excess, hypercortisolism, hyperaldosteronism or B-symptoms. Initial CT scan revealed a 44 × 42 mm lesion, which increased to 50 × 46 mm within three months and suspicious washout characteristics (Figure 1). Endocrinological work-up showed a pathological dexamethasone inhibition test, while metanephrines and aldosterone testing was normal. Tumor markers (AFP, β-HCG) were unremarkable. A hormonally active adrenal adenoma with autonomous cortisol production was suspected. After discussion at the interdisciplinary tumor board, robotic-assisted adrenalectomy was performed (Figure 2). Complete resection was achieved without complications, the patient was discharged on the third postoperative day.
Histopathological examination showed a Sertoli cell tumor with complete excision and no evidence of local infiltration or malignancy (Figure 3). Immunohistochemistry showed positivity for CD56, CD99, synaptophysin and partial positivity for SF1, calretinin and inhibin. Chromogranin A and MART1 were negative. Molecular analysis revealed no FOXL2 or DICER1 mutations. Postoperatively, hydrocortisone substitution was initiated due to submaximal cortisol response in ACTH stimulation testing. At six-month follow-up, CT imaging showed no recurrence or metastases and tumor markers remained normal.

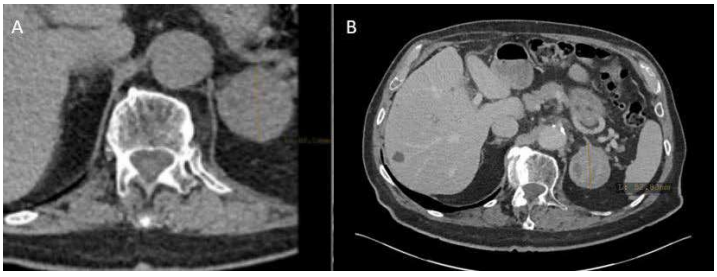


Figure 1

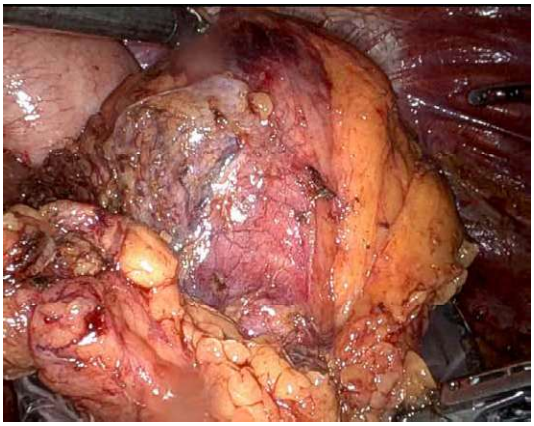

Figure 2

Figure 3

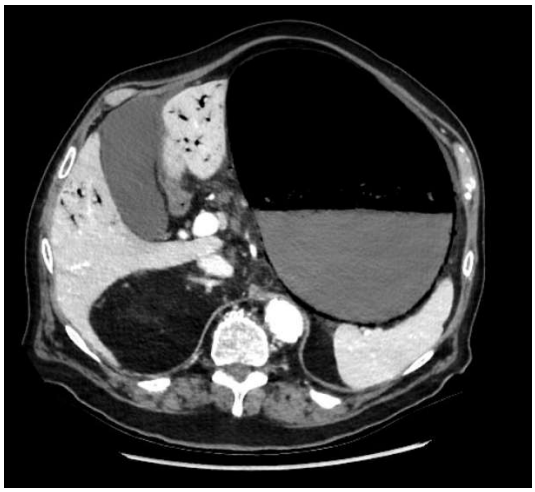

Figure 1. Abdominal computed tomography scan showing marked gastric distension, parietal pneumatosis and portal and mesenteric vein gas

Figure 2. Intraoperative finding of gastric necrosis of the greater curvature

**Acute Idiopathic Gastric Necrosis Due to Gastric Dilatation: A Case Report**

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**Background:** Acute gastric necrosis due to gastric dilatation is a rare but serious condition resulting from venous outflow obstruction. Traditionally associated with eating disorders, it is also described in patients with polytrauma and diabetes. Despite effective treatment, the mortality rate remains significant.
**Conclusion:** Acute gastric necrosis is a rare, potentially fatal condition requiring prompt diagnosis and intervention. Radical excision might be the safest approach due to the risk of complications from the poor healing of residual tissue. Employing a damage control strategy is advisable for patients in a shock, where anastomosis may pose significant risks during the initial procedure.
**Case presentation:** A 77-year-old man with a history of arterial hypertension, chronic alcohol use, gait disorders, and umbilical hernia repair, was admitted with acute left upper quadrant pain and repeated vomiting. Upon admission, vital signs where stable, but clinical exam revealed abdominal distension with peritoneal signs. An abdominal computed tomography scan (Figure 1) showed marked gastric distension, parietal pneumatosis and portal and mesenteric vein gas along with small bowel ileus, without signs of perforation. Additionally, a lesion in the right colonic's flexure raised suspicion of a neoplasic lesion. Initial management included nasogastric tube placement via gastroscopy. Exploratory laparoscopy revealed necrosis of the gastric greater curvature (Figure 2), confirmed by intraoperative gastroscopy, which showed transmural necrosis extending to the oesophagogastric junction. The patient's condition deteriorated, leading to septic shock requiring significant adrenergic support. Following conversion to an open laparotomy, a total gastrectomy was performed, employing a damage control strategy that left the esophageal and duodenal stumps. After achieving hemodynamic stability, the planned second look procedure included eosophagojejunal anastomosis with Roux-en-Y reconstruction, feeding jejunostomy, cholecystectomy, and right hemicolectomy with ileo-colostomy for the suspected neoplasic lesion. Remarkably, the patient recovered without postoperative complications and was discharged to a rehabilitation program.

**Spontaneous Mesenteric Hematoma Following a Sneezing Episode Associated with an Intestinal Pseudodiverticulum: A Case Report**

M. Lagger[1], A. Miftaroski[1], G. Ilanjian[2], L. Widmer[2], F. Pugin[1]
[1]General surgery, Fribourg Cantonal Hospital, Fribourg; [2]Radiology, Fribourg Cantonal Hospital, Fribourg

**Background:** Spontaneous mesenteric hematoma, historically referred to as abdominal apoplexy, is a rare and potentially life-threatening cause of acute abdominal pain. It is defined as bleeding into the mesentery in the absence of trauma or iatrogenic injury. Reported etiologies include anticoagulant therapy, vasculitides, connective tissue disorders, or pancreatitis; however, truly idiopathic cases remain exceptional. Diagnosis is challenging due to nonspecific clinical presentation and imaging findings that may mimic bowel ischemia or neoplasia.
**Conclusion:** Spontaneous mesenteric hemorrhage can occur in otherwise healthy individuals and may be precipitated by transient increases in intra-abdominal pressure such as sneezing. Local structural abnormalities, including intestinal pseudodiverticula, may contribute to mesenteric vessel fragility and bleeding. Awareness of this rare entity may facilitate timely diagnosis and appropriate management.
**Case presentation:** A 45-year-old man with no relevant past medical history presented with acute diffuse abdominal pain following a forceful sneezing episode. Physical examination revealed localized right-sided abdominal tenderness without peritoneal signs. Laboratory tests showed mild leukocytosis with normal inflammatory markers and hemoglobin. Contrast-enhanced computed tomography demonstrated a mesenteric hematoma associated with moderate hemoperitoneum and focal mural hypoenhancement of an ileal loop, without active arterial extravasation (Figure 1). Urgent surgical exploration revealed approximately 500 mL of hemoperitoneum, a large mesenteric hematoma, and an adjacent intestinal pseudodiverticulum (Figures 2-3). Segmental small bowel resection including the diverticulum was performed. Histopathological analysis confirmed fresh mesenteric hemorrhage and pseudodiverticular changes without evidence of malignancy, vasculitis, or vascular malformation. The postoperative course was uneventful, and the patient remained asymptomatic at six-week follow-up.

Figure 1. Coronal portal phase image demonstrates a blind-ending ileal loop (arrow) measuring approximately 3cm, located caudally to the mesenteric hematoma, with associated stranding of the adjacent mesenteric fat

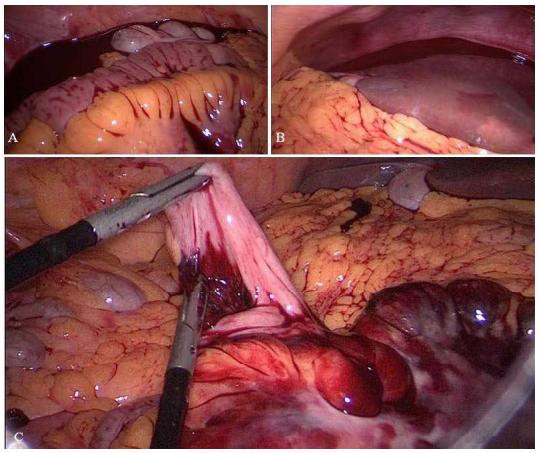

Figure 2. Intraoperative laparoscopy findings: (A) hemoperitoneum in the left hemiabdomen, (B) hemoperitoneum in the uper right quadrant (C) mesenteric hematoma adjacent to an ileal diverticulum

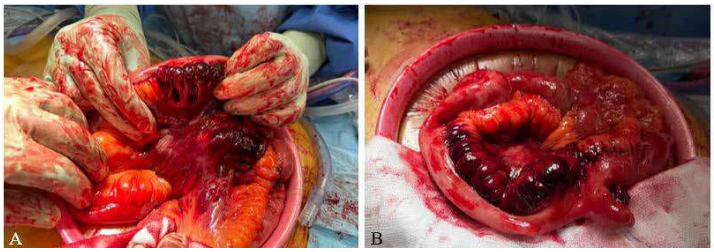

Figure 3. Intraoperative findings during laparotomy: (A) mesenteric hematoma

**What to Expect When You Are Not Expecting: A Rare Case of Persistent Left Superior Vena Cava**

C. Miatello[1], P. Froment[2], H. L. Chan[1], M. Menth[1]
[1]Vascular Surgery, HFR Fribourg – Cantonal Hospital, Fribourg; [2]General Surgery, HFR Fribourg – Cantonal Hospital, Fribourg

**Background:** Persistent left superior vena cava (PLSVC) is a rare congenital vascular anomaly, resulting from the persistent patency of the left superior cardinal vein following early stages of venous system development. In most cases, PLSVC coexists along the right SVC and drains into the right atrium via the coronary sinus, without haemodynamic consequences. Usually asymptomatic, PLSVC is identified incidentally during imaging studies or invasive procedures, such as central venous catheterisation and pacemaker implantation. We present a case of an accidental PLSCV finding following a challenging catheterisation of the SVC during port placement.
**Conclusion:** This case report emphasises the critical importance of understanding central venous system anatomical variants. Identifying PLSVC can prevent complications and inform appropriate procedural strategies, particularly for venous catheterisation. Preprocedural imaging review, and eventually vascular consultation, are essential to identify such anomalies, ensuring safe and effective clinical outcomes.
**Case presentation:** A 57-years-old female was referred to general surgeons for port implantation before starting chemotherapy. Catheter insertion was planned on the right cephalic vein, but its progression proved impossible during the procedure. A right subclavian vein puncture was subsequently performed, allowing the guidewire to cross the right brachiocephalic vein and descend to left side of the heart. While suspecting incorrect placement, the right internal jugular vein was punctured under ultrasound control, yet the guidewire advanced laterally toward the left heart. Upon vascular consultation, images review of previously conducted scan revealed a patent PLSVC, which transversed posteriorly to the left atrium and drained into the right atrium through the coronary sinus. The right SVC was absent, replaced by a left brachiocephalic vein bridge that drained into the PLSVC (Figure 1). The catheter was placed into the PLSVC and the procedure completed (Figure 2). The patient developed a pneumothorax due to subclavian puncture, which was effectively managed by drainage placement, leading to an uneventful recovery.

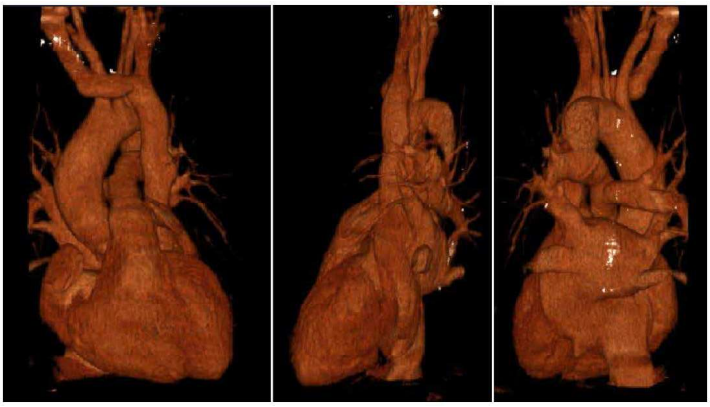

Figure 1

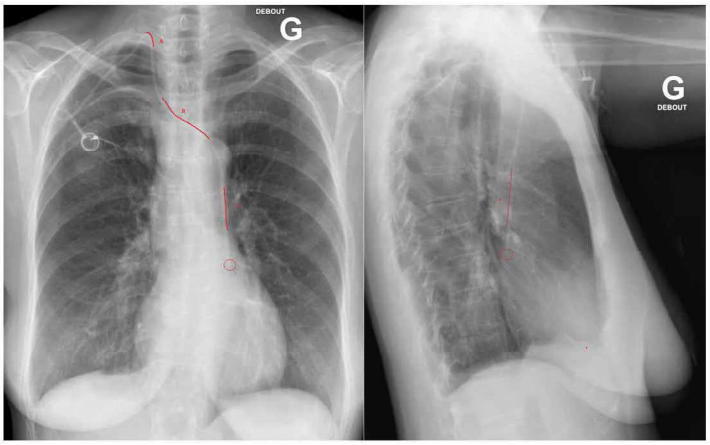


Figure 2

**Impact of Peer-Assisted Learning on Suturing Skill Acquisition in 194 Medical Students: A Multicenter Cohort Study**

J. Gisiger[1], D. Hahnloser[2], G. Joliat[2], H. Teixeira[2], L. Widmer[3], C. Golliez[3], L. Lapierre[3], M. Magnin[3], E.Houdebert[3], S. Hubert-Sigwart[3], C. Amstutz[3], G. Shafer[3]
[1]Surgery, Fribourg University Hospital, Fribourg; [2]Visceral Surgery, CHUV, Lausanne; [3]Visceral Surgery, Fribourg Hospital, Fribourg

**Background:** Developing foundational surgical skills is an essential element of medical education; however, a substantial proportion of medical graduates demonstrate limited proficiency or lack formal competence in suturing.
**Aims:** This study investigated the effectiveness of peer-assisted learning on suturing skill progression and its influence on students' engagement with surgery.
**Methods:** Prospective study (2023–2025). Medical students in years 2–5 participated in three standardized 2-hour suturing sessions integrating e-learning with peer-assisted, supervised hands-on practice. Participants submitted video recordings of their suturing performance. Suturing videos were independently evaluated by surgeons from two different hospitals using the Objective Structured Assessment of Technical Skills (OSATS : 1-5 point), two-sided p value $< 0.05$ was considered statistically significant. Pre–post comparisons were assessed using paired.
**Results:** A total of 194 enrolled medical students, completed the study; 161 participants were included in the final analysis. Mean performance increased by 0.95 points on the 5-point OSATS scale ($p < 0.01$). The largest gain was observed for procedural knowledge ("knowledge of steps"; mean increase 1.27, $p < 0.01$), whereas the smallest improvement was noted for tissue handling (mean increase 0.55, $p < 0.01$). Inter-rater reliability was moderat (IRR of 0.476) across four reviewers. Despite a very large pre–post effect size (Cohen's $d = 4.01$), inter-rater agreement on absolute OSATS scores was limited, with low correlations between reviewers (Pearson's $r = 0.067$; Spearman's $\rho = 0.404$), likely reflecting differences in score calibration rather than inconsistency in observed skill. In multivariable analysis, skill progression was positively associated with higher perceived competence in suturing ($\beta = 0.32$; 95% CI [0.047, 0.55], $p = 0.02$).
**Conclusion:** Peer-assisted learning was associated with measurable improvements in basic suturing skills following the 6-hour suturing program.

**Liver all Around: A Rare Case of Ectopic Gallbladder**

S. Wistehube, N. Mena1, S. Happ
Department of Visceral Surgery, Hopital du Valais, Visp

**Background:** Intrahepatic gallbladder (IHGB) is a rare congenital anomaly that occurs with a prevalence of 0.1%. It is associated with cholecystolithiasis, bile stasis, liver abscesses, bile

duct carcinoma and can challenge diagnosis and surgery. We present a case in which IHGB was missed in preoperative ultrasound.
**Conclusion:** This case illustrates the challenge of preoperatively undiagnosed IHGB. Preoperative ultrasound may not reliably provide definitive evidence of aberrant GB position. In any doubt MRI or CT scan is recommended. Intraoperative ultrasound can be helpful. Be aware of associated liver anomalies that might complicate the procedure.
**Case presentation:** A 65-year-old woman presented to the outpatient clinic with severe right upper abdominal pain for two days, vomiting and diarrhea. Her medical history included mild renal insufficiency, cholecystolithiasis and atrial fibrillation treated with anticoagulants. Clinically, she presented with skin and scleral icterus and a positive Murphy's sign. Biochemical tests showed elevated inflammation and severe cholestasis parameters. Sonography revealed a gallbladder (GB) with multiple concrements, a thickened wall and dilated CHD (Figure 1). ERC with stenting was performed same day. She developed a mild post-ERC pancreatitis. Since on the fifth day after ERC inflammation markers remained elevated and ultrasound showed signs of inflammation cholecystectomy was indicated. Intraoperatively fibrinous peritonitis was observed in the right upper abdomen. An enlarged liver in non- anatomic position extended to the umbilicus. It was not possible to locate the GB so a laparotomy via Kocher incision was necessary. Even in open surgery the GB was untracable. The hepatic ligament with the palpable stent could be followed until the intrahepatic part. Intraoperative ultrasound located the completely intrahepatic GB (Figure 2). Dissection of the liver with diathermy allowed the inflamed GB to be removed. Histology showed only inflammation. The patient was discharged on the 11th postoperative day for further outpatient care.

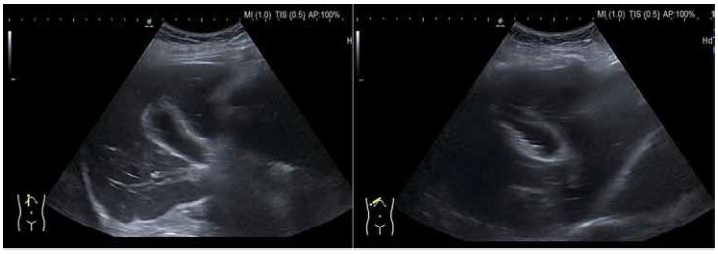

**Figure 1. Preoperative ultrasound imaging of the gallbladder**

**Figure 2. Intraoperative ultrasound imaging of the gallbladder**

**From VATS to RATS: Extending Minimally Invasive Approaches to Advanced and Complex Lung Cancer Resections**
E. Zanfrini, T. Krueger, E. Abdelnour
Thoracic Surgery, CHUV, Lausanne

**Background:** Minimally invasive techniques have become central to the surgical management of non-small cell lung cancer (NSCLC). While video-assisted thoracoscopic surgery (VATS) is well established, robotic-assisted thoracic surgery (RATS) has emerged as a complementary platform with potential advantages in complex anatomical resections.
**Aims:** This study aims to report the impact of implementing a comprehensive RATS program in a high-volume single-center setting, focusing on the changes in surgical approach, perioperative outcomes, and the feasibility of minimally invasive surgery for complex cases.
**Methods:** Consecutive patients undergoing anatomical pulmonary resections for primary lung cancer or pulmonary metastases were analyzed across two periods: a pre-RATS era (two years prior to RATS introduction) and a RATS era (two years after implementation). Surgeons were experienced in VATS before transitioning to RATS. Cohorts were propensity-matched for age, sex, and oncological stage. Primary endpoints included surgical approach, perioperative outcomes, and feasibility of minimally invasive surgery in complex cases (post-induction therapy, sleeve resections).
**Results:** A total of 873 patients were included (pre-RATS: n=448; RATS era: n=425). Case mix and procedural distribution were comparable between groups. Following RATS implementation, the proportion of open resections significantly decreased (21.9% vs 12.7%, p<0.001), as did conversion rates (3.9% vs 3.0%, p=0.025). Minimally invasive surgery was increasingly feasible after induction therapy (31.7% vs 63.3%, p=0.005) and for sleeve lobectomies (18% vs 43%, p=0.011). Operative time and postoperative outcomes, including length of stay, drainage duration, and complication rates, were similar between groups.
**Conclusion:** Implementation of a RATS program in a high-volume center is safe and effective and is associated with reduced thoracotomy rates. Importantly, RATS facilitates the extension of minimally invasive approaches to more complex and locally advanced lung cancer resections, supporting its role in the modern multimodal treatment era.

**Ulceroinfiltrative Lesion of the Distal Rectum Caused by a Probable Sexually Transmitted Infection**
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[1]Colorretal Surgery, Clinica Nassif, Curitiba; [2]Chirugie thoracique, Centre hospitalier universitaire vaudois, Lausanne; [3]General Surgery, Hospital Santa Casa da Misericordia, Curitiba; [4]Colorrectal Surgery, Hospital Santa Casa da Misericordia, Curitiba; [5]Hospital Santa Casa da Misericordia, Curitiba

**Background:** Sexually transmitted infections (STIs) with anorectal involvement have become increasingly prevalent and may clinically and endoscopically mimic inflammatory or neoplastic diseases. The absence of specific histopathological findings often delays diagnosis and management, reinforcing the importance of maintaining a high index of suspicion in patients with rectal lesions of unclear origin.
**Conclusion:** Rectal lesions of indeterminate etiology should raise suspicion of sexually transmitted infections, even when the causative pathogen cannot be clearly identified. Early recognition and appropriate investigation are essential for adequate management and for reducing disease transmission.
**Case presentation:** A 29-year-old male patient with no relevant medical history presented with diarrhea, abdominal pain, hematochezia, mucus in stools, and anal pain during defecation lasting ten days. Prior antiparasitic treatment was ineffective. Abdominal and pelvic computed tomography revealed mesorectal, obturator, and left iliac lymphadenopathy, rectal wall thickening, mesorectal fat stranding, and mild colonic distension. Colonoscopy showed an ulceroinfiltrative lesion in the distal rectum, 6 cm from the anal verge, occupying approximately 50% of the lumen, with poorly defined margins and fibrin deposits. Histopathological analysis demonstrated acute ulcerated proctitis without evidence of chronic inflammatory disease, granulomas, infection by fungi or parasites, or malignancy, suggesting a nonspecific infectious process. Empirical treatment with metronidazole was initiated, and pelvic magnetic resonance imaging and serological tests were requested. Follow-up colonoscopy demonstrated marked regression of the lesion, involving less than 10% of the rectal lumen, although mucosal friability persisted.

**Haemorrhagic Shock Following Splenic Rupture Caused by an Infiltrative Metastatic Renal Tumour: A Rare Case Report**
N. Vaes, C. Paganetti, L. M. Schupp, D. Eucker, R. Rosenberg
Surgery, Kantonsspital Baselland, Liestal

**Background:** The most common cause of splenic rupture is trauma. Atraumatic aetiologies include hematologic malignancies or infections, whereas metastatic renal neoplasms represent an exceptional cause that has been rarely reported in the literature.
**Conclusion:** Our case report demonstrates an extraordinary case of per continuitatem infiltration of the spleen originating from a kidney tumour. This rare but clinically relevant complication should be considered as a differential diagnosis of splenic rupture especially in the absence of trauma.
**Case presentation:** A 72-year-old male patient presented with acute onset of thoracic and abdominal pain, additionally complaining of light-headedness and cold sweats. The medical history was unremarkable regarding previous trauma or infections, but the patients was recently diagnosed with a kidney mass. The patient was hypotensive, tachycardic, with cold peripheral extremities and tenderness in the epigastrium. Laboratory investigations showed mild anaemia and leucocytosis, impaired renal function, and high lactate. Ultrasonography suggested free fluid in the Morison's pouch, a mass of the left kidney and inhomogeneous splenic tissue, confirmed by CT angiography, which revealed a hematoma of the spleen with signs of ongoing bleeding and free fluid in the abdominal cavity. After initial stabilization with blood transfusions and phenylephrine, an endovascular approach was planned. However, the patient developed hypovolemic shock prior to the procedure, indicating urgent explorative laparotomy. After the splenic hilum was initially clamped, splenectomy was performed, resulting in hemodynamic stabilization. Subsequent exploration of the abdomen revealed peritoneal nodules and a tumour of the left kidney. Peritoneal biopsies were taken and showed a papillary renal cell carcinoma. The patient was referred for further diagnostic and treatment to the oncology department to receive chemotherapy. The postoperative recovery was uneventful except for one additional blood transfusion and the patient was discharged on postoperative day six.

Figure 1. CT abdomen cor renal mass & hemorrhage

## Transvaginal Small Bowel Evisceration 23 Years After Vaginal Hysterectomy: A Case Report

B. Herrmann
Surgery, Luzerner Kantonsspital Wolhusen, Wolhusen

**Background:** Transvaginal small bowel evisceration is an extremely rare but potentially life threatening surgical emergency, most commonly occurring after pelvic surgery. Delayed presentations several decades after hysterectomy are exceptional and pose diagnostic and therapeutic challenges. To report a rare case of transvaginal small bowel evisceration occurring 23 years after vaginal hysterectomy and to highlight the importance of interdisciplinary surgical management.
**Conclusion:** Transvaginal bowel evisceration can occur decades after hysterectomy. Prompt recognition and a structured interdisciplinary surgical strategy are essential to achieve favorable outcomes.
**Case presentation:** An 88 year old woman presented with acute lower abdominal pain and transvaginal evisceration of approximately 50 cm of small bowel. She had undergone vaginal hysterectomy 23 years earlier for endometrial carcinoma in situ. Relevant comorbidities included metastatic melanoma and anticoagulation with rivaroxaban. The exposed bowel appeared livid but showed preserved peristalsis. Abdominal ultrasound revealed no free intra abdominal fluid or ileus. An interdisciplinary open surgical approach involving general surgeons and gynecologists was chosen. A lower midline laparotomy was performed. The vaginal vault was enlarged, allowing reduction of the small bowel into the abdominal cavity with transvaginal assistance. The vaginal vault was closed transvaginally using a two layer suture, supplemented by unilateral right sided pectineal fixation. Abdominal wall closure was performed using a small bite technique. The postoperative course was uneventful with no bleeding complications. Bowel function resumed on postoperative day four. The patient was discharged on postoperative day six. Transient urinary incontinence and mild fecal smearing were noted during follow up.

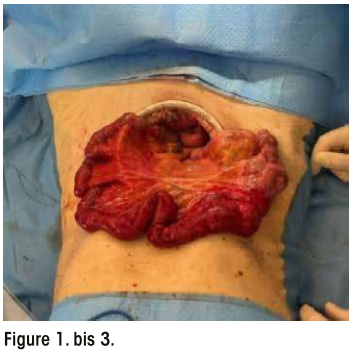

Figure 1. bis 3.

## Paracolic Internal Hernia With Small Bowel Incarceration Without Surgical History: A Case Report

T. Dionysopoulou, S. Lamm, R. Rosenberg, A. Taha
Department of Surgery & Visceral Surgery, Cantonal Hospital Baselland, Liestal

**Background:** Internal hernias, including paraduodenal (the most common), pericecal, Foramen of Winslow, intersigmoid, and transmesenteric/transmesocolic hernias (the rarest), account for approximately 0.5–5% of all cases of intestinal obstruction. Owing to their rarity and nonspecific clinical presentation, they are frequently misdiagnosed, leading to significant morbidity.
**Conclusion:** Although rare, paracolic hernias should be considered in the differential diagnosis of small bowel obstruction in patients without prior abdominal surgery. High clinical suspicion, early diagnosis, and timely surgical intervention are essential for favorable outcomes.
**Case presentation:** An 82-year-old male presented to the emergency department with acute-onset lower abdominal pain and one episode of vomiting. His medical history was unremarkable, with no prior abdominal surgery. Laboratory tests revealed elevated lactate levels, while all other parameters were within normal limits. Abdominal computed tomography demonstrated a mechanical ileus with suspicion of an internal hernia. Emergency diagnostic laparoscopy revealed partial herniation and incarceration of the small bowel through a paracolic defect. The procedure was converted to a mini-laparotomy, with mobilization of the ileocecal region, followed by segmental ileal resection approximately 1 meter proximal to the ileocecal junction, due to questionable bowel viability and a tight strangulation ring. The patient received intravenous antibiotic therapy, and oral intake was gradually reintroduced without complications. After satisfactory wound healing and decreasing inflammatory markers, secondary closure of the laparotomy wound was performed, followed by a rapid and uneventful postoperative recovery.

Figure 1

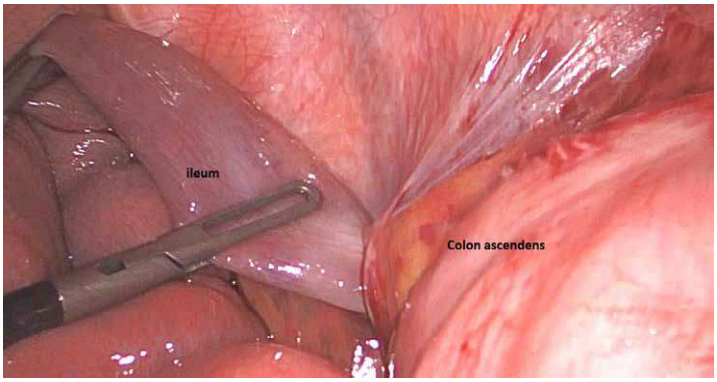


Figure 2

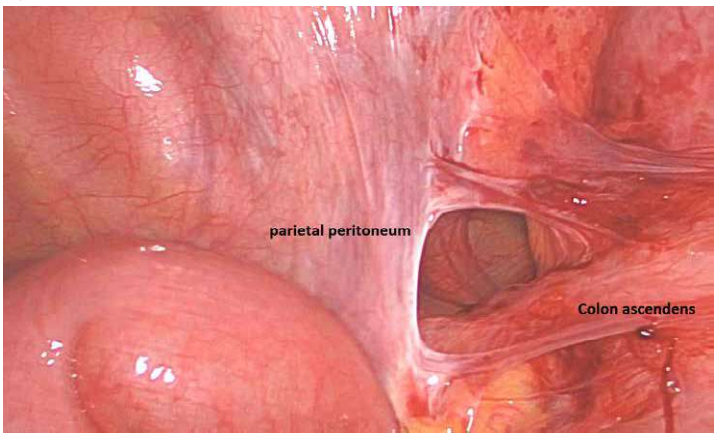


Figure 3

**Staged Resection of a Giant Hypervascular Posterior Hemangioma with Foraminal Extension**

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[1]Chirugie thoracique, Centre hospitalier universitaire vaudois, Lausanne; [2]Chirugie thoracique, Hôpital du Valais, Sion; [3]Radiologie, Centre hospitalier universitaire vaudois, Lausanne; [4]Chirurgie spinale, Centre hospitalier universitaire vaudois, Lausanne

**Background:** Posterior mediastinal hemangiomas are rare and may mimic neurogenic tumors, particularly when associated with foraminal extension. Their hypervascularity and proximity to critical neurovascular structures make their surgical management challenging with no optimal operative approach to date.
**Conclusion:** Giant hemangiomas are rare. The suggested multidisciplinary staged approach was safe and resolved the patient's symptoms.
**Case presentation:** Here we describe a multidisciplinary management of a superior sulcus, giant hypervascular, posterior mediastinal hemangioma with foraminal extension. A 69 year old female presented with progressive dyspnea and fatigue. CT-scan imaging revealed a superior sulcus, well circumscribed 9x9x5.5cm mass of the right posterosuperior mediastinum extending through the T1-T2 neuroforamen. Magnetic resonance imaging confirmed a dumbell invasion of the foramen with hyperintense T2 signal confirming its hypervascularization. A transthoracic core needle biopsy confirmed a cavernous hemangioma. Because of the progressive symptomatology, a surgical resection was decided. An initial embolisation of the hemangioma was performed by interventional radiology to reduce intraoperative bleeding. Then, the spinal surgeon proceeded with a T1-T2 posterior hemi-laminectomy to free the dura mater and the foramen from the tumor. The first rib and C7 nerve root were resected because involved in the tumor. The thoracic surgeon then performed a hemi-clamshell to dissect the subclavian vessels and the plexus which allowed en bloc resection of the tumor with the lamina and the first rib. The surgery was uneventful and the patient was discharged on postoperative day 8 with a complete resolution of the dyspnea and slight paresthesias in the C7 dermatoma.

**The Appendix Strikes Back: An Exceptional Cause of Sepsis After Ileal Conduit Diversion**

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**Background:** Radical cystoprostatectomy with Bricker ileal conduit diversion is an established treatment for severe, refractory radiation cystitis. Postoperative urinary sepsis is most commonly related to ascending infection, conduit obstruction, or anastomotic complications. Entero-urinary fistulas involving an ileal conduit are rare, and an appendiceal origin is exceptionally uncommon.
**Conclusion:** This case illustrates an extremely rare cause of recurrent urinary sepsis after ileal conduit diversion: an appendico-ileal conduit fistula. The presence of fecal material in the conduit should prompt urgent evaluation for an enteric fistula. Laparoscopic appendectomy with fistula closure can offer definitive treatment with excellent clinical outcomes.
**Case presentation:** A 70-year-old man with a history of prostate adenocarcinoma treated with pelvic radiotherapy underwent radical cystoprostatectomy with Bricker ileal conduit diversion for chronic radiation cystitis and persistent macrohematuria. The postoperative course was complicated by recurrent episodes of urinary sepsis. Two months after surgery, fecal material was observed in the ileal conduit, prompting surgical consultation. Cross-sectional imaging confirmed a fistulous communication between the appendix and the ileal conduit (Figure 1 & 2). The patient underwent laparoscopic appendectomy with direct closure of the fistulous tract. Recovery was uneventful, and the septic episodes resolved.

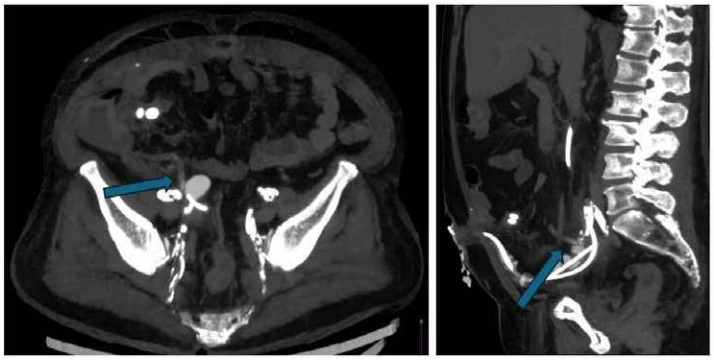

Figure 1

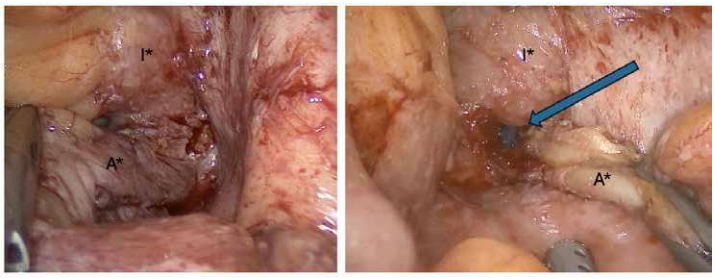


Figure 2

**Total Vascular Exclusion of the Liver with Veno-venous ECMO in Resection of a Leiomyosarcoma of the Inferior Vena Cava: A Case Report**

S. Suter, J. P. Jonas, F. Rössler, J. Oberholzer

Departement of Surgery and Transplantation, University Hospital Zurich, Zurich

**Background:** Leiomyosarcoma is a rare malignant mesenchymal tumor originating from smooth muscle cells, characterized by aggressive growth and a high potential for metastasis.
**Conclusion:** Resection of an advanced leiomyosarcoma of the inferior vena cava is challenging but achievable. We employed a unique technique involving bypassing the liver and preserving right heart inflow, thus avoiding autotransplantation and its related complications.
**Case presentation:** We report on a 76-year-old female who presented to the emergency department with increasing upper abdominal pain, a 2-month history of loss of appetite, and new bilateral leg edema. The diagnostic work-up revealed an intravascular tumor of the vena cava inferior extending from the right atrium to the right renal vein, measuring 15 cm in length. Biopsy confirmed the diagnosis of leiomyosarcoma. Upfront chemotherapy or radiation therapy was deemed inappropriate, and primary resection was planned. As the primary surgical option, we planned to exclude the retrohepatic vena cava by preserving the hepatic inflow while connecting the liver veins to a v-v bypass to maintain cardiac inflow into the right atrium (Figure 1). Alternatively, a tumorectomy ex-situ on the backtable with in-situ bypass and auto-transplantation was our fall-back strategy. The entire sarcoma was successfully removed without the need for auto-transplantation, including 20 cm of the inferior vena cava, which was reconstructed using bovine pericardium. Postoperatively, the patient stayed in the ICU for 2 days and was discharged to rehab after 12 days without any major complications.

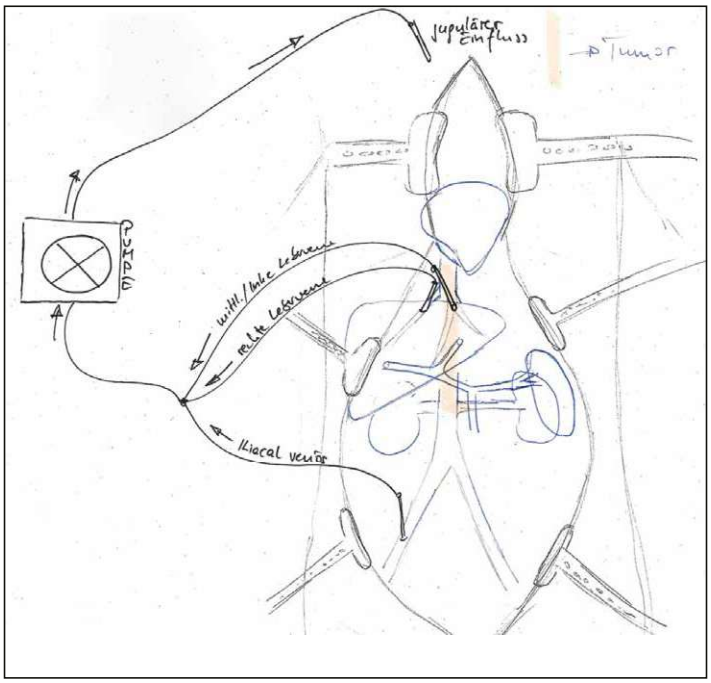


Figure 1

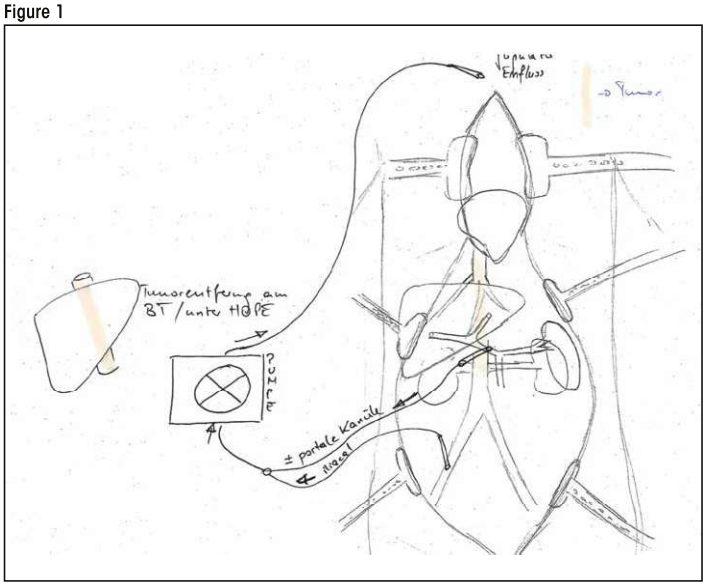


Figure 2

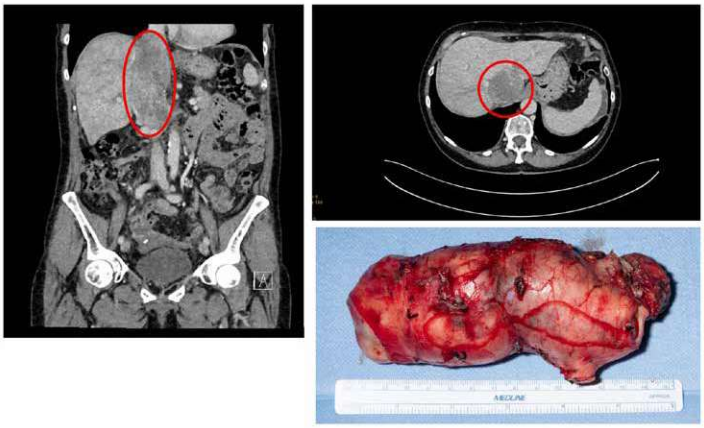

Figure 3. bis 5.

**Giant Intramuscular Hibernoma of the Thigh: Diagnostic Challenges and Surgical Treatment**

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[1]Department of Surgery, Clinica Moncucco, Lugano; [2]Department of Orthopedic Surgery and Traumatology, Clinica Moncucco, Lugano

**Background:** Hibernoma is a rare benign lipomatous tumor originating from brown adipose tissue, accounting for less than 1% of benign adipocytic neoplasms. Fewer than 300 cases have been reported in the literature. Due to its hypervascularity and heterogeneous appearance on imaging, it often mimics malignant neoplasms, such as atypical lipomatous tumors or liposarcomas, posing significant diagnostic challenges.
**Conclusion:** This case represents a rare brown adipose tissue tumor, known as hibernoma, located in the proximal thigh of a young patient. Surgical management is relatively straightforward; however, from a diagnostic standpoint, it is essential to exclude sarcoma, as MRI findings may appear similar. Immunohistochemical analysis and multidisciplinary discussion are therefore crucial before proceeding with surgical excision.
**Case presentation:** We report the case of a 37-year-old male presented with a slowly enlarging, painless mass of the anterior right thigh. Magnetic Resonance Imaging (MRI) identified a well-circumscribed, deeply seated intramuscular lesion within the quadriceps femoris, measuring 16x15x5 cm, exhibiting heterogeneous signal intensity and prominent internal vascularity. A core needle biopsy demonstrated a lipomatous neoplasm composed of brown fat–like cells with focal spindle cell and myxoid features. Molecular analysis showed absence of MDM2 amplification, supporting a benign diagnosis. Following a multidisciplinary consultation, a complete surgical excision of the mass, weighing approximately one kilogram, was performed. Macroscopically, the tumor was well-encapsulated and easily cleaved from the surrounding muscle fibers without evidence of local infiltration (figure 1, figure 2). Final histopathological examination confirmed the diagnosis of intramuscular hibernoma without evidence of malignancy (figure 3). Patient was discarged on post-operative day two in good general conditions. The postoperative course was uneventful, with preserved limb function and no complications.

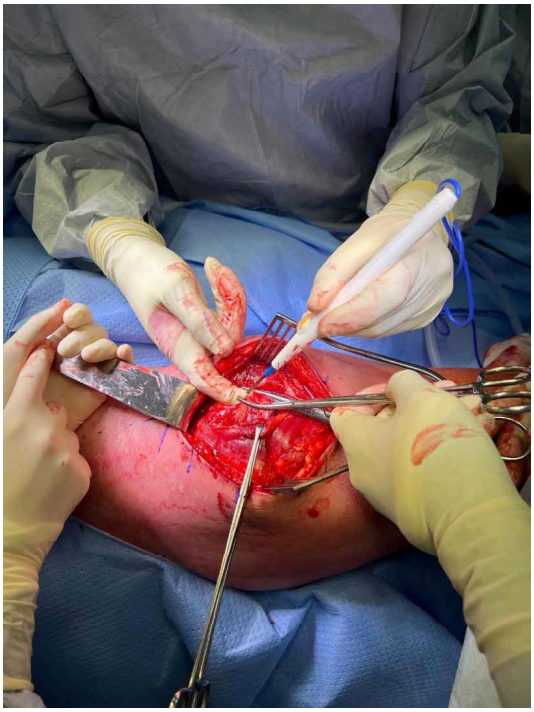

Figure 1. Incision of the fascia lata to access the quadriceps femoris compartment

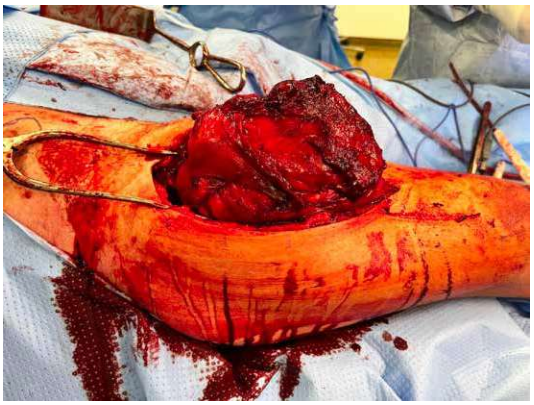

Figure 2. Enucleation of the hibernoma

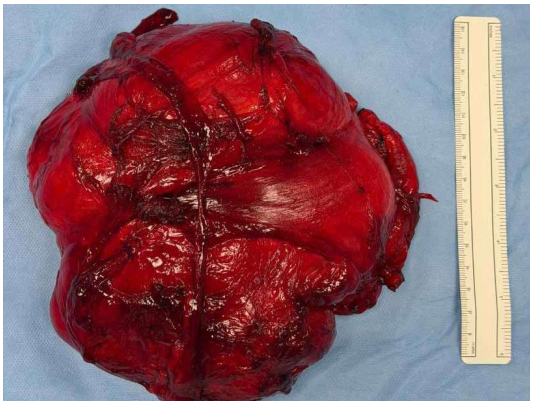

Figure 3. Resected specimen (16x15x5 cm)

**Radial Dislocation of the Median Nerve After Volar Plate Fixation of a Distal Radius Fracture: A Case Report**

T. Loupasis[1,2,3], M. Dietrich[4], S. Günkel[4]
[1]Orthopädie und Unfallchirurgie, Universität Luzern, Lucerne; [2]Orthopädie und Unfallchirurgie, Stadtspital Zurich, Zurich; [3]Orthopädie und Unfallchirurgie, Kantonsspital Luzern, Lucerne; [4]Stadtspital Zurich

**Background:** Median nerve neuropathy and secondary carpal tunnel syndrome are well-recognized complications following volar plate fixation of distal radius fractures. In contrast, late-onset anatomical displacement of the median nerve has rarely been described.
**Conclusion:** This case highlights a rare but clinically relevant cause of late-onset median nerve neuropathy after volar plate fixation of a distal radius fracture. Persistent or atypical neurological symptoms long after fracture healing should prompt consideration of structural nerve pathology. In this context, removal of osteosynthesis material should be regarded as revision surgery, as unexpected nerve displacement may be encountered and requires meticulous surgical technique.
**Case presentation:** We present the case of a patient who developed persistent wrist pain and sensory disturbances involving all digits approximately one year after volar plate fixation of a distal intra-articular radius fracture. Clinical and electrophysiological evaluations were consistent with secondary carpal tunnel syndrome, with additional evidence of ulnar nerve involvement at Guyon's canal. Due to persistent symptoms, revision surgery including osteosynthesis material removal was performed. Intraoperatively, the median nerve was found to be markedly dislocated in a radial direction, following an abnormal curved course and lying superficially beneath the radial subcutaneous tissue. Focal compression was identified at the level of the carpal tunnel inlet between the flexor pollicis longus and flexor carpi radialis tendons. Microsurgical neurolysis, decompression of the carpal tunnel and Guyon's canal, and medial repositioning of the median nerve were performed.

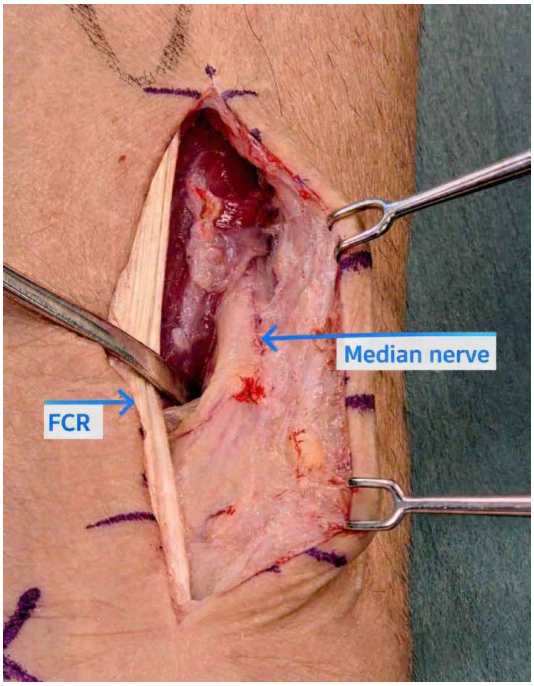


Figure 1. Initial intraoperative exposure of the volar wrist with distorted anatomy

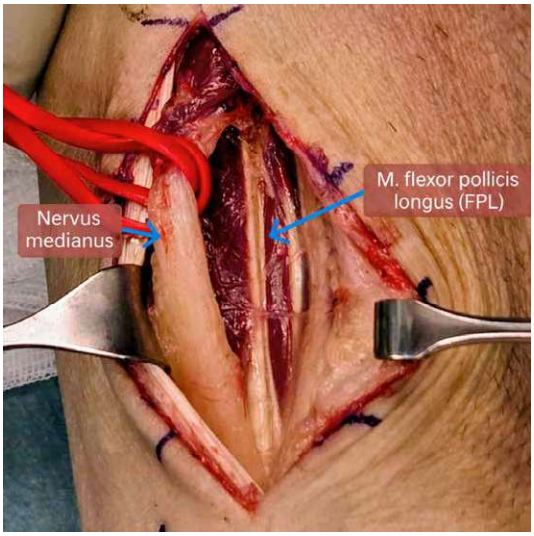


Figure 2. Intraoperative view demonstrating marked radial displacement of the median nerve (arrows) with surrounding scar tissue and adjacent flexor tendons

Figure 3. Median nerve after successful neurolysis and medial repositioning

**Feasibility of ICG Fluorescence for Intraoperative Imaging of Non-CRLM and Non-HCC lesions: A Case Series**

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Visceral Surgery, Ente Ospedaliero Cantonale, Lugano

**Background:** Indocyanine green (ICG) fluorescence imaging for the intraoperative visualization of hepatocellular carcinoma (HCC) and colorectal liver metastases (CRLM) has been widely reported in the literature. Its role in highlighting other liver lesions remains insufficiently characterized, with existing evidence limited to heterogeneous series and isolated reports. Several non-colorectal malignancies, including breast cancer and gastrointestinal stromal tumor (GIST) metastases, as well as benign lesions such as focal nodular hyperplasia, have been reported to exhibit variable fluorescence behavior.
**Aims:** To evaluate the feasibility and histology-specific intraoperative fluorescence behavior of ICG in non-HCC, non-CRLM operated in our institution.
**Methods:** We retrospectively analyzed a case series of patients undergoing liver resection for non-HCC and non-CLRM from May 2024 to August 2025. ICG was administered intravenously between 24-48h preoperatively, using a dosage of 0.5mg/kg. Intraoperative near-infrared fluorescence imaging was performed in combination with intraoperative ultrasound. Fluorescence findings were recorded and correlated with final histopathological diagnosis.
**Results:** A total of eleven patients were included. Pathologies comprised breast cancer liver metastases, GIST metastases, neuroendocrine tumor (NET) metastases, and benign lesions including adenomas. Positive intraoperative fluorescence was observed in breast cancer metastases (Fig.1), GIST metastases, focal nodular hyperplasia (Fig.2) and adenomas (Fig.3), facilitating lesion localization during surgery. In contrast, the two neuroendocrine tumor metastasis cases did not demonstrate fluorescence in this series.
**Conclusion:** ICG fluorescence imaging appears to be a feasible adjunct for intraoperative visualization of other less explored liver lesions, including breast cancer and GIST metastases. Fluorescence behavior is dependent on several factors, including histology, administration techniques and patient characteristics influencing biliary excretion. The absence of uptake in NET metastases in our case series contrasts to what reported in the literature, highlighting biological variability and potential limitations of the technique. These findings support the need for larger, standardized and histology-specific studies to better define the role of ICG fluorescence beyond CRLM and HCC resections.

Figure 1. Breast cancer metastases

Figure 2. Focal Nodular Hyperplasia

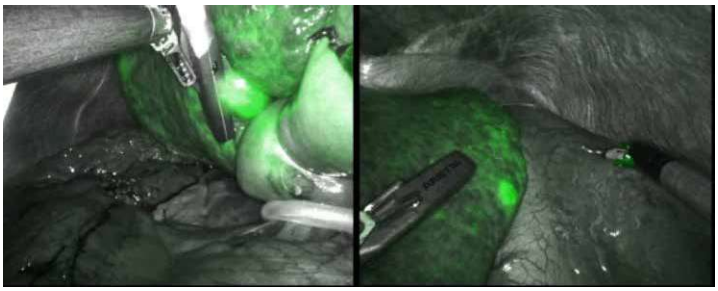

Figure 3. Hepatic adenomas in cirrhotic liver (initial suspicion of HCC)

**Beyond the Groin: Internal and Transthoracic Littre's Hernias – A Rare Case Series Surgeons Should be Aware of**

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Chirurgie viscérale, HUG, Genève

**Background:** A Littré's hernia is defined by the presence of a Meckel's diverticulum within a hernia sac and is classically described in inguinal, femoral, or umbilical hernias. Internal and transthoracic Littré's hernias are exceptionally rare and remain poorly characterized, often leading to delayed diagnosis. To our knowledge, this case series is the first to describe exceptionally rare locations of Littré's hernia.
**Aims:** It aims to raise awareness among surgeons of this uncommon and specific entity, which is notoriously difficult to diagnose preoperatively.
**Methods:** We report a case series of seven patients with internal or transthoracic Littré's hernias identified in literature. Research was conducted on Pubmed database in order to analyze clinical presentation, imaging findings, anatomical location, surgical management and outcomes.
**Results:** Seven cases were identified (six men, one woman). Hernia locations were intra-abdominal in five cases (foramen of Winslow, transmesocolic, transomental) and transthoracic through acquired diaphragmatic defects in two cases. Clinical presentation varied according to location: transthoracic cases presented with respiratory and abdominal symptoms, whereas intra-abdominal cases presented with bowel obstruction features. Computed tomography (CT) identified internal herniation but failed to diagnose Meckel's diverticulum in all cases. Four procedures were initiated laparoscopically, all requiring conversion to laparotomy. Resection of the Meckel's diverticulum was performed in all patients, with additional bowel resection when indicated. Among transthoracic Littré's hernias, one patient recovered without complications, while the other died on postoperative day 111 from hospital-acquired pneumonia. For abdominal Littré's hernias, a single postoperative death was reported in 1968.
**Conclusion:** Internal and transthoracic Littré's hernias are rare and potentially life-threatening entities with misleading clinical presentations. Awareness of these atypical locations and presentations is essential to avoid diagnostic delay. Early surgical intervention with systematic inspection of the small bowel, even in the absence of specific CT findings, and resection of the Meckel's diverticulum remains the cornerstone of management.

**Dysfunctional Jejunojejunostomy After Roux-en-Y Gastric Bypass**

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**Background:** Persistent abdominal pain after Roux-en-Y gastric bypass (RYGB) remains a diagnostic and therapeutic challenge. Up to one third of patients report chronic postoperative abdominal symptoms. Standard imaging frequently fails to identify an anatomical pathology.
Growing evidence suggests that dysfunction of the jejunojejunostomy (JJ) represents an underestimated cause of postprandial pain, nausea and functional impairment. Patients are therefore misattributed to psychosomatic disorders. Our aim is to illustrate JJ dysfunction as a clinically relevant and underdiagnosed cause of refractory postprandial pain after RYGB. We demonstrate the diagnostic and therapeutic value of surgical revision.
**Conclusion:** JJ dysfunction is an underestimated cause of persistent postprandial pain after RYGB. When non-invasive diagnostics are inconclusive, early surgical exploration and JJ revision should be considered.
**Case presentation:** We report the case of a 41-year-old woman with RYGB surgery (2015) and multiple abdominal revisions who developed new-onset, severe postprandial left-sided abdominal pain after robotic repair of a trocar hernia in December 2024. All previous bariatric revisions included closure of the mesenteric defects. Extensive diagnostic workup with repeated CT imaging (Figure 1), gastroscopy, colonoscopy and enteroscopy failed to demonstrate obstructive pathology. A radiopaque intraluminal structure was intermittently visualized in the jejunum but not confirmed endoscopically. Ongoing symptoms caused inability to work and significant quality-of-life impairment. Therefore, we performed a diagnostic laparoscopy and a revision of the JJ. Intraoperatively, the JJ was found to be severely pathological, showing extensive adhesions, fibrotic remodeling, an elongated rigid anastomosis with a long blind limb and mechanical distortion consistent with functional obstruction (Figure 2, 3). Resection of the dysfunctional JJ with complete reconstruction of the alimentary and biliopancreatic limbs and closure of mesenteric defects was performed via mini-laparotomy. The patient experienced rapid and sustained resolution of postprandial pain with full functional recovery.

Figure 1. Dilated area of the jejunojejunostomy

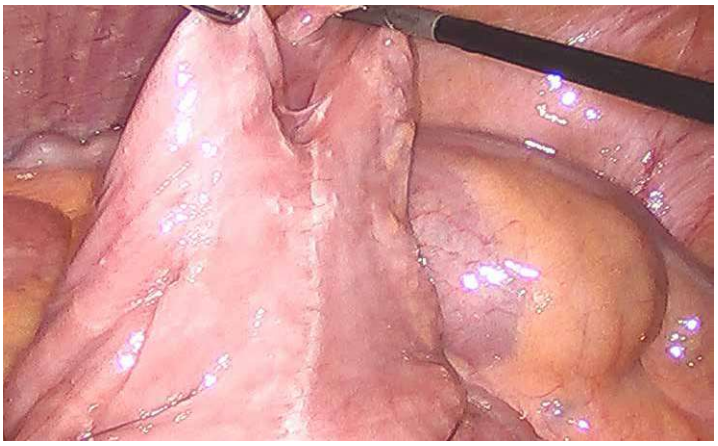


Figure 2. intraoperative finding of an elongated rigid anastomosis with a long blind limb and mechanical distortion consistent with functional obstruction

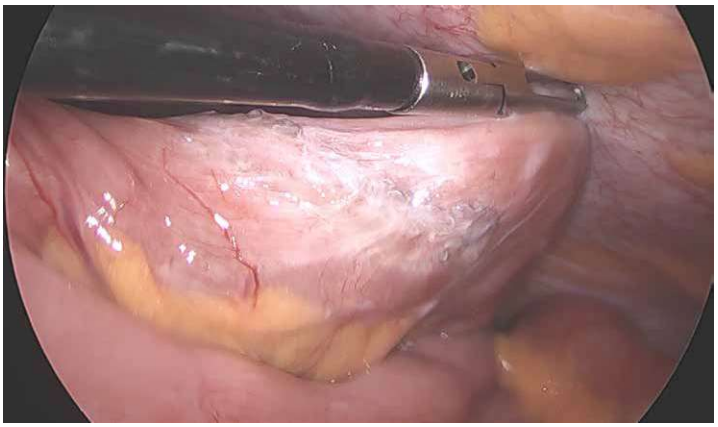


Figure 3. fibrotic remodeling of the jejunojejunostomy

**Diagnostic Pitfall of Para-Duodenal Paragangliomas: A Case Report and Implications for Perioperative Management**

G. Gonzales[1], R. Sortino[1], M. G. Marie-Laure[1], G. Oliver[2]
[1]Chirurgia, Clinica Moncucco, Lugano; [2]Chirurgia Viscerale, Clinica Moncucco, Lugano

**Background:** Paragangliomas are rare extra-adrenal neuroendocrine tumors that may occur in atypical abdominal locations. When arising in the para-duodenal region, they can closely mimic gastrointestinal stromal tumors (GISTs) or non-functioning neuroendocrine tumors (NETs). Failure to recognize this entity preoperatively may result in omission of mandatory biochemical testing and expose patients to significant perioperative risk.
**Aims:** To highlight a diagnostic pitfall of para-duodenal masses with important implications for perioperative safety and surgical management.
**Methods:** We present the case of a 71-year-old woman in whom a para-duodenal mass was incidentally detected during abdominal imaging. MRI and endoscopic ultrasound with fine-needle biopsy suggested a non-functioning NET or GIST arising from the muscularis propria. Due to the atypical location and absence of catecholamine-related symptoms, paraganglioma was not suspected, and no preoperative biochemical testing for metanephrines was performed. The patient underwent elective laparoscopic resection.
**Results:** Intraoperatively, a well-encapsulated mass was identified adjacent to – but not originating from – the duodenum and was completely excised laparoscopically without complications. Histopathological examination revealed a paraganglioma with classic Zellballen architecture and S-100–positive sustentacular cells (Figs. 1 and 2). Immunohistochemistry showed

preserved SDHB/SDHA expression and a low proliferative index (Ki-67 < 2%). Postoperative plasma-free metanephrines were within normal limits, confirming a non-functional tumor. The postoperative course was uneventful, and no recurrence was detected at short-term follow-up.
**Conclusion:** Para-duodenal paragangliomas are a rare but clinically relevant diagnostic pitfall for surgeons. Even in asymptomatic patients, they should be included in the differential diagnosis of para-duodenal masses with neuroendocrine features. In accordance with Endocrine Society and ESE/ENSAT guidelines, preoperative biochemical testing is essential to ensure perioperative safety and optimal surgical management.

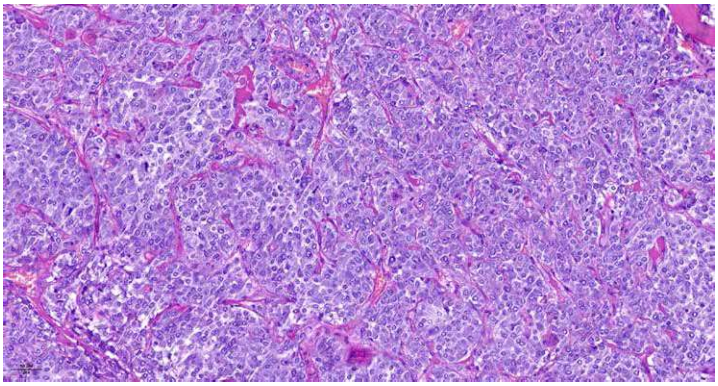


**Figure 1. H&E staining ×20, Classic Zellballen architecture**

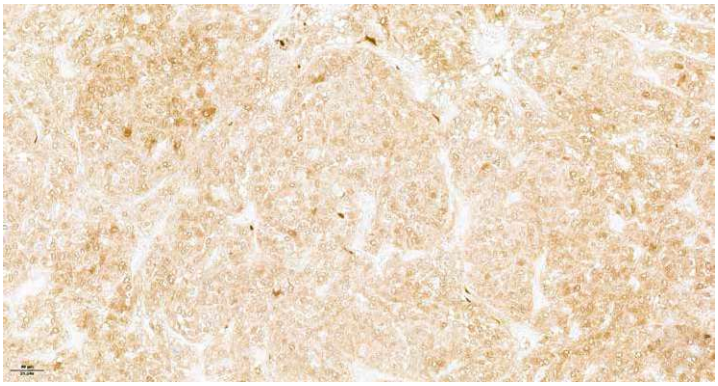


**Figure 2. S-100–positive sustentacular cells**

**Figure1. Abdominal MRI**

**Figure 2. Percutaneous biopsy**

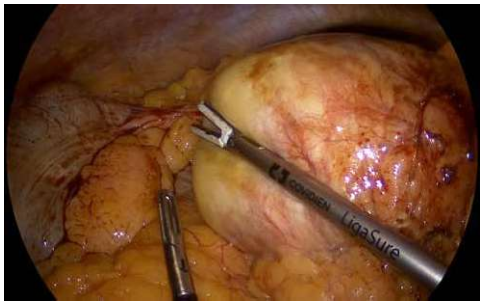



**Figure 3. Laparoscopic resection**

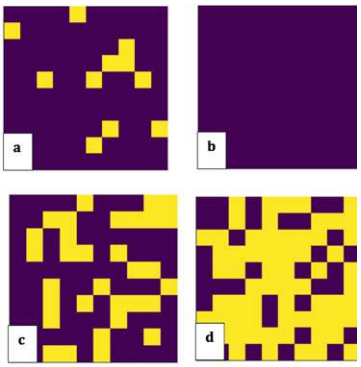
**Symptomatic Intraperitoneal mass: Lipoma or liposarcoma?**
B. Picut, F. Ris, E. Liot
Chirurgie Viscérale, HUG, Genève

**Background**: Lipomas are the most common benign mesenchymal tumors. Intra-abdominal localizations are rare and usually incidentalomas, with symptoms mainly related to mass effect when present.
**Conclusion:** Intra-abdominal lipomas are rare and may mimic malignant lipomatous tumors. Surgical resection is justified in symptomatic patients or when malignancy cannot be confidently excluded despite biopsy and molecular analysis.
**Case presentation:** We report the case of a 79-year-old woman with metabolic syndrome presenting with several months of abdominal pain, diarrhea, and abdominal distension. CT revealed an intraperitoneal para-colonic mass. MRI showed a well-circumscribed, predominantly fatty lesion attached to the mid-ascending colon, measuring 8x6.5x9 cm, suspicious for liposarcoma. Colonoscopy showed no intraluminal lesion or extrinsic compression (Figure 1). Percutaneous biopsy (Figure 2) demonstrated steatonecrosis with inflammatory fibrous remodeling, no MDM2 amplification on FISH. Following multidisciplinary sarcoma board discussion, laparoscopic resection (Figure 3) was performed (PCI score 0). Histopathology confirmed a benign lipoma, and postoperative recovery was uneventful. Giant intra-abdominal or paracolonic lipomas are rare, predominantly affecting elderly women. They are most frequently located in the ascending colon (52%), usually small and asymptomatic. However, some lesions may reach large sizes, up to 7x29x24 cm, and become symptomatic. Clinical presentation is variable and mainly related to compression, ranging from abdominal pain and bowel habit changes to rarer complications such as intussusception. Their true incidence remains unknown, as many cases are asymptomatic. Post-mortem studies report an incidence between 0.32%-to-4.4%. The main diagnostic issue is differentiation from malignant lipomatous tumors, particularly liposarcomas. CT and MRI are essential for lesion characterization. Liposarcomas are generally larger (>10 cm) and present thick septa (>2 mm), non-adipose components, and heterogeneous features, but imaging alone may be insufficient to exclude malignancy. Histological confirmation is therefore required. MDM2 gene amplification assessed by FISH reliably distinguishes liposarcomas from benign lipomas. Surgical resection is indicated in suspected malignancy symptomatic mass effec.

**Impact of Preoperative Obstructive and Infectious Complications on Liver Fibrosis in Choledochal Cysts**
I. Sakvarelidze[1], A. M. Calinescu[2], B. Wildhaber[2], N. Rock[3], A. L. Rougemont[4]
[1]Pediatric Surgery, UNIGE/HUG Geneva, Switzerland, Geneva; [2]Swiss Pediatric Liver Center, Division of Pediatric Surgery, Department of Pediatrics, Gynecology, and Obstetrics, University of Geneva, Geneva; [3]Swiss Pediatric Liver Center, Gastroenterology, Hepatology and Pediatric Nutrition Unit, Department of Pediatrics, Gynecology and Obstetrics, University of Geneva, Geneva; [4]Swiss Pediatric Liver Center, Division of Clinical Pathology, Diagnostic Department, University of Geneva, Geneva

**Background:** Patients with choledochal cysts (CC) may present with associated complications, most commonly infectious or obstructive. Further, intraoperative liver biopsies often reveal hepatic fibrosis, indicating associated liver injury.
**Aims:** This study aimed to determine whether infectious and/or obstructive complications occurring before surgical management for CC were associated with an increased prevalence of liver fibrosis.
**Methods:** Retrospective review of children aged 0-16 years who had undergone surgical management for CC in our center, from 01.01.2009 to 31.12.2025. Obstructive complications were defined as cholestasis, cholelithiasis, pancreatitis; infectious events as cholecystitis, cholangitis, biliary peritonitis. Intraoperative liver biopsy specimens were assessed for fibrosis using the METAVIR scoring system. Patient exclusion: liver biopsy unavailable or insufficient for assessment. Clinical and pathological data were analysed descriptively with quantitative variables presented as medians (range) and qualitative variables as frequencies and percentages. Group comparisons were performed using Fisher's exact test.
**Results:** Thirty-five patients underwent surgical treatment for CC, of whom 29 met the inclusion criteria. For the 24 postnatally diagnosed patients median age at diagnosis was 2 years (range: 0.17–15 years), 5 patients were diagnosed prenatally. 27/29 patients had Todani type I CC, 1 type II and 1 type IV. Eighteen patients experienced obstructive complications, 5 infectious and 3 experienced both. Hepatic fibrosis was more frequently observed in patients who had experienced both obstructive and infectious events (67%), than in those with obstructive or infectious events alone (33% and 0%, respectively) (all $p > 0.35$). Patients with no preoperative events had 11% fibrosis (Figure 1). None of the prenatally diagnosed patients showed liver fibrosis.

**Conclusion:** Preoperative obstructive complications, especially when combined with infectious events, are associated with a higher prevalence of hepatic fibrosis in CC patients. These findings highlight the importance of early detection and prompt surgical management of CC patients to mitigate the risk of liver fibrosis.




**Waffle plot distribution of hepatic fibrosis according to preoperative complications in choledochal cyst patients. a. No complication. b. Infectious complications. c. Obstructive complications. d. Infectious and obstructive complications. Purpel, normal liver biopsy; yellow, liver fibrosis**

### Varico–Portal Bypass with Superficial Femoral Vein for Chronic Superior Mesenteric Vein Thrombosis and Portal Hypertension with Colonic Variceal Bleeding

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[1]Department of Visceral Surgery, Lugano Regional Hospital, Ente Ospedaliero Cantonale (EOC), Lugano; [2]Clinic of Hematology, Oncology Institute of Southern Switzerland, Ente Ospedaliero Cantonale (EOC), Bellinzona; [3]Department of Surgery and Gastrointestinal Surgical Services, King Edward VII Memorial Hospital, Bombay; [4]Department of Vascular Surgery and Angiology, Lugano Regional Hospital, Ente Ospedaliero Cantonale (EOC), Lugano; [5]Faculty of Biomedical Sciences, University of Southern Switzerland (USI), Lugano

**Background:** Surgical shunt procedures for variceal bleeding secondary to portal hypertension are currently rarely performed because of advances in medical therapy and the widespread use of interventional radiology and endoscopic techniques. However, surgery may remain necessary in complex cases.
**Conclusion:** Varico-portal bypass using superficial femoral vein may represent a safe and effective option to treat complicated portal hypertension safely.
**Case presentation:** A 32-year-old man with extensive superior mesenteric vein thrombosis of multifactorial origin (previous sleeve gastrectomy, pancreatitis, and antiphospholipid antibody syndrome) presented with recurrent lower gastrointestinal bleeding while receiving oral anticoagulation. Diagnostic workup demonstrated severe portal hypertension with extensive splanchnic involvement and active bleeding from right colonic varices. As thrombosis extended into peripheral venous branches, an interventional radiology approach was not feasible, and laparotomic surgical decompression was indicated after multidisciplinary discussion. After imaging review, three potential shunts were identified: varico-splenic at the pancreatic body, varico-external right iliac, or a portal bypass. Intraoperatively, the main varix draining the right colon was identified. A varico-splenic shunt was excluded because of excessive distance between vessels and extensive peripancreatic collateral circulation; therefore, a varico-portal venous bypass was planned. The left superficial femoral vein was harvested as an autologous graft, preserving the great saphenous and profunda femoris veins. An end-to-side anastomosis between the conduit and the portal vein was created, followed by antepancreatic retrogastric conduit positioning and an end-to-side anastomosis to the colic varix. Immediate decompression of all splanchnic variceal circulation was observed. The postoperative course was uneventful. At one-year follow-up, no further episodes of hematochezia or rectal bleeding occurred despite full-dose anticoagulation. Colonoscopy at six months showed absence of red spots. Bypass patency was confirmed by Doppler ultrasound and contrast-enhanced magnetic resonance imaging.

### Peculiar Pulmonary Mass

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[1]Thoraxchirurgie, Kantonsspital Aarau, Aarau; [2]Pathologie, Kantonsspital Aarau, Aarau

**Background:** Pneumocytomas, first described by Liebow and Hubbell in 1956, are rare, mostly benign tumors, although cases with malignant transformations are described. They are more frequent in women of eastern Asian descent, with a higher incidence in middle age. They typically present as asymptomatic, incidental findings of solitary peripheral mass in the lower lobes. They present a unique surgical challenge due to their rarity and lack of consensus regarding management.
**Conclusion:** Treatment of choice for pneumocytomas is surgical resection, preferably sublobar, if adequate resection margin can be achieved, with usually excellent prognosis. Although the guidelines for pneumocytoma are non-existent, a follow up is needed due to the possibility of lymph node spread and local recurrence.
**Case presentation:** 50-yo, otherwise healthy, nonsmoker female patient had an abdomen-CT scan due to intermittent epigastric pain, which revealed a 6cm, well delineated tumor in left lower lobe as an incidental finding. A chest-CT scan was also obtained, revealing no signs of mediastinal lymphadenopathy or other pathological lesions. The lung function tests were normal. The case was presented to an interdisciplinary tumorboard, and resection was recommended. We chose the open thoracotomy and fissureless approach due to the size of the tumor, thick adhesions and subtotaly fused interlobar fissure. During the dissection of the infracarinal lymph nodes to facilitate the bronchial division, a part of n. vagus had to be removed. During the postoperative course there was mild air leak which resolved spontaneously, the drainage could be removed on postop day 4. The patient suffered from nausea and disrupted gastrointestinal motility, which we managed with metoclopramide. The patient was discharged on postop day 7. The pathology revealed a 58 mm pneumocytoma, presenting with sclerotic, solid growing tumor-cell clusters with no mitotic figures, positivity for EMA and TTF1 as well for pancytokeratin superficially and low Ki-67 proliferation index.

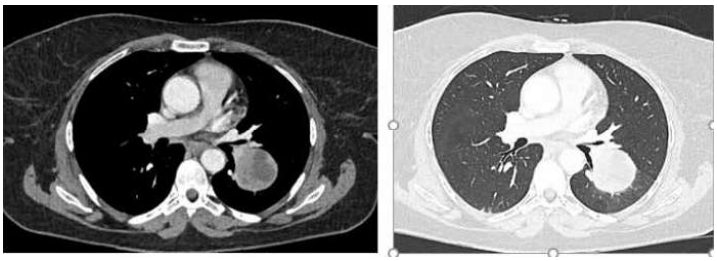

**Figure 1. CT**

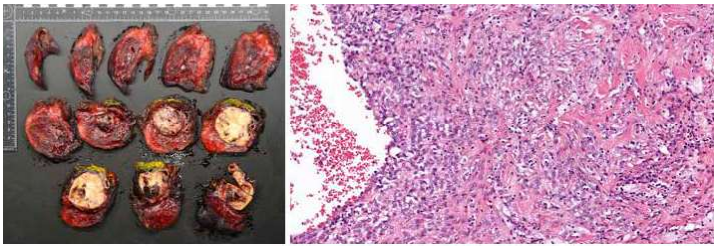

**Figure 2. Macroscopic & HE stain, 20 x magnification**

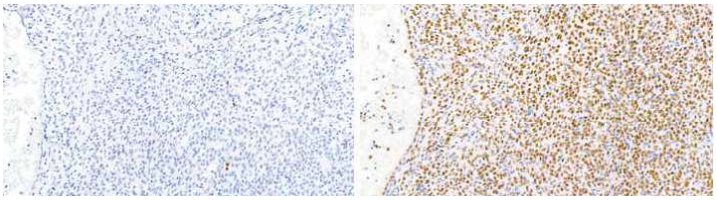

**Figure 3. KI 67 & TTF1 stain, 20 x magnification**

### A Rare Case of Gallbladder Volvulus: The Hidden Twist

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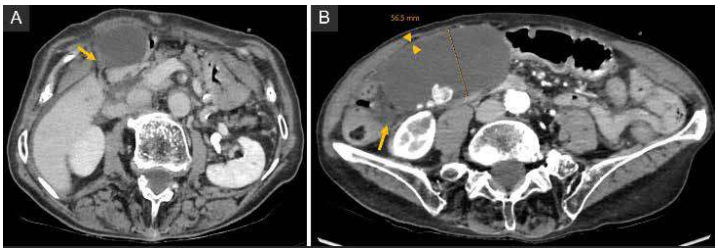
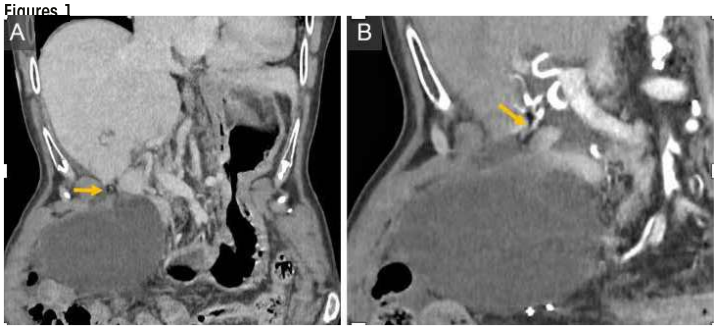
[1]Visceral Surgery, Geneva University Hospital, Geneva; [2]General Surgery, Fribourg Cantonal Hospital, Fribourg; [3]Radiology, Fribourg Cantonal Hospital, Fribourg; [4]General Surgery, Fribourg Cantonal Hospital, Villars-sur-Glâne; [5]Medecin, University of Fribourg, Fribourg

**Background:** Gallbladder volvulus is a rare but serious surgical condition caused by the twisting of the gallbladder around its mesentery, leading to vascular compromise. It occurs in approximately 1 in 350'000 hospital admissions and predominantly affects elderly women. Arising from congenital or acquired anomalies of the gallbladder mesentery, it is often associated with loss of supporting tissue, increased peristaltic activity, or gallbladder verticalization due to kyphoscoliosis. Clinical presentation is nonspecific, frequently mimicking acute cholecystitis, which explains why fewer than 10% of cases are diagnosed preoperatively. Because of the risk of necrosis and perforation, early recognition and prompt surgical intervention are crucial. This case report aims to describe a case of gallbladder volvulus and present a brief review of the literature.
**Conclusion:** Gallbladder volvulus remains a diagnostic and therapeutic challenge due to its rarity and nonspecific presentation. Imaging, particularly MRI, may reveal a distended and malpositioned gallbladder, but diagnosis is often intraoperative. Emergency cholecystectomy is the treatment of choice, as conservative management is ineffective. This case highlights the importance of maintaining a high index of suspicion, particularly in elderly women or patients not responding to conservative measures, to improve outcomes in this rare but potentially fatal condition.
**Case presentation:** An 87-year-old woman with a history of hiatal hernia presented with acute epigastric pain lasting one day. Physical examination revealed a periumbilical palpable mass. CT imaging (Figures 1-2) showed marked gallbladder distension with cholelithiasis and features suggestive of cholecystitis. Laparoscopic cholecystectomy was performed on the same day. Intraoperative exploration (Figure 3) revealed a 360° torsion of the gallbladder located in the right iliac fossa, with areas of necrosis but no perforation. The volvulus was reduced, and a standard cholecystectomy with critical view of safety was performed. The postoperative course was uneventful, and the patient was discharged the next day. Histopathological analysis confirmed the diagnosis.




Figures 1




Figures 2

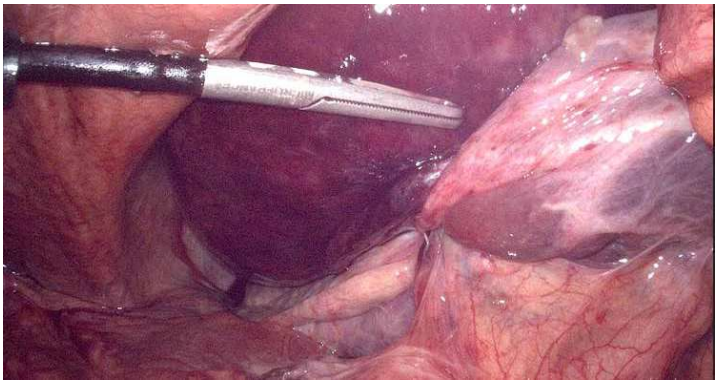


Figure 3

**Pessary-Induced Rectovaginal Fistula in Advanced Prolapse: Successful Repair Using Transvaginal Approach Without Fecal Diversion**

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**Background:** Rectovaginal fistulas are uncommon but disabling. In developed countries, the etiology is predominantly iatrogenic injury, obstetric trauma, perianal abscess, Crohn's disease, malignancy, and radiation. Pessary-induced fistulas represent a rare complication, with a reported prevalence of less than 1% in routine care, increasing to 3% in patients with risk factors such as advanced pelvic prolapse, prior pelvic surgery, and advanced age. The underlying pathophysiology involves tissue ischemia and necrosis caused by prolonged pessary contact, particularly in the setting of advanced prolapse. Standard surgical treatment includes rectal submucosal advancement flap repair via an endorectal approach or vaginal flap via a transvaginal approach.
**Conclusion:** This case illustrates successful management of a pessary-induced anovaginal fistula using a predominantly transvaginal approach without fecal diversion. This technique offers the advantage of operating through a low-pressure compartment, reducing mechanical stress and facilitating healing.
**Case presentation:** We report the case of an 80-year-old woman (G3P2) with stage IV vaginal vault prolapse who had previously undergone vaginal hysterectomy and both posterior and anterior colporrhaphy. In early 2025, she was managed with a pessary for recurrent prolapse and developed vaginal brownish discharge and recurrent urinary tract infections after three months of pessary use. Clinical examination revealed a low rectovaginal fistula located 3.5 cm from the anal verge, above the anal sphincter complex, with preserved sphincter function. Colonoscopy and pelvic MRI confirmed the fistula without evidence of abscess, malignant features or underlying inflammatory disease. She underwent combined Richter's sacrospinofixation with rectal submucosal advancement flap repair via transvaginal approach, using multilayer offset paletot sutures. The rectal mucosa was closed by simple sutures. No fecal diversion was performed. Postoperative follow-up demonstrated complete fistula healing. Although vaginal vault prolapse recurred on later follow-up, repeated clinical examination confirmed fistula closure at 6 months.

**The Non-Recurrent Inferior Laryngeal Nerve, an Unexpected Guest During Thyroidectomy: About two Cases**

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**Background:** The recurrent laryngeal nerve is a branch of the vagus nerve (VN) providing motor and sensitive function to the larynx. It usually describes a loop as it turns upward, passing under the subclavian artery on the right and recurring around the ligamentum arteriosum on the left. A nonrecurrent laryngeal nerve (NRLN) is a rare anatomical variation in which the nerve enters the larynx directly from the cervical VN. It has been reported in 0.3-0.8% of the population. The NRLN is closely related to the occurrence of rare vascular anomalies, such as arteria lusoria. Damage to this nerve during the surgical procedure may lead to severe morbidity.
**Conclusion:** The non-recurrent laryngeal nerve is a rare but significant anatomical variation that can turn a routine thyroidectomy into an unexpected challenge. While IONM is a valuable tool, the prevention of nerve injury ultimately relies on the surgeon's patience, careful dissection, and systematic attention to anatomical landmarks. Vigilance and anticipation remain the most reliable safeguards against this "unexpected guest."
**Case presentation:** Case 1: A 71-year-old woman was admitted for the management of a multinodular goitre. The preoperative contrast-enhanced computed tomography (CT) showed no vascular abnormality (Figure 1). The team proceeded to total thyroidectomy with routine identification of the inferior laryngeal nerve and systematic use of intraoperative neuromonitoring (IONM). On the right side, the lower laryngeal nerve had not been identified on its usual path; it came directly from the VN and was heading towards the right tracheal cricothyroid angle (Figure 1). Case 2: A 54-year-old man was admitted for the management of a multi-nodular goitre. The preoperative CT showed an arteria lusoria as a vascular anatomic variation (Figure 2). The surgery confirmed a NRLN on the right side (Figure 3). No loss of signal was noticed.

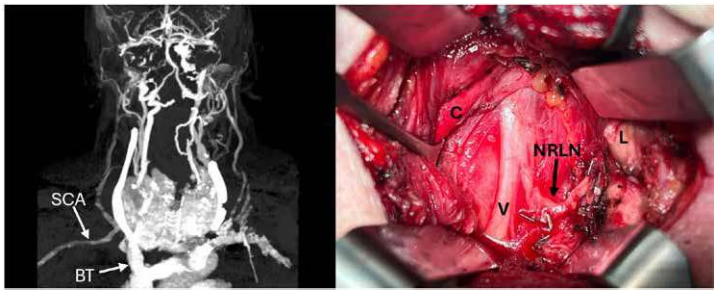


**Figure 1. CT proved normal vascular anatomy with the right subclavian artery (SCA) emerging on the right side, from the brachiocephalic trunk (BT). Intraoperative findings: the carotid artery (C) is put aside, exposing the vagus nerve (V). The NRLN exits**

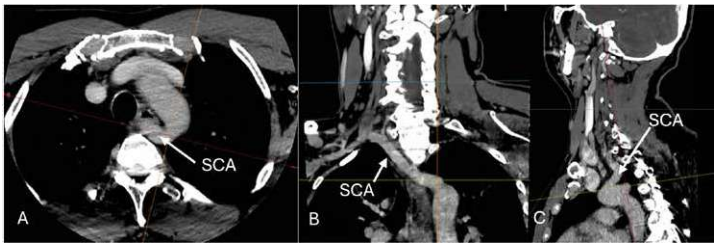


**Figure 2. Axial (A), coronal (B) and sagittal (C) CT shows the right subclavian artery (SCA) emerging from the aortic arch on the left and hooking back to reach the right side, following a retro-oesophageal path**

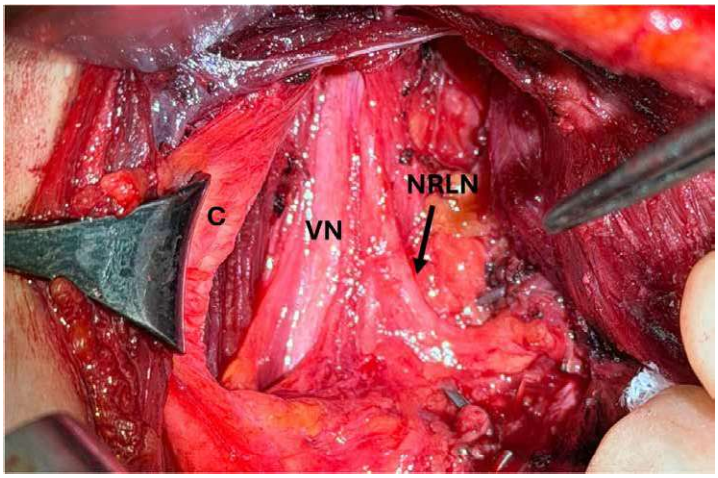


**Figure 3. Intraoperative findings for second case with the carotid artery (C) put aside, exposing the vagus nerve (V) and the NRLN emerging directly from it**

**Colonic Intussusception Due to an Undifferentiated Spindle Cell Sarcoma With Partial Smooth Muscle Differentiation: A Case Report**

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**Background:** Intestinal intussusception is predominantly a paediatric condition, with most cases arising from benign causes. In contrast, adult intussusception is a rare event, accounting for approximately 5% of all cases with differences in its presentation, its management and – most notably – in its etiology. Intussusception occurs predominately in the small bowel, followed by the colon in approximately 20% of cases. More than 50% of all adult cases are related to a malignant process. This is particularly true in colo-colonic intussusception, where approximately 70% of cases are caused by malignancy, most commonly adenocarcinoma, lymphoma, and metastatic carcinoma.
**Conclusion:** Among the different sites of intussusception, colonic involvement is associated with the highest risk of malignancy and has even been identified as a significant predictive factor for malignancy. Nevertheless, sarcoma remains an exceptionally rare malignant cause of colo-colonic intussusception, accounting for only 0.015% of cases in a 2025 systematic review of 37 studies. Given the aforementioned risk of malignancy, surgical management should favor an en bloc resection without prior reduction to ensure oncological safety.
**Case presentation:** We report the case of an 87-year-old patient with a history of mid-rectal adenocarcinoma treated by low anterior resection in 2004 and adjuvant radio-chemotherapy, whose last colonoscopy in 2014 showed no abnormalities. She presented to the emergency department with intermittent abdominal pain evolving over several days, associated with two episodes of hematochezia. Abdominal CT scan revealed a right-sided colo-colonic intussusception with a mass effect, suggestive of an underlying malignant lesion. An urgent exploratory laparotomy with a right hemicolectomy was performed without prior reduction of the intussusception. Histopathological examination identified an undifferentiated ulcerated spindle cell sarcoma with partial smooth muscle differentiation, pT1, pN0, R0. Following a multidisciplinary team discussion, no adjuvant treatment was recommended. A long-term surveillance for pulmonary metastases is to be carried out under the supervision of the primary care physician.

**Figure 1. Axial CT scan revealing the colo-colonic intussusception**

**Figure 2. Intra-operative picture revealing the intussusception**

**Figure 3. Colic resection with the pedunculated undifferentiated spindle cell sarcoma**

**Neoadjuvant Immunotherapy for Resectable Colon Cancer Outside Clinical Trials: Lessons from a Swiss Real-World Cohort**

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**Background:** Neoadjuvant immunotherapy has shown promising results in patients with mismatch repair deficient (dMMR) colon cancer under controlled trial conditions. The NICHE-2-Trial reported high response rates and limited toxicity. However, real-world data of routine clinical practice remain scarce. We report our experience with Checkpoint-Inhibitors (ICIs) for resectable colon cancer (cT3-cT4, N0/N+) outside of clinical trials.
**Aims:** Primary endpoints were immune-related adverse events and impact on surgical timing. Secondary endpoints included pathological response, N-status, surgical outcomes and early oncological follow-up.
**Methods:** All consecutive patients with resectable, non-metastatic dMMR colon cancer treated with ICIs at a tertiary referral center were retrospectively analyzed. Treatment regimens were adapted from published trial protocols. Only when insurance coverage was refused, Pembrolizumab was used instead of Ipilimumab and Nivolumab.
**Results:** Between 01/2023 and 01/2026 16 patients received ICIs in neoadjuvant setting. Immune-related adverse events occurred in 6 patients, 3 classifying as severe. One patient was no longer operable due to immunotherapy-related myositis, myocarditis and hepatitis, while in another a pembrolizumab-related duodenitis and gastric ulcera caused therapy suspension. Standard oncological resection with adequate lymphadenectomy was achieved in all operated patients (n=12). A complete pathological response was observed in 5 patients. In one case despite complete regression of the primary tumor, a vital metastatic lymph node was reported. No postoperative complications occurred. In median follow-up of 15 months no recurrences and one non-treatment-related death were observed.
**Conclusion:** In routine clinical practice, neoadjuvant immunotherapy for resectable dMMR colon cancer may be associated with significant immune-related toxicity, impacting surgical timing and feasibility. Although tumor regression rates are high, a subset of patients does not achieve pathological regression, underscoring the need for reliable predictive biomarkers to identify non-responders prior to treatment initiation. Therefore, careful patient selection and close interdisciplinary monitoring are essential. In this context, establishment of a national registry would be beneficial.

**Biliopancreatic Limb Obstruction Caused by Intraluminal Bleeding of the Excluded Stomach After Roux-en-Y Gastric Bypass**

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General Surgery, Hôpital de Pourtales (RHNe), Neuchâtel

**Background:** Early bleeding after Roux-en-Y gastric bypass (RYGB) is a rare complication (0.9% to 4.4%), typically occurring in the postoperative period (mostly within 72 hours). Most bleeding events originate from anastomotic or staple-line sites (gastrojejunal 56%, jejunojejunal 11%), while the excluded stomach is an unusual source. In exceptional cases, bleeding may result in intraluminal clot formation, leading to bowel obstruction. We present a case of excluded stomach bleeding complicated by biliopancreatic limb obstruction after RYGB.
**Conclusion:** This case highlights a rare sequence of events following early a postoperative bleeding after RYGB, originating from the excluded stomach and leading to intraluminal clot

formation with secondary biliopancreatic limb obstruction and staple-line dehiscence. In patients presenting early after RYGB with abdominal pain, anemia, and radiological signs of bowel dilation, intraluminal clot obstruction should be considered. Prompt diagnosis and surgical management are essential to limit morbidity.

**Case presentation:** A 40-year-old woman presented to the emergency department, two days after a RYGB for class II obesity, with acute left upper quadrant abdominal pains, tachycardia, and mild hypotension. Laboratory tests revealed severe anemia and leukocytosis. The abdominal CT scan demonstrated dilation of the biliopancreatic limb and excluded stomach, with an intraluminal hyperdense lesion proximal to the jejunojejunal anastomosis. Laparoscopy revealed an intraluminal hematoma obstructing the biliopancreatic limb, secondary to a hemorrhage from the excluded stomach. Revision of the jejunojenunal anastomosis, hematoma evacuation, gastrostomy of the excluded stomach, and drainage were performed. Two days later, the patient developed recurrent abdominal pain with the apparition of bile in the drainage. A laparoscopy was performed and revealed a staple line dehiscence of the excluded stomach, requiring resection of its proximal portion. The postoperative course was complicated by a retrogastric hematoma and a peri-gastrojejunal abscess requiring laparoscopic lavage, drainage and closure of the gastrostomy. The remainder post-operative period was uneventful.

Fgure 1. Coronal CT scan revealing biliopancreatic limb dilatation with intraluminal hyperdense lesion

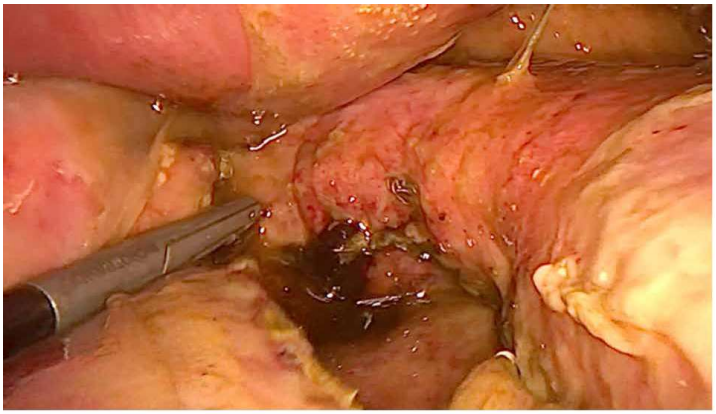

Figure 2. Intra-operative picture revealing excluded stomach staples dehiscence

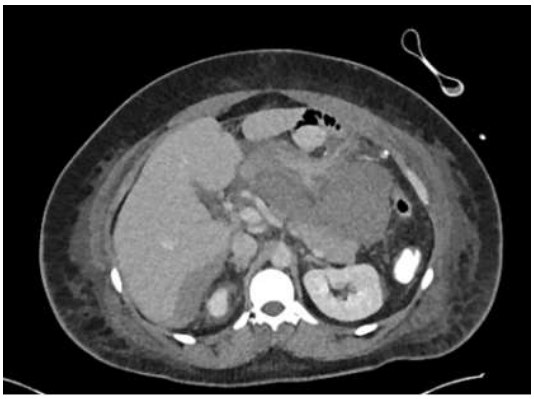

Figure 3. Axial CT scan revealing a retrogastric hematoma

**Abdominal Intercostal Hernias: A Case Series of Four Patients**

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General Surgery, Riviera Chablais Hospital, Rennaz

**Background:** Abdominal intercostal hernias (AIHs) are a rare and often misdiagnosed clinical entity characterized by protrusion of abdominal viscera through an intercostal space under an intact diaphragm. Due to its rarity and nonspecific presentation, diagnosis is often delayed, potentially leading to serious complications including incarceration and strangulation.

**Aims:** This short case series aims to describe the clinical features, diagnostic approach, and surgical management of AIHs, and to contribute to the limited literature on this rare condition.

**Methods:** We present a retrospective analysis of four patients diagnosed and treated for abdominal intercostal hernias at our institution between December 12th 2023 and January 1st 2026. Patient demographics, etiology, clinical presentation, imaging findings, surgical technique, and postoperative outcomes were analyzed.

**Results:** The series included four males (mean age = 69). Etiologies were traumatic (n=3) and spontaneous (n=1). Intercostal defects were mainly located at the 9th intercostal space (n=2). The most common presenting symptoms were chest wall swelling (n=4) and pain (n=3). CT imaging confirmed the diagnosis in all cases, demonstrating herniation of digestive organs (omentum, small bowel, or colon) through the intercostal defect with intact diaphragm. Three patients underwent open surgical repair with mesh reinforcement. Operative repair was not performed in one patient due to comorbidities and age. Mean operative time was 89 minutes with no major intraoperative complications. Mean hospital stay was 5.6 days. During a mean follow-up of 5.8 months, one patient presented with persistent AIH due to initial misdiagnosis as a flank hernia, highlighting the diagnostic and therapeutic challenge of this rare entity.

**Conclusion:** Abdominal intercostal hernia should be suspected in patients presenting with inferior chest bulging, particularly following minor or major trauma. CT imaging is essential for accurate diagnosis and surgical planning. Early recognition and prompt surgical intervention are crucial to prevent potentially life-threatening complications.

**Herniation of the Small Bowel Through the Foramen of Winslow: A Case Report**

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**Background:** Foramen of Winslow hernia (FWH) is a rare clinical situation, accounting for approximately 8% of internal hernias and only 0.08% of all hernias. Clinical diagnosis is challenging due to aspecific symptoms, and CT scan is essential for early diagnosis. Optimal surgical management remain debated. We report a case of small bowel herniation through the foramen of Winslow.

**Conclusion:** FWH is a rare pathology presenting with nonspecific symptoms and diagnosed by abdominal CT scan. Emergency laparoscopy is a safe and effective approach, even in the presence of bowel ischemia. Routine closure of the foramen of Winslow is debated to prevent recurrence and may expose patients to serious complications, including portal vein thrombosis or iatrogenic injury to the portal trial. Surgical strategy should therefore be individualized. In the present case, cholecystectomy allowed for widening and loosening of the foramen.

**Case presentation:** A 49-year-old man with a history of umbilical hernia repair without mesh presented to the emergency department with isolated epigastric pain evolving for 12 hours. Physical examination revealed epigastric guarding, while laboratory tests showed no inflammatory response. Abdominal CT scan suggested an internal hernia through the foramen of Winslow with signs of small bowel ischemia. Emergency exploratory laparoscopy revealed dilated small bowel herniating through a narrow foramen of Winslow. After reduction, indocyanine green fluorescence angiography demonstrated adequate bowel perfusion, allowing bowel preservation. Given the narrow foramen, a cholecystectomy was performed to achieve an adequate widening of the foramen (video available). The postoperative course was uneventful, with oral intake resumed on day 0. The patient was discharged on day 3, with no recurrence of symptoms reported.

Figure 1. CT scan revealing small bowel herniation through a narrow foramen of Winslow (16 mm)

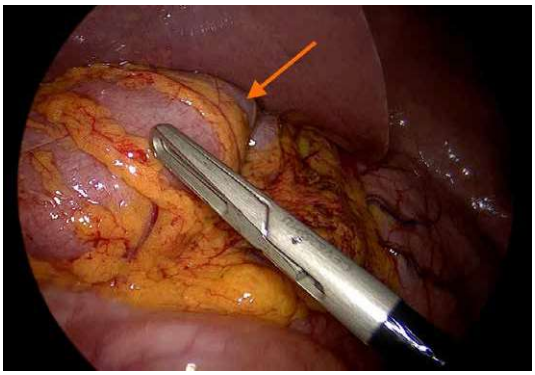

Figure 2. Intra-operative status with small bowel located below the pars flaccida (arrow)

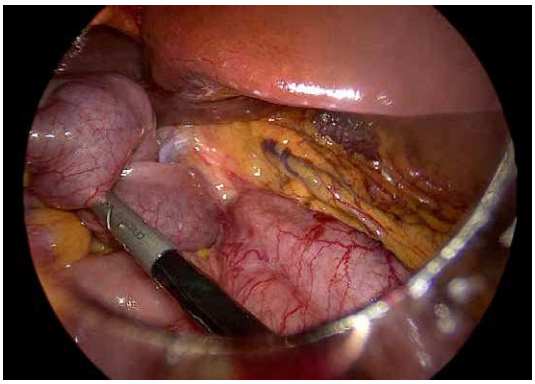

Figure 3. Intra-operative status with laparoscopic reduction of the small bowel herniated

**Post-Traumatic Hepatic Pseudoaneurysm: A Case Report**

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Chirurgie, Kantonsspital Freiburg HFR, Fribourg

**Background:** Traumatic hepatic pseudoaneurysms are rare complications of blunt liver injury. Despite initial hemodynamic stability, they may rupture suddenly, causing potentially fatal hemorrhage. Early CT follow-up is essential. Treatment options include endovascular embolization, ultrasound-guided thrombin injection, angiographic stent placement, surgical ligation, or hepatic resection.
**Aims:** To document the clinical course, imaging findings, and management of traumatic hepatic-pseudoaneurysms, a rare but potentially life-threatening complication of liver trauma.
**Methods:** A retrospective analysis of a patient with traumatic hepatic pseudoaneurysms was performed. Clinical presentation, laboratory findings, imaging, management, and follow-up were reviewed. Contrast-enhanced CT was used for diagnosis and surveillance. Liver injury severity was graded according to the American Association for the Surgery of Trauma (AAST) liver injury scale.
**Results:** A young adult patient presented with right upper quadrant pain after a high-energy traffic accident, remaining hemodynamically stable. Laboratory tests revealed mild anemia and markedly elevated transaminases (> eightfold increase). CT revealed a grade III perihilar liver laceration in segment V with three arterial pseudoaneurysms, one in segment V (7 mm) and two in segment VIII (5 mm, 6 mm) (Figure 1). No active bleeding or free fluid was detected. Follow-up CT at 48 hours showed stable laceration but enlargement of the segment V pseudoaneurysm to 11 mm. Selective segmental coil embolization was successfully performed (Figure 2 and 3). Eight-week follow-up CT showed complete exclusion of the treated pseudoaneurysm, regression of remaining segment VIII pseudoaneurysms, and resolution of the laceration.
**Conclusion:** Post-traumatic hepatic pseudoaneurysms may enlarge and rupture unpredictably, even in clinically stable patients. Routine imaging surveillance is essential. Selective endovascular embolization represents an effective and organ-preserving prophylactic treatment strategy, potentially reducing liver-related complications compared with non-selective arterial embolization.

Figure 1. Arterial pseudoaneurysms

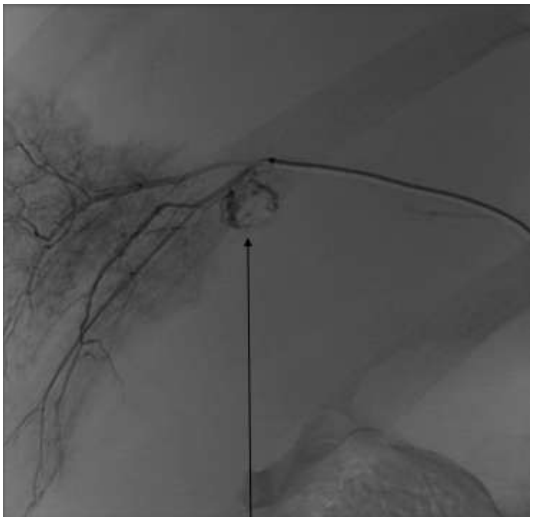

Figure 2. Arterial pseudoaneurysms segment V before the intervention

Figure 3. Arteral oseudoaneurysms in segment y arter berore intervencion

**Acute Gastric And Distal Oesophageal Necrosis Secondary To Idiopathic Portal Vein Thrombosis: A Rare Surgical Emergency**

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**Background:** Acute gastric necrosis is an exceptionally rare and catastrophic condition due to the stomach's extensive vascular supply. Most reported cases are related to arterial insufficiency, gastric volvulus, or caustic injury. Venous outflow obstruction, particularly secondary to portal vein thrombosis (PVT), represents an exceedingly uncommon mechanism and remains sparsely described. Acute PVT can abruptly impair gastric venous drainage, resulting in severe venous congestion, oedema, reduced mucosal perfusion, and progression to transmural necrosis. Because of its rarity and non-specific presentation, gastric venous ischemia is frequently under-recognized with delaying diagnosis and treatment.
**Conclusion:** This case highlights acute gastric necrosis as a rare, life-threatening, and under-recognized complication of portal vein thrombosis. Gastric necrosis should not be attributed exclusively to arterial ischemia, as venous outflow obstruction alone may precipitate catastrophic injury. Contrast-enhanced CT is essential for early detection of vascular thrombosis and ischemic gastric changes, while histopathological findings of diffuse venous congestion and transmural necrosis support a venous ischemic mechanism. Early anticoagulation and prompt surgical intervention are critical when full-thickness necrosis is present. Awareness of gastric venous ischemia broadens the differential diagnosis of acute abdominal pain and hematemesis and may improve patient outcomes.
**Case presentation:** A 56-year-old woman with no prior surgery or prothrombotic risk factors presented with acute abdominal pain and hematemesis. Contrast-enhanced CT showed extensive splanchnic venous thrombosis involving the portal vein trunk, intrahepatic branches, splenomesenteric confluence, and splenic vein, with marked hypoenhancement of the gastric fundus and greater curvature. Emergency laparoscopy revealed diffuse gastric and distal oesophageal necrosis, requiring conversion to open surgery. Total gastrectomy with transhiatal distal oesophagectomy and Roux-en-Y esophagojejunal anastomosis was performed with prophylactic intraluminal EndoSponge placement. Antimicrobial therapy, anticoagulation, and endoscopic therapy led to recovery. Thrombophilia investigations were negative, confirming idiopathic vein thrombosis.

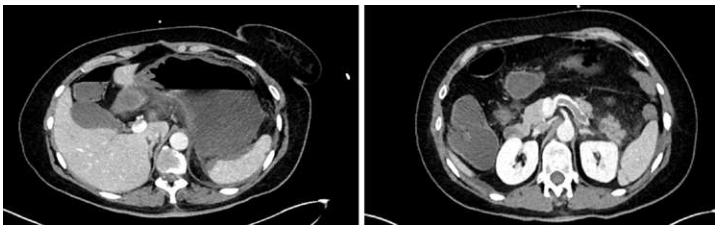

Figure 1. Contrast-enhanced abdominal CT on admission showing absence of gastric wall enhancement involving the cardia, fundus, and greater curvature (left panel), associated with partial thrombosis of the main portal vein extending to the splenomesenter

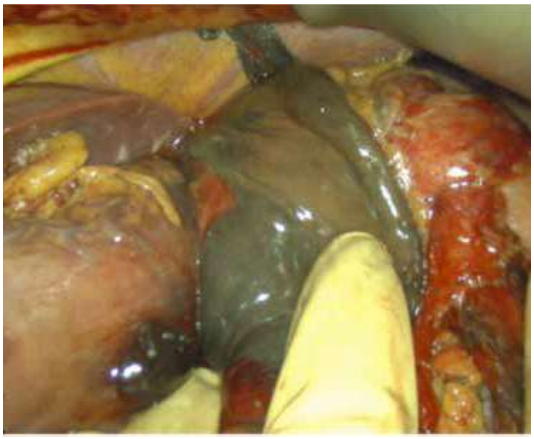

Figure 2. Intraoperative macroscopic gastric necrosis after conversion to laparotomy

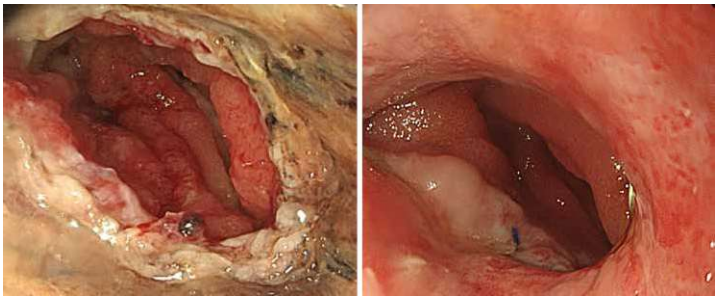

Figure 3. Endoscopic evaluation by gastroscopy on PODs 8 and 12. On day 8 (left), grey oesophageal mucosa with a patent oesophagojejunal anastomosis after initial EndoSponge placement. On day 12 (right), normalised oesophageal mucosa allowing EndoSponge

**Closed-loop Small Bowel Obstruction through an Internal Hernia caused by Meckel's Diverticulum: A Case Report**

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General and Visceral Surgery, Etablissements Hospitaliers du Nord Vaudois (EHNV), Yverdon-les-Bains

**Background:** Meckel's diverticulum is the most common congenital anomaly of the gastrointestinal tract, affecting approximately 2–3% of the population, however asymptomatic for most. In adults, internal hernia causing small bowel obstruction is a rare but potentially severe complication. Several previous case reports have described cases of closed-loop obstruction caused by mesodiverticular bands creating an internal hernia. In a literature review, Unadike et al. reported 16 cases of mesodiverticular band–related obstruction, with high rates of bowel ischemia and resection. Laparotomy was performed in 75% of patients and was associated with ischemic bowel in 58.3% and bowel resection in 83.3% of cases, whereas laparoscopy accounted for 25% of cases, with bowel resection required in half of them. We report a case of closed-loop small bowel obstruction secondary to Meckel's diverticulum.
**Conclusion:** This case highlights an uncommon mechanism of closed-loop small bowel obstruction caused by a Meckel's diverticulum. Although Meckel's diverticulum is common, internal herniation with closed-loop obstruction remains rare and difficult to diagnose preoperatively. In young patients with acute small bowel obstruction and no prior abdominal surgery, Meckel's diverticulum should be considered. Early surgical exploration is essential to prevent ischemic complications.
**Case presentation:** A 31-year-old previously healthy woman, with no surgical history, presented with sudden-onset, severe peri-umbilical abdominal pain unresponsive to high-dose opioids. CT-scan revealed mildly dilated distal jejunum with mesenteric edema and free fluid (Fig. 1, 2). Because of persistent pain despite step III analgesia, emergency diagnostic laparoscopy was performed. Intraoperatively, a closed-loop obstruction of an ileal segment was identified, herniated through a narrow internal window formed by an adherent mesenteric vessel supplying a Meckel's diverticulum (Fig. 3). The vascular band was divided, releasing the closed loop, with no irreversible small bowel ischemic damage. The Meckel's diverticulum was resected. The postoperative course was uneventful, and the patient was discharged after two days.

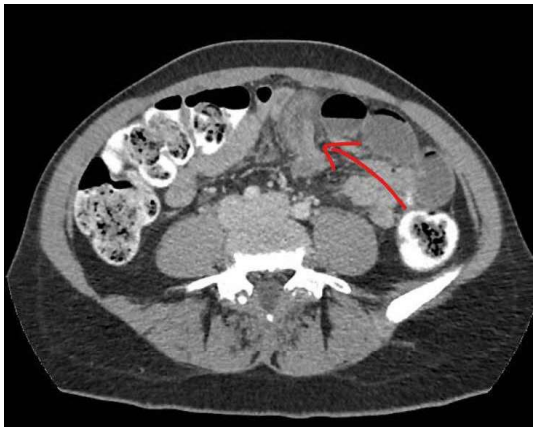

Figure 1

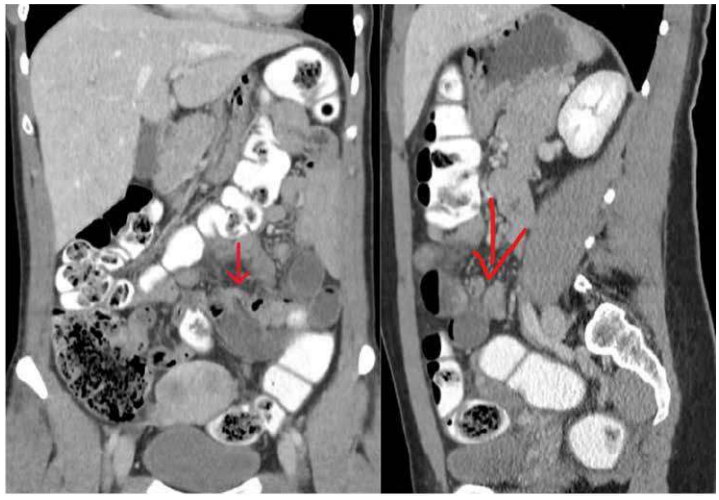

Figure 2

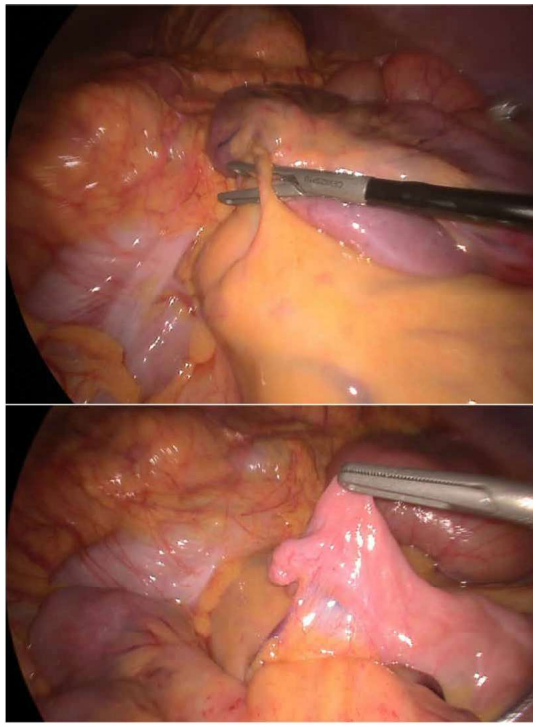

Figure 3

**Massive Hemoperitoneum From a Spontaneous Jejunal Intramural Hematoma: A Case Report**

I. Kuffer, T. Girardin, M. A. Mansouri, J. C. Renggli, M. O. Sauvain
Chirurgie, Réseau hospitalier neuchâtelois, Neuchâtel

**Background:** Spontaneous intramural small bowel hematoma (SISBH) is an acute, non-traumatic accumulation of blood within the intestinal wall, most frequently involving the jejunum. It is mainly associated with anticoagulant therapy and coagulation disorders. Most cases are uncomplicated and can be managed conservatively. Massive hemoperitoneum is exceptionally

reported. We report the case of SISBH complicated by massive hemoperitoneum in a patient receiving direct oral anticoagulants (DOACs).

**Conclusion:** Although SISBH is usually managed conservatively, it may become life-threatening when complicated by massive hemoperitoneum. When associated with hemodynamic instability, SISBH mandates immediate surgical management. In this setting damage control surgery with delayed anastomosis appears as a safe and effective strategy in unstable patients. SISBH should be considered in anticoagulated patients with abdominal pain and anemia.

**Case presentation:** A 37-year-old man with an history of cirrhosis and atrial fibrillation treated with apixaban was admitted for weakness and dizziness. On admission, he was hypotensive and tachycardic, with signs of peripheral hypoperfusion and diffuse abdominal tenderness. Laboratory investigations revealed severe anemia (Hb 46 g/L), marked coagulopathy, and metabolic acidosis with elevated lactate levels. Abdominal CT scan demonstrated a left flank mesenteric lesion exerting mass effect on adjacent small bowel loops, associated with a large-volume acute hemoperitoneum. Emergency exploratory laparotomy revealed approximately 4 liters of hemoperitoneum and a large jejunal intramural hematoma with complete serosal rupture. Segmental jejunal resection was performed with temporary abdominal closure. A planned second-look laparotomy allowed jejunojejunal anastomosis. Histopathological examination confirmed a submucosal hematoma with preserved mucosa and no evidence of ischemia.

**Figure 1. CT scan revealing small bowel with mesenteric hematoma, associated with hemoperitoneum**

**Figure 2. CT scan revealing small bowel with mesenteric hematoma, associated with hemoperitoneum**

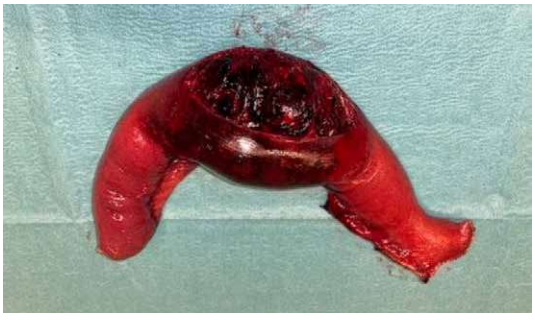

**Figure 3. Small bowel resected with mesenteric intramural hematoma**

## Uretero-Colonic Fistula in the Setting of Rectal Adenocarcinoma: A Case Report

T. Fillol Ruiz[1], E. Patane[2], P. Fournier[2], F. Bretagnol[2], F. Grass[3], P. Kuczma[2], F. Butti[2]
[1]General Surgery, GHOL, Nyon; [2]Visceral Surgery, GHOL, Nyon; [3]Visceral surgery, HUG, Geneva

**Background:** Uroenteric fistulas are abnormal communications between the urinary tract and the gastrointestinal tracts. Colovesical fistulas are the most common subtype, typically secondary to diverticular disease. In contrast, uretero-colonic fistulas are exceedingly rare, accounting for fewer than 0.5% of colorectal surgical cases, with only sporadic cases reported in the literature. Reported etiologies include colorectal malignancy, prior pelvic surgery, radiotherapy, chronic inflammatory conditions, diverticular disease, and prolonged ureteral stenting. Clinical presentation is often nonspecific, frequently characterized by recurrent urinary tract infections or pyelonephritis. Diagnosis is challenging and typically requires cross-sectional imaging and retrograde ureteropyelography. Management is not standardized and usually necessitates a multidisciplinary approach. We present a rare case of a right-sided uretero-colonic fistula occurring after multimodal treatment for rectal adenocarcinoma and provide a brief review of the literature.

**Conclusion:** Uretero-colonic fistulas are rare but potentially severe complications, particularly in patients with prior pelvic malignancy, radiotherapy, and prolonged ureteral stenting. Recurrent urinary tract infections caused by enteric pathogens or pneumaturia should raise clinical suspicion for a uroenteric fistula. Combined cross-sectional imaging with retrograde ureterography are essential for diagnosis and surgical management should aim at fistula eradication and preservation of renal function.

**Case presentation:** A 65-year-old woman with rectal adenocarcinoma (pT4bN0R2, KRAS-mutated) treated with neoadjuvant chemoradiotherapy, and extensive pelvic surgery developed chronic right-sided ureteral obstruction requiring long-term ureteral stenting. From 2023 onward, she experienced recurrent episodes of pyelonephritis, with urine cultures repeatedly isolating enteric organisms. In 2025, pelvic magnetic resonance imaging and retrograde ureteropyelography revealed right-sided hydronephrosis and a fistulous tract connecting the distal right ureter and the rectosigmoid colon, without evidence of tumor recurrence. Surgical management consisted of a bloc resection of the fistula, proctectomy with perineal closure, right ureteral reimplantation, terminal colostomy, and omentoplasty. The postoperative course was uneventful.

**Figure 1. UPR 2**

**Figure 2. UPR**

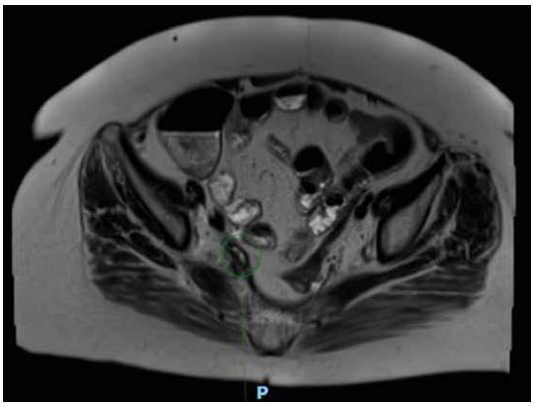


Figure 3. MR Pelvis

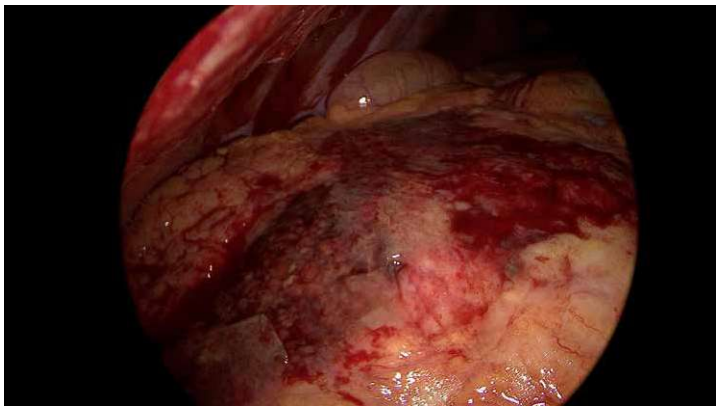

Figure 2. Intraoperative laparoscopic photograph showing the ischemic portion of the greater omentum

**Idiopathic Segmental Infarction of the Greater Omentum (ISIGO): A Case Report**

C. M. Nava[1], A. Alonso Calleja[2], S. Sid'amar[3], F. Pugin[1], F. Cherbanyk[1]
[1]Visceral Surgery, Hôpital Cantonal Fribourg, Fribourg; [2]Radiology, Hôpital Cantonal Fribourg, Fribourg; [3]Pathology, Promed Laboratoire Médical, Marly

**Background:** Idiopathic segmental infarction of the greater omentum (ISIGO) is a rare cause of acute abdominal pain and often mimics common surgical emergencies, while systemic signs may be absent or mild. Contrast-enhanced computed tomography (CT) is the key modality for diagnosis and can allow initial conservative management in selected stable patients. However, treatment failure may occur and require surgery.
**Conclusion:** ISIGO should be included in the differential diagnosis of acute abdominal pain. Current evidence supports conservative treatment in stable patients with confirmed CT diagnosis, but failure occurs in a minority and warrants laparoscopy, particularly with persistent symptoms or diagnostic uncertainty.
**Case presentation:** A 55-year-old overweight man presented with one week of right-sided abdominal pain with recent worsening despite outpatient medical therapy. He was hemodynamically stable but had right upper quadrant tenderness and localized guarding. Laboratory testing showed elevated C-reactive protein with a normal leukocyte count and normal liver biochemistry. CT demonstrated inflammatory fat stranding of the right greater omentum with a hyperdense rim, consistent with right-sided omental infarction (Figure 1). Because pain persisted despite conservative management, diagnostic laparoscopy was performed and confirmed ischemic omentum with hemorrhagic peritoneal fluid (Figure 2), and a normal gallbladder and appendix. Laparoscopic omentectomy was completed without complications. Histopathology confirmed omental infarction (Figure 3). The patient was discharged on postoperative day 1 and remained asymptomatic at 6-week follow-up.

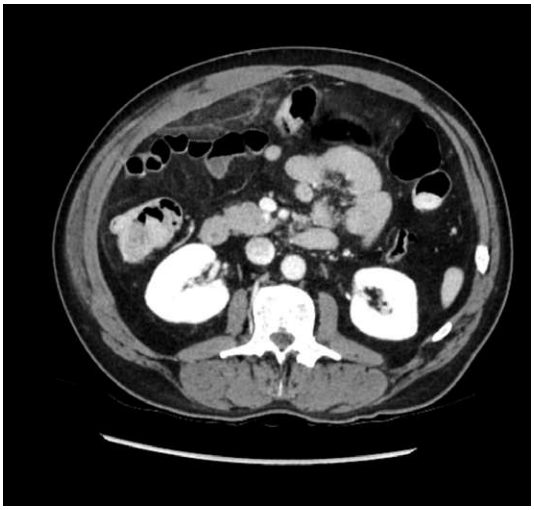

Figure 1. Axial view of computed tomography scan demonstrating omental infarction in the right upper quadrant anterior to the ascending colon

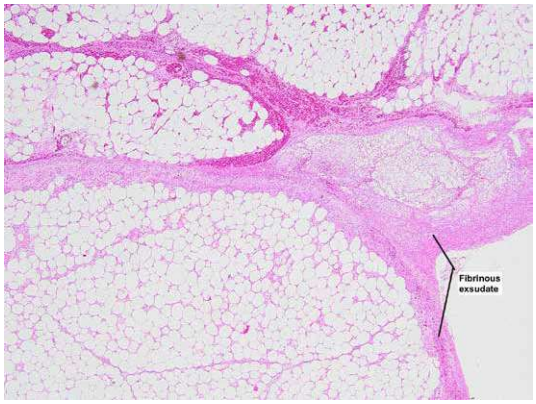


Figure 3. Histopathology showing fibro-adipose tissue with fat necrosis (liponecrosis) and lipid-laden macrophages. Reactive fibroblastic and vascular proliferation with serosal congestion is present, consistent with omental infarction

**Complete Bilateral Spontaneous Pneumothorax at Moderate Altitude Revealing Marfan Syndrome: A Case Report**

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[1]Chirurgie Générale, Hôpital de Sion, Sion; [2]Chirurgie Thoracique, Hôpital de Sion, Sion

**Background:** Primary spontaneous pneumothorax is frequently encountered in young adults. However, simultaneous complete bilateral pneumothorax is rare and potentially fatal. Exposure to altitude-related barometric pressure changes may precipitate pneumothorax in susceptible individuals, particularly those with unrecognized connective tissue disorders.
**Conclusion:** This case illustrates complete bilateral spontaneous pneumothorax as a dramatic sentinel event revealing Marfan syndrome, likely precipitated by moderate altitude exposure. It emphasizes the importance of comprehensive etiological evaluation in young patients with severe or atypical pneumothorax and highlights the value of early multidisciplinary management to prevent life-threatening complications.
**Case presentation:** We report the case of a 17-year-old previously healthy male who developed sudden severe dyspnea while recreational skiing at a moderate altitude of 2'200 meters. On-site emergency management required immediate bilateral needle decompression, followed by urgent transfer to hospital care. Imaging confirmed a complete bilateral pneumothorax with bilateral apical subpleural blebs (Figure 1). Sequential bilateral chest tube placement was performed, and the patient subsequently underwent staged bilateral video-assisted thoracoscopic surgery with apical wedge resection and mechanical pleurodesis. Postoperative recovery was uneventful, with no recurrence during follow-up. Etiological investigations revealed normal alpha-1 antitrypsin levels. Transthoracic echocardiography identified a bicuspid aortic valve associated with moderate aortic regurgitation (grade 2/4). Combined clinical, radiological, and cardiac findings ultimately led to the diagnosis of Marfan syndrome, previously unrecognized.

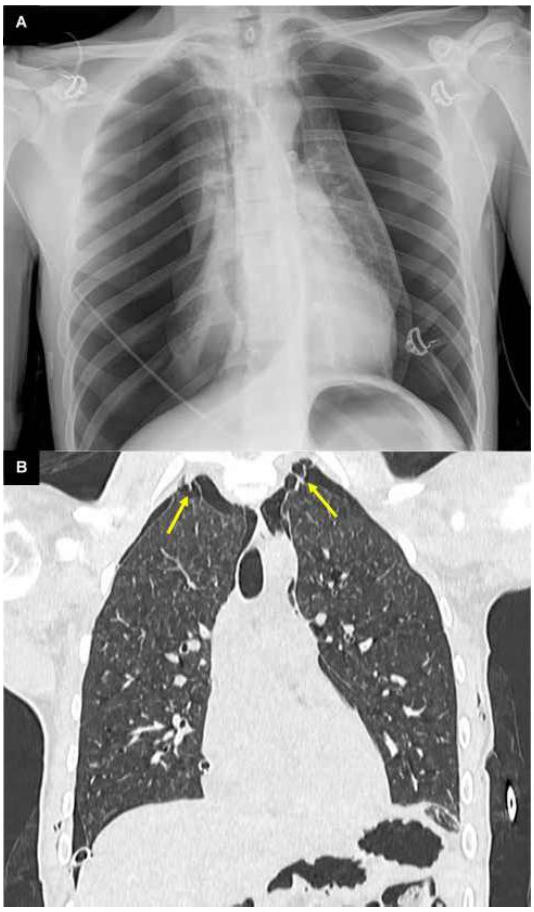


**Figure 1. Chest imaging at presentation. (A) Chest radiograph showing a complete bilateral pneumothorax. (B) Chest computed tomography demonstrating bilateral apical subpleural blebs (arrows)**

### Spoliative ileal tumor revealing Peutz-Jegher Syndrome

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[1]Chirurgie viscérale, HUG, Hôpitaux universitaires de Genève, Genève; [2]Service de pathologie clinique, HUG, Hôpitaux universitaires de Genève, Genève

**Background:** Peutz-Jegher Syndrome (PJS) is an autosomal dominant inherited disease. It is characterized by the development of mucocutaneous pigmentations and gastrointestinal hamartomatous polyps. Predominantly found in the small intestine, those polyps can typically lead to intussuception and/or bleeding. PJS increase the risk of colorectal, pancreatic, gastric and breast cancers. From a proportional perspective, 1:50'000 to 1:200'00 person is affected by PJS. Due to the rarity of the syndrome, a lack of guidelines exists. For this reason, the follow up is guided by expert consensus.
**Conclusion:** PJS is a rare but potentially serious disease. If hamartomous polyp associated with pigmentated spots are found, PJS will be the most likely diagnosis. Endoscopic resection is the preferred method, but sometimes, as in our case, surgery is necessary either for large polyps or if they cannot be reached by endoscopy. A consistent follow up and family council could improve long terms outcomes and reduce cancer-induced morbidity and mortality.
**Case presentation:** A 60 year old man presented with spoliative anemia. He is not known for cutanous macules around the mouth. An initial work up by colonoscopy and gastroscopy revealed a Helicobacter pylori infection without other significant abnormalities. Subsequently, a magnetic resonance imagery was performed and a 18 mm polyp located in the small intestine was identified (Figure 1). The lesion was not reachable by conventional endoscopy techniques. As endoscopic resection was not feasible, the patient underwent an explorative laparoscopy which enabled the discovery of a lesion in the terminal ileum coupled with an intussuception. The histopathological examinations demonstrated a pedunculated polypoid lesion, measuring 2 x 1.7 cm with a pedicle measuring 2.4 cm consistent with a Peutz-Jegher Syndrome (Figure 2 and Figure 3). Multidisciplinary meeting proposed genetic counselling and endoscopic follow up.

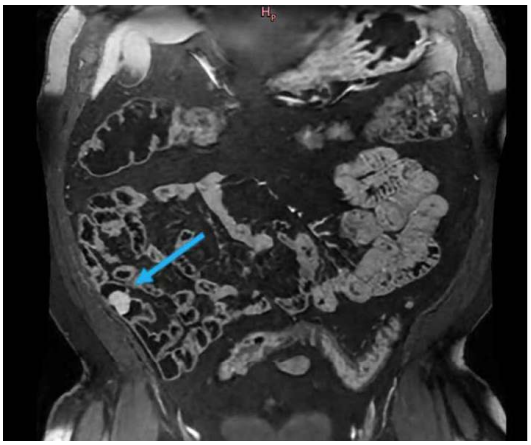

**Figure 1. MRI showing the lesion in the small intestine indicated by an arrow**

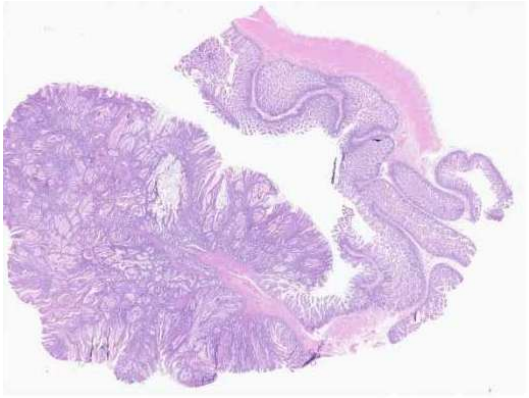

**Figure 2. Microscopic histopathological image of the pedunculated lesion**

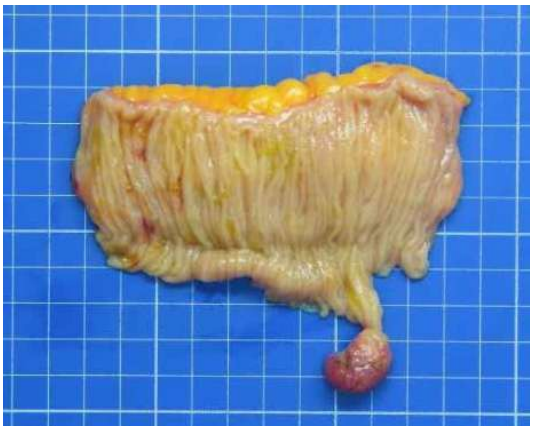

**Figure 3. Macroscopic histopathological image of the pedunculated lesion**

### Rare Benign Tumors of the Distal Phalanx: A Case Series of Eight Distinct Entities

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[1]Klinik für Orthopädie, Hand- und Unfallchirurgie, Stadtspital Zürich, Zurich; [2]Klinik für Orthopädie, Hand- und Unfallchirurgie, Stadtspital Waid, Zurich

**Background:** The distal phalanx may be affected by a broad spectrum of benign soft-tissue and bone tumors, posing a diagnostic challenge due to their rarity and diverse histopathological origins. Accurate diagnosis is essential for appropriate surgical management.
**Aims:** We present an image-based overview of eight benign soft-tissue and bone tumors affecting the distal phalanx through a surgical case series.
**Methods:** A retrospective case series of eight patients with benign soft-tissue and bone tumors of the distal phalanx were reviewed. The patients were treated by a single surgeon between 2011 and 2025. The entities included acral fibromyxoma, fibrokeratoma, subungual glomus tumor, glomus tumor of the pulp, ossifying fibromyxoid tumor of the distal interphalangeal joint, subungual mucoid cyst, volar exostosis of the distal phalanx, and enchondroma. Clinical presentation, imaging findings, histopathological characteristics, surgical techniques, and follow-up outcomes were evaluated (Figures 1–3).
**Results:** Preoperative clinical assessment combined with lesion-oriented imaging enabled comprehensive characterization of all lesions and supported surgical planning. Four patients exhibited nail deformities. Surgical excision was performed in all cases with histopathological confirmation. No major complications were observed during follow-up. Correlation of clinical appearance, imaging findings, and histopathology enabled the creation of a structured, image-based overview illustrating eight benign soft-tissue and bone tumors of the distal phalanx.
**Conclusion:** Rare tumors of the distal phalanges require careful clinical evaluation and imaging assessment to ensure accurate diagnosis. Surgical excision with histopathological confirmation remains the treatment of choice in these tumors.

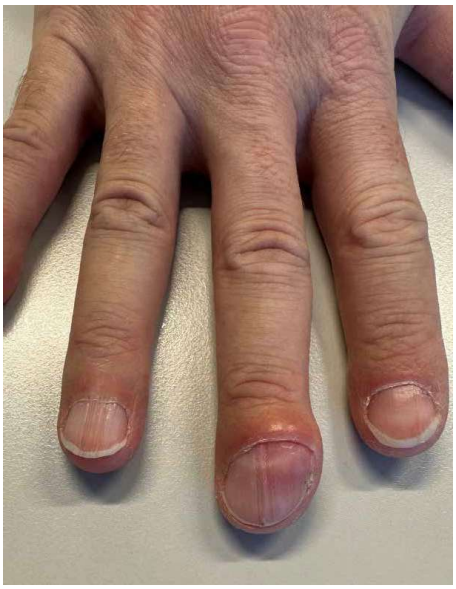

Figure 1. Acral fibromyxoma, preoperative

Figure 2. Fibrokeratoma, preoperative

Figure 3. Glomus tumor of the pulp, intraoperative

**Sigmoid Colon Obstruction from Broad Ligament Internal Herniation After Cesarean Section: A Case of Successful Endoscopic Reduction**

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[1]Surgery, Riviera-Chablais Hospital, Rennaz; [2]Gastroenterology, Riviera-Chablais Hospital, Rennaz; [3]Obstetrics and Gynecology, Riviera-Chablais Hospital, Rennaz

**Background:** Internal herniation through a defect of the broad ligament is an uncommon cause of bowel obstruction, typically involving the small intestine. Colonic involvement is exceptionally rare. Early diagnosis in the postpartum period is often difficult, as symptoms can mimic expected postoperative findings. This case describes an unusual sigmoid colon herniation occurring shortly after cesarean section and successfully treated by endoscopic reduction.
**Conclusion:** Sigmoid colon herniation through the broad ligament is an exceptional postpartum complication. In the absence of ischemia and when the herniated segment is accessible endoscopically, endoscopic reduction may represent a safe and effective conservative strategy, avoiding reoperation in the early postoperative setting. This case expands the spectrum of broad ligament hernias and suggests that carefully selected patients may benefit from nonoperative management.
**Case presentation:** A 34 year-old postpartum patient developed acute abdominal pain, distension, and inflammatory syndrome on postoperative day 3 following cesarean section. Abdominopelvic CT revealed an incarcerated sigmoid loop herniating through the right broad ligament without signs of ischemia. An interdisciplinary discussion led to attempted endoscopic management with laparoscopic standby. Colonoscopy demonstrated a luminal stenosis corresponding to the herniation site, without ischemic changes. Gentle advancement of the endoscope combined with external manual pressure allowed complete reduction of the herniated segment. Full sigmoidoscopic reevaluation confirmed absence of ischemia. Surgical intervention was therefore avoided. Bowel function returned the following day, inflammatory markers normalized, and the postoperative course was uneventful. No recurrence or symptoms related to the ligament defect were observed during 8-month follow-up.

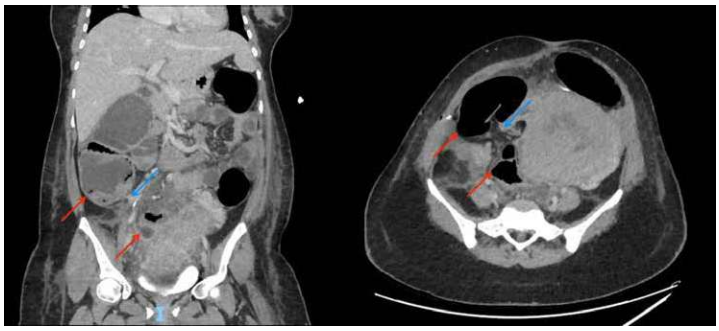

Figure 1. Arrow

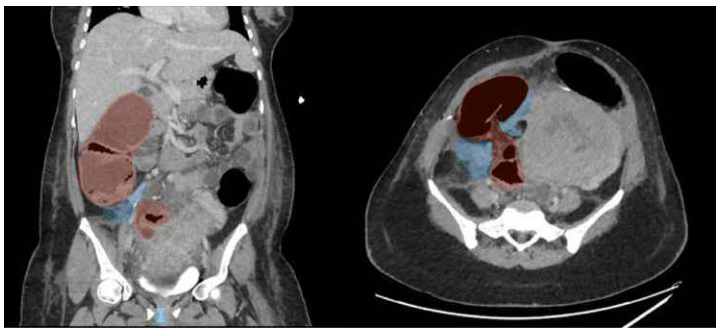

Figure 2. Zone

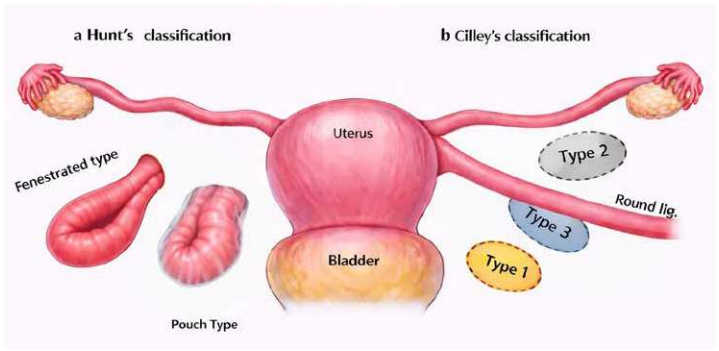


Figure 3. Hunt's and Cilley's

**Ileocecal Resections for Crohn's: Predictive Value of Resection Margins on the Risk of Resurgery in the Swiss IBD Cohort**

E. Zhu[1], R. Hadorn[2], V. Pittet[3], A. Schoepfer[4], D. Hahnloser[5]
[1]Digestive surgery, Ensemble Hospitalier de la Côte, Lausanne; [2]Internal medecine, Hôpital de Sion, Sion; [3]Epidemiology and Health Systems, University Center for Primary Care and Public Health (Unisanté), Lausanne; [4]Gastroenterology and Hepatology, Lausanne University Hospital (CHUV), Lausanne; [5]Visceral Surgery, Lausanne University Hospital, Lausanne

**Background:** The ileocecal region is the most common primary site of Crohn's disease, and up to 90% of patients will require an ileocecal resection during their lifetime. The impact of positive resection margins on postoperative surgical recurrence remains controversial in patients undergoing ileocecal resection for Crohn's disease.
**Aims:** This study aimed to assess the impact of resection margin status on endoscopic and surgical recurrence following ileocecal resection for Crohn's disease in a national Swiss cohort.
**Methods:** A retrospective analysis of the prospective Swiss Inflammatory Bowel Disease Cohort Study (SIBDCS) database was conducted. All consecutive patients who underwent ileocecal re-

section between 2006 and 2020 with available surgical and pathology reports were included. Endoscopic recurrence was defined as lesion seen at the colonoscopy control according to Rutgeer's score. Surgical recurrence was defined as the need for bowel surgery after primary ileocecal resection. The primary outcome was surgical recurrence. The secondary outcome was the evaluation of pathology report content with the aim of proposing a standardized pathology report for Crohn's disease surgery.
**Results:** A total of 82 patients were included. The median follow-up was 8 years. Positive small bowel resection margins were significantly associated with surgical recurrence (p=0.022) but not with endoscopic recurrence. Pathology reports lacked standardization, did not report resection margin status in 13% of cases, and frequently omitted key histopathological features such as myenteric and submucosal plexitis.
**Conclusion:** Positive small bowel margins are associated with and increased risk of surgical recurrence. Pathology reports in Switzerland are still lacking important information and should be standardized in order to stratify the postoperative risk of recurrence.

### Septic Bursitis Olecrani Caused by Nocardia Farcinica in an Immunocompromised Patient – Case Report and Scoping Literature Review

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[1]AO Research Institute, Davos; [2]Center of Musculoskeletal Infections, University Hospital Basel, Basel; [3]Department of Infectious Diseases, University Hospital Basel, Basel; [4]Division of Clinical Bacteriology and Mycology, University Hospital of Basel, Basel; [5]Institute of Pathology and Medical Genetics, University Hospital Basel, Basel

**Background:** Septic bursitis is mainly caused by Staphylococcus aureus and Streptococcus spp. However, patients with immunosuppression may experience infections by rare pathogens. Here, we describe a case of septic olecranon bursitis caused by Nocardia farcinica and provide a literature review of musculoskeletal infections by this pathogen.
**Conclusion:** This report highlights the importance for clinicians to consider rare pathogens in immunosuppressed patients with bursitis, especially when presenting with atypical courses. Localized musculoskeletal infections by Nocardia are mostly treated by a combined surgical and antibiotic approach. Antibiotics are typically administered for one to six months. In case of surgical removal, a shorter antibiotic treatment duration seems sufficient. A multidisciplinary approach involving infectious diseases specialists, microbiologists and surgeons is critical to achieve good outcomes.
**Case presentation:** A 75-year-old immunosuppressed patient with seronegative rheumatoid arthritis experienced an elbow trauma, followed by a two-week history of progressive painful swelling, slight erythema and finally the formation of a fistula draining cloudy fluid. Culture of the aspirated bursal fluid yielded slow-growing yellow pigmented colonies identified as Nocardia farcinica. Whole genome sequencing confirmed the species without detecting any known virulence genes or resistance mutations. Clinical and radiological evaluation showed no signs of systemic dissemination. The patient was treated by surgical bursectomy and by targeted antimicrobial therapy with oral trimethoprim/sulfamethoxazole. After 3 weeks, the patient developed a systemic allergic reaction, necessitating a switch to susceptibility-guided amoxicillin/clavulanate. Treatment was continued for 3 months, ultimately resulting in the successful complete resolution of the bursitis.

### Conservative Management of Degenerative Rotator Cuff Tears: A Systematic Review of Long-Term Clinical Outcomes and Cost Effectiveness

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[1]Orthopädie und Unfallchirurgie, Luzerner Kantonsspital, Lucerne; [2]Orthopädie und Unfallchirurgie, Stadtspital Zürich, Zürich; [3]Orthopädie und Unfallchirurgie, Universität Luzern, Lucerne; [4]Orthopädie und Unfallchirurgie, Universität Bern, Bern; [5]Emergency Medicine, Inselspital Bern, Bern

**Background:** Degenerative rotator cuff tears are a common cause of shoulder dysfunction in adults. The optimal choice between conservative management and surgical repair remains controversial, particularly in older patients and in cases of partial-thickness tears.
**Aims:** This systematic review evaluates long-term clinical outcomes and cost-effectiveness of conservative treatment strategies compared with surgical repair.
**Methods:** A comprehensive literature search was performed in PubMed, Embase, Cochrane Library, and Scopus for studies published between 2010 and 2025. Randomized controlled trials and cohort studies comparing conservative and surgical interventions for degenerative rotator cuff tears were included. Methodological quality was assessed using the Cochrane Risk of Bias 2 tool and ROBINS-I. Due to heterogeneity in study design and outcome reporting, a meta-analysis was not feasible; therefore, a structured narrative synthesis was conducted. Recent evidence, including emerging conservative modalities such as platelet-rich plasma (PRP) and extracorporeal shockwave therapy (ESWT), was incorporated.
**Results:** Seven high-quality studies involving 893 patients were included. Conservative treatment, predominantly physiotherapy-based, achieved clinical outcomes comparable to surgery in partial-thickness tears and in low-demand or elderly patients. In contrast, surgical repair demonstrated superior long-term improvements in Constant-Murley Score, Visual Analogue Scale pain scores, American Shoulder and Elbow Surgeons scores, and patient satisfaction in full-thickness tears. Structural re-tears were observed after surgery; however, these did not consistently correlate with inferior functional outcomes, indicating that anatomical integrity does not always predict clinical success. Conservative management was consistently associated with lower direct and indirect healthcare costs across studies. Adjunctive therapies such as ESWT and PRP showed promising benefits in selected patient populations.
**Conclusion:** Conservative management represents an effective and cost-efficient first-line treatment for degenerative rotator cuff tears, particularly in partial tears and older patients. Surgical repair provides superior long-term functional outcomes in full-thickness tears. Treatment decisions should be individualized based on tear severity, patient activity level, and therapeutic objectives.

### Timing Matters: Early Orthoplastic Coverage reduces Fracture-related Infections in Gustilo III B/C Tibial Fractures – A Systematic Review and Meta-Analysis

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Orthopedic, Universitätsklinik Balgrist, Zurich

**Background:** Gustilo-Anderson type III B/C open tibial fractures are among the most complex and high-risk injuries in trauma care. Their management demands a multidisciplinary approach, and early intervention is critical. While early debridement has been established as essential, the optimal timing for definitive orthoplastic coverage remains less clearly defined.
**Aims:** To evaluate whether early orthoplastic coverage reduces the risk of fracture- related infections (FRIs) and complication rates compared to late coverage in type III B/C open tibial fractures.
**Methods:** We conducted a PRISMA-compliant systematic review and meta-analysis of studies comparing early versus late orthoplastic treatment in patients with Gustilo-Anderson III B/C open tibial fractures (Table 1). Databases included PubMed and EMBASE. Primary outcome was FRI; secondary outcomes included amputation, non-union, and revision surgery rates. Risk of bias was assessed using the Newcastle-Ottawa Scale.
**Results:** Of 3007 studies screened, five studies with a total of 454 patients met the inclusion criteria. Cutoff for early vs late treatment was defined variably across studies (either within 72 or 168 hours). Meta-analysis showed that early treatment significantly reduced the odds of infection (OR: 0.34; 95% CI: 0.23–0.52; $p < 0.001$) compared to late treatment (Table 2). Subgroup analyses confirmed consistent benefits regardless of timing cutoffs or surgical approach ("fix and flap" vs. staged). While trends suggested reduced rates of amputation and non-union with early treatment, these did not reach statistical significance.
**Conclusion:** Early orthoplastic coverage significantly reduces FRI in patients with Gustilo- Anderson III B/C open tibial fractures. While secondary outcomes showed positive trends, further high-quality prospective studies are needed.

| | | Alawadi 2020 | Chua 2014 | Higgin 2021 | Olesen 2015 | Singh 2018 | Total |
|---|---|---|---|---|---|---|---|
| **Total** | **N =** | **102** | **89** | **114** | **46** | **103** | **454** |
| Early Orthoplastic Coverage | N = | 25 (24.5%) | 30 (33.7%) | 49 (42.9%) | 18 (39.1%) | 59 (57.2%) | **181 (39.8%)** |
| Late Orthoplastic Coverage | N = | 77 (75.5%) | 59 (66.3%) | 65 (57.1%) | 28 (69.9%) | 44 (42.8%) | **273 (60.1%)** |
| | | | | | | | |
| Complication Rate for early Orthoplastic Coverage | N = | 25 | 30 | 49 | 18 | 59 | **181** |
| | Infection | 7 (28%) | 8 (26.6%) | 17 (34.6%) | 5 (27.7%) | 15 (25.4%) | **52 (28.7%)** |
| | Amputation | 0 | 0 | 3 (6.1%) | 3 (16.6%) | N/A | **6 (3.3%)** |
| | Non/Delayed Union | 4 (16%) | N/A | 4 (8.1%) | 6 (33.3%) | N/A | **11 (6.7%)** |
| | Revision | 8 (32%) | 14 (46%) | N/A | N/A | N/A | **22 (12.1%)** |
| Complication Rate for late Orthoplastic Coverage | N = | 77 | 59 | 65 | 28 | 44 | **273** |
| | Infection | 25 (32.4%) | 37 (62.7%) | 42 (64.6%) | 17 (60.7%) | 21 (47.7%) | **142 (52%)** |
| | Amputation | 3 (3.8%) | 4 (6.7%) | 8 (12.3%) | 1 (3.5%) | N/A | **16 (5.8%)** |
| | Non/Delayed Union | 6 (8.8%) | N/A | 13 (20%) | 13 (46%) | N/A | **28 (10.2%)** |
| | Revision | 12 (15%) | 25 (42.3%) | N/A | N/A | N/A | **37 (13.5%)** |

**Table 1. Patient number and complication rates (primary and secondary outcomes) for each included study**

| | OR (Effect Size) | 95% CI Lower | 95% CI Upper | p.value | Regression Model | Z | I^2 | Tau^2 | Q | df | p.value Q-Stat |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Infection | 0.3444 | 0.2273 | 0.5223 | >0.0001 | Fixed | -5.024 | 0.045 | 0.000 | 4.186 | 4 | 0.3814 |
| Infection (72h) | 0.3943 | 0.2315 | 0.6722 | 0.0006 | Fixed | -3.421 | 0.430 | 0.162 | 3.506 | 2 | 0.1732 |
| Infection (168h) | 0.279 | 0.1434 | 0.5422 | 0.0002 | Fixed | -3.766 | 0.000 | 0.000 | 0.042 | 1 | 0.8381 |
| Infection (Fix & Flap) | 0.4446 | 0.2508 | 0.7867 | 0.0054 | Fixed | -2.782 | 0.148 | 0.030 | 2.348 | 2 | 0.3091 |
| Infection (Staged) | 0.2589 | 0.1413 | 0.4744 | >0.0001 | Fixed | -4.373 | 0 | 0 | 0.220 | 1 | 0.6390 |
| Amputations | 0.5303 | 0.2169 | 1.2979 | 0.1649 | Fixed | -1.389 | 0.340 | 0.662 | 4.547 | 3 | 0.2081 |
| Non/Delayed Unions | 0.742 | 0.2591 | 2.1254 | 0.5784 | Random | -0.556 | 0.524 | 0.454 | 4.197 | 2 | 0.1226 |
| Revision Operations | 1.6368 | 0.8343 | 3.2114 | 0.1519 | Fixed | 1.433 | 0.163 | 0.047 | 1.194 | 1 | 0.2745 |

**Table 2. All results from meta-analyses (incl. test for heterogeneity)**

### Buried Versus Exposed Kirschner Wires in Distal Radius Fractures: A Systematic Review and Meta-Analysis of Randomized Controlled Trials

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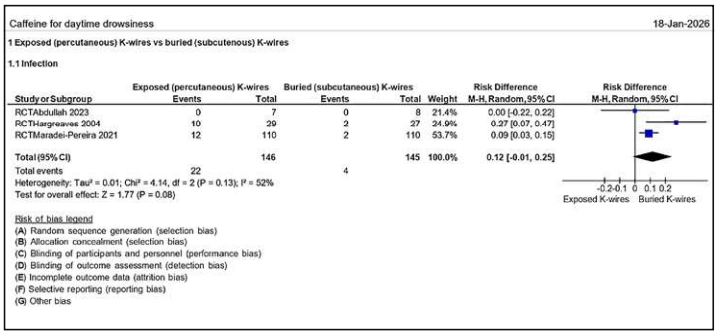
Orthopädie und Traumatologie, Luzerner Kantonsspital, Lucerne

**Background:** Percutaneous Kirschner wire fixation remains a common treatment for distal radius fractures. Whether wires should be left exposed or buried subcutaneously is controversial, particularly with regard to infection risk and subsequent clinical consequences.
**Aims:** To compare exposed versus buried Kirschner wire fixation in distal radius fractures with respect to pin tract infection and clinically relevant secondary outcomes.
**Methods:** A systematic review and meta-analysis was conducted in accordance with established methodological standards. Randomized controlled trials comparing exposed and buried Kirschner wires for distal radius fracture fixation were included. The primary outcome was pin tract infection, defined as superficial or deep infection. Secondary outcomes were early pin removal due to infection. Risk differences (RD) with 95% confidence intervals (CI) were calculated using random-effects models. Statistical heterogeneity was assessed using the $I^2$ statistic.
**Results:** Three randomized controlled trials comprising 291 patients were included. Buried Kirschner wires were associated with a significantly lower risk of pin tract infection compared with exposed wires (RD 0.12; 95% CI 0.06–0.18; $p = 0.0002$), with moderate heterogeneity ($I^2 = 52\%$). There was no statistical difference in early pin removal due to infection in the exposed

vs in the buried K-wire group.

**Conclusion:** Buried Kirschner wires significantly reduce the risk of pin tract infection compared with exposed wires. However, this reduction does not translate into a statistically significant decrease in early wire removal due to infection. From a clinical perspective, the choice between buried and exposed wires may therefore have limited impact on patient-relevant outcomes beyond infection rates and should be individualized based on surgical context and resource considerations.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1 Exposed (percutaneous) K-wires vs buried (subcutaneous) K-wires

1.1 Infection

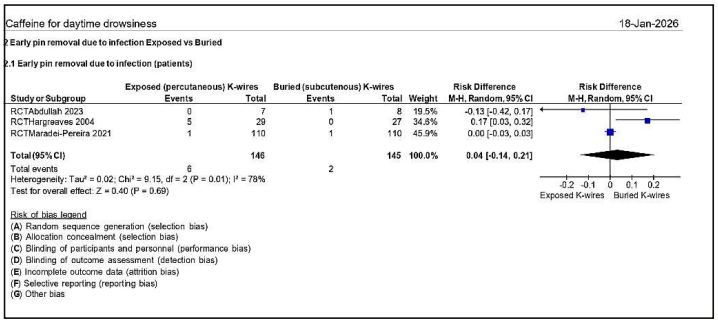
| Study or Subgroup | Exposed (percutaneous) K-wires Events | Total | Buried (subcutaneous) K-wires Events | Total | Weight | Risk Difference M-H, Random, 95% CI |
|---|---|---|---|---|---|---|
| RCTAbdullah 2023 | 0 | 7 | 0 | 8 | 21.4% | 0.00 [-0.22, 0.22] |
| RCTHargreaves 2004 | 10 | 29 | 2 | 27 | 24.9% | 0.27 [0.07, 0.47] |
| RCTMaradei-Pereira 2021 | 12 | 110 | 2 | 110 | 53.7% | 0.09 [0.03, 0.15] |
| Total (95% CI) | | 146 | | 145 | 100.0% | 0.12 [-0.01, 0.25] |
| Total events | 22 | | 4 | | | |

Heterogeneity: Tau² = 0.01; Chi² = 4.14, df = 2 (P = 0.13); I² = 52%
Test for overall effect: Z = 1.77 (P = 0.08)

Risk Difference M-H, Random, 95% CI
-0.2 -0.1 0 0.1 0.2
Exposed K-wires Buried K-wires

Risk of bias legend
(A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Blinding of participants and personnel (performance bias)
(D) Blinding of outcome assessment (detection bias)
(E) Incomplete outcome data (attrition bias)
(F) Selective reporting (reporting bias)
(G) Other bias

**Table and Forest Plot Exposed vs Buried K Wires 1 Endpoint**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2 Early pin removal due to infection Exposed vs Buried

2.1 Early pin removal due to infection (patients)

| Study or Subgroup | Exposed (percutaneous) K-wires Events | Total | Buried (subcutenous) K-wires Events | Total | Weight | Risk Difference M-H, Random, 95% CI |
|---|---|---|---|---|---|---|
| RCTAbdullah 2023 | 0 | 7 | 1 | 8 | 19.5% | -0.13 [-0.42, 0.17] |
| RCTHargreaves 2004 | 5 | 29 | 0 | 27 | 34.8% | 0.17 [0.03, 0.32] |
| RCTMaradei-Pereira 2021 | 1 | 110 | 1 | 110 | 45.9% | 0.00 [-0.03, 0.03] |
| Total (95% CI) | | 146 | | 145 | 100.0% | 0.04 [-0.14, 0.21] |
| Total events | 6 | | 2 | | | |

Heterogeneity: Tau² = 0.02; Chi² = 9.15, df = 2 (P = 0.01); I² = 78%
Test for overall effect: Z = 0.40 (P = 0.69)

Risk Difference M-H, Random, 95% CI
-0.2 -0.1 0 0.1 0.2
Exposed K-wires Buried K-wires

Risk of bias legend
(A) Random sequence generation (selection bias)
(B) Allocation concealment (selection bias)
(C) Blinding of participants and personnel (performance bias)
(D) Blinding of outcome assessment (detection bias)
(E) Incomplete outcome data (attrition bias)
(F) Selective reporting (reporting bias)
(G) Other bias

**Table and Forest Plot Exposed vs Buried K Wires 2nd Endpoint**

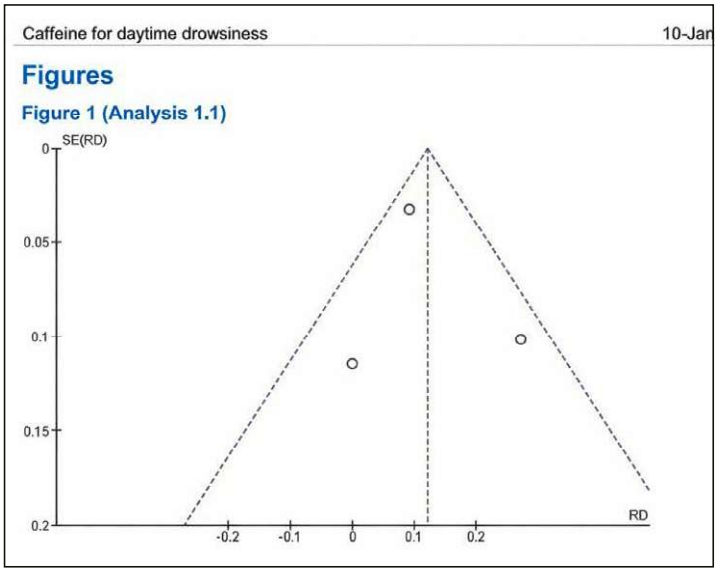


**Figure 3. Funnel Plot Exposed vs Buried K Wires 1 Endpoint**

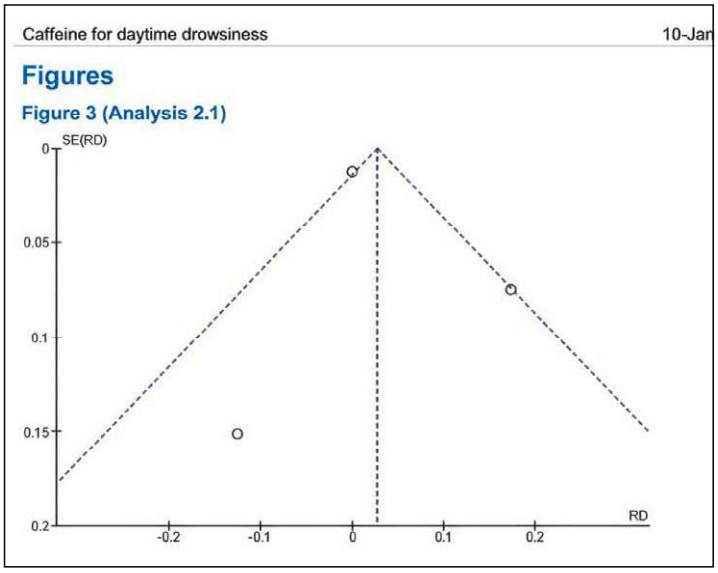


**Figure 4. Funnel Plot Exposed vs Buried K Wires 2nd Endpoint**

### Use of Sural Artery-Based Flaps in Reconstruction of Distal Lower Extremity Injuries Following Armed Conflict

A. Nazarenko[1], T. Kedyk[1], V. Tsapenko[2]
[1]Vinnytsia National Medical University, Vinnytsia UA; [2]General Surgery, Cherkasy Regional Hospital, Cherkasy

**Background:** Ongoing armed conflict has resulted in a substantial number of combat-related injuries, with mine-blast trauma to the distal lower extremities being particularly prevalent. These injuries are frequently associated with extensive soft-tissue defects and compromised local vascularity, posing significant reconstructive challenges. Sural artery–based flaps represent a reliable option for soft-tissue coverage due to their consistent vascular anatomy, versatility, and relative technical simplicity.

**Aims:** To evaluate the effectiveness of sural artery–based flaps in the reconstruction of distal lower extremity defects following mine-blast injuries.

**Methods:** A narrative review of the PubMed database was conducted alongside a retrospective analysis of clinical and statistical data from patients treated at a local hospital in Ukraine.

**Results:** Sural artery–based flaps include skin, subcutaneous tissue, fascia, sural nerve, medial superficial sural artery, and the small saphenous vein. Distal sural flaps are characterized by a distally located pedicle with retrograde perfusion via anastomoses between the superficial sural artery and perforators from the fibular artery. Proximal sural flaps utilize an antegrade blood supply with a proximally located pedicle. In cases where local flap elevation on the injured limb was contraindicated due to extensive tissue damage, cross-leg sural flaps were employed.A total of 21 reconstructions were performed: 4 proximal sural flaps, 9 distal sural flaps, and 8 cross-leg flaps. Postoperative complications occurred in 4 cases and were predominantly associated with the severity of blast-related tissue damage and trauma-induced microcirculatory impairment.

**Conclusion:** Sural artery–based flaps provide an effective and dependable method for reconstruction of distal lower extremity defects in patients with mine-blast injuries. The favorable success rate and low incidence of complications support their use as a valuable reconstructive option in the management of complex combat-related trauma.

### Influence of Physiologic Media on Biomechanical Performance of 1.5-mm Wire Cerclages: Defining the Minimum Number of Twists Required for Stability

M. Kraus[1,2,3], L. van Rossenberg[3], B. van de Wall[2], F. Beeres[2], B. C. Link[2], B. Gueorguiev[3], T. Pastor[2]
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**Background:** Wire cerclages remain an important adjunct for treating long-bone spiral and peri-implant fractures. However, biomechanical testing is commonly performed under dry laboratory conditions that poorly reflect the physiologic environment. This study evaluated the influence of testing medium on the biomechanical performance of 1.5-mm wire cerclages and determined the minimum twist number required for optimal static and cyclic properties.

**Aims:** To assess the effect of dry versus physiologic testing environments on cerclage biomechanics and to identify the optimal number of wire twists.

**Methods:** Using a standardized mechanical setup within a 37 °C heated water bath, cerclage constructs with 4, 6, 8, or 10 twists (n = 6 per group) were created and tested in dry, saline, or fat environments; fat was actively applied during twisting. Static testing evaluated stiffness, load to yield, and load to failure. Separate constructs underwent cyclic tensile testing at 700 N to determine cycles to 2-mm, 3-mm, and 5-mm elongation and cycles to failure.

**Results:** The testing environment significantly influenced all biomechanical parameters. Stiffness increased from 4-8 twists across all media, with no further increase at 10 twists. Load-to-failure peaked at 8–10 twists in each environment. Dry testing consistently yielded higher stiffness, load capacity, and fatigue endurance than saline or fat, markedly overestimat-

ing performance. For example, dry constructs with 6 twists achieved 45321±28114 cycles to 2-mm elongation, compared with 18769±15361 cycles in saline and 12306±6838 cycles in fat ($p<0.001$). Saline and fat showed comparable, consistently inferior performance relative to dry testing, but both improved with increasing twist number. Across all environments, 8 twists provided the most reliable balance of stiffness, strength, and cyclic durability, with no meaningful benefit from additional twists.
**Conclusion:** Wire cerclage biomechanics are strongly dependent on the surrounding medium. Dry testing substantially overestimates strength and fatigue resistance compared with physiologic saline and fat conditions. At least 8 twists are required for biomechanically robust constructs, and future studies should incorporate physiologic testing environments to better reflect clinical performance.

**Sonication of Orthopaedic Implants: Impact of Implant Size, Container Dimensions, and Sonication Time on Bacterial Recovery**
N. Maai[1,2,3], N. Reinert[2,4], M. Clauss[2,4], R. Kuehl[4], T. F. Moriarty[5], M. Morgenstern[2,4], M. Chittò[5]
[1]AO Research Institute, Davos; [2]Orthopaedic and Trauma Department, University Hospital Basel, Basel; [3]Center for Muskuloskletal Infections, University Hospital Basel, Basel; [4]Center for Muskuloskletal Infections, University Hospital Basel, Basel; [5]Infection Biology, AO Research Institute, Davos

**Background:** Sonication enhances detection of implant-associated infections by releasing biofilm-embedded bacteria from orthopaedic hardware. Although a ≥50 CFU/mL diagnostic threshold is often applied in fracture-related infection (FRI), its validity remains uncertain. The influence of implant size, container characteristics, and sonication duration on bacterial recovery is insufficiently defined.
**Aims:** To determine whether implant size and sonication container volume or material affect the efficiency of bacterial detachment and recovery, using Staphylococcus aureus MU12 and Staphylococcus epidermidis 12.1 as model organisms.
**Methods:** Titanium locking compression plates (LCP; 577.8 $mm^2$) and titanium TPLO plates (2224.47 $mm^2$) were inoculated with S. aureus or S. epidermidis for 30 min. Implants were sonicated for 1, 2, 5, or 10 min in small (0.47 L), medium (0.60 L), or large (1.0 L) plastic containers, and in small (0.38 L), medium (0.63 L), or large (1.0 L) glass containers. Sonication was performed at 40 kHz and 0.1 W/$cm^2$. Bacterial recovery was quantified as CFU/mL. Statistical analysis used two-way ANOVA ($P < 0.05$).
**Results:** In small plastic containers, TPLO plates yielded significantly higher bacterial loads than LCP plates ($4.07 \times 10^4 \pm 1.21 \times 10^4$ vs. $1.22 \times 10^4 \pm 7 \times 10^3$ CFU/mL; $P < 0.01$), reflecting surface-area–dependent colonisation. Container size showed no significant effect on recovery ($P > 0.05$). Glass containers produced slightly higher bacterial counts overall, reaching significance only when compared with small plastic containers ($P < 0.05$). Increasing sonication duration consistently enhanced bacterial retrieval, with 10 min yielding significantly higher counts than 1 min ($5.97 \times 10^4 \pm 2.27 \times 10^4$ vs. $1.22 \times 10^4 \pm 7 \times 10^3$ CFU/mL; $P < 0.0001$).
**Conclusion:** Implant surface area and sonication duration substantially influence bacterial recovery, whereas container size and material play minor roles. These findings highlight variability in sonication outcomes and suggest that a fixed CFU threshold for diagnosing FRI may be unreliable. Standardised, evidence-based sonication protocols are required to improve diagnostic consistency and sensitivity.

**Clinical Equipoise as Inclusion Criterion: A New Way to Prevent Confounding in Observational Surgical Studies**
b. van de Wall[1], N. van der Hoeven[2], B. Link[3], C. Michelitsch[4], R. Babst[3], R. Groenwold[5], F. Beeres[3]
[1]Orthopedic and Trauma Surgery, Luzerner Kantonsspital, Kriens; [2]Surgery, Leiden University Medical Center, Leiden; [3]Orthopedic and Trauma Surgery, Luzerner Kantonsspital, Lucerne; [4]Orthopedic and Trauma Surgery, Kantonsspital Graubunden, Chur; [5]Epidemiology, Leiden University Medical Center, Leiden

**Background:** Observational studies are crucial in orthopedic trauma surgery when randomized controlled trials (RCTs) are not feasible. However, they are susceptible to confounding by indication, as treatment decisions are often influenced by patient characteristics that also affect outcomes. While statistical adjustments are frequently used, they cannot account for unmeasured confounders. Clinical equipoise – defined as genuine uncertainty among experts regarding the optimal treatment – has been proposed as an inclusion criterion to improve baseline comparability in observational studies.
**Aims:** This study investigates whether higher levels of expert disagreement, as a proxy for clinical equipoise, are associated with improved baseline comparability between treatment groups in patients with proximal humerus fractures.
**Methods:** We used data from the LADON Humerus study, a multicenter, prospective cohort including patients treated operatively or non-operatively in five hospitals in the Netherlands and Switzerland. An international expert panel of trauma surgeons assessed anonymized cases, blinded to the actual treatment, and recommended a preferred approach. Disagreement between the treatment given and the expert recommendations was categorized into four levels (A: complete disagreement, B: partial, C: minimal, D: complete agreement). Standardized differences (StDiff) for age, sex, ASA score, and AO classification were used to assess comparability between treatment groups across disagreement levels.
**Results:** A total of 745 patients were evaluated. Comparability between treatment groups improved as the level of disagreement increased. At complete disagreement (Level A), the groups were well balanced in terms of age, sex, and ASA score ($StDiff \leq 0.1$). AO classification showed less improvement. Narrower inclusion criteria led to better balance but smaller sample sizes.
**Conclusion:** Using expert panel disagreement as a clinical equipoise criterion can enhance group comparability in observational research. This approach offers a feasible alternative to randomization and may reduce confounding when RCTs are not possible.

**Surgical Patient Safety During the COVID-19 Pandemic: An Integrative Review**
G. Giandotti Gomar, E. Rossi Ribeiro, R. Ceschin Fernandes
Chirugie Thoracique, Centre Hospitalier Universitaire Vaudois, Lausanne

**Background:** The COVID-19 pandemic imposed sudden and profound changes on surgical practice worldwide, significantly impacting decision-making and patient safety. The lack of prior knowledge about the disease, combined with limited resources and shortages of personal protective equipment (PPE), challenged healthcare systems and required rapid adaptation of surgical services.
**Aims:** This study aimed to identify and analyze the main impacts of the COVID-19 pandemic on surgical patient safety.
**Methods:** An integrative literature review was conducted using PubMed, SciELO, and the Virtual Health Library databases. The descriptors "COVID-19," "general surgery," and "patient safety" were applied according to MeSH terms, including studies in English, Portuguese, or Spanish from 2017 to 2021 that addressed the relationship between COVID-19 and patient safety in surgical settings. From 32 initially identified articles, 10 met the eligibility criteria and were included in the final analysis.
**Results:** COVID-19 is a highly contagious disease that can cause severe pulmonary involvement and was declared a pandemic by the World Health Organization in 2020, it profoundly affected healthcare systems, particularly surgical services. Elective procedures for benign conditions were initially postponed to reduce hospital burden and transmission risk, while emergency and oncologic surgeries were maintained. Safety strategies included preoperative testing up to 30 days before surgery, mandatory use of PPE, careful postoperative monitoring for pulmonary complications, and RT-PCR testing for symptomatic patients. Suspected or confirmed COVID-19 patients were managed in separate hospital circuits. Minimally invasive surgery, when performed with appropriate equipment and technique in asymptomatic patients, proved to be a valuable alternative, offering clinical benefits and potentially reducing viral transmission risk.
**Conclusion:** During the COVID-19 pandemic, strict adherence to PPE use, postoperative surveillance, and patient flow separation were essential to ensure surgical patient safety. The implementation of structured safety protocols and the appropriate use of minimally invasive techniques contributed to safer surgical care in a highly challenging epidemiological context.

**Single-Port Endoscopic Nipple Sparing Bilateral Mastectomy in Male Gynecomastia: A Case Report**
A. Mantawil
Surgery, Cotabato Regional and Medical Center, Cotabato City PH

**Background:** Gynecomastia is a condition of breast enlargement in men due to breast gland proliferation that is generally bilateral.
**Conclusion:** The case presents a 30-year-old man with bilateral gynecomastia, defined as painless, bilateral breast enlargement of glandular breast tissue without associated skin changes, nipple discharge, or palpable lumps. The diagnosis was confirmed by clinical and histopathological findings and treatment by single-port endoscopic nipple sparing bilateral mastectomy was uneventfully performed. This case highlights the significance of careful clinical examination and timely surgical treatment in patients with gynecomastia especially when the condition starts raising cosmetic or psychological issues with excellent results and fewer complications.
**Case presentation:** A 30-year-old male presenting with bilateral breast enlargement noticed within the past month. There was no pain, no breast discharge, and no hard lump when palpated. On physical examination, there is symmetrical breast enlargement, without skin changes, nipple retraction, or any discharge. Glandular enlargement with a diameter of 5 cm, painless, immobile, firm borders, no galactorrhea, no palpable lumps. Laboratory examination was within normal limits. The diagnosis was bilateral gynecomastia. An endoscopic bilateral mastectomy was performed. Histopathologic findings supported the diagnosis of gynecomastia. The post operative course was unremarkable.

## BJS Session

**AI-Powered Assessment of Surgical Performance in Laparoscopic Training: A Prospective Observational Study**
D. Chatziisaak[1,2,3], M. Sparn[2], P. Burri[4], A. Vouris[5], B. Schmied[2], D. Hahnloser[3], S. Bischofberger[2]
[1]Department of Transplantation Surgery, Guy's & St Thomas's NHS Foundation Hospitals NHS Trust, London; [2]Department of Surgery, HOCH Health Ostschweiz, St.Gallen; [3]Department of Surgery, Centre Hôpitalier Universitaire Vaudois, Lausanne; [4]Surgery, Universitiy Hospital of Zurich, Zurich; [5]Independent Statistical Consultant, Independent Statistical Consultant, Athen

**Background:** Ensuring accurate and objective evaluation of laparoscopic surgical performance is critical for high-quality surgical training. Conventional assessment methods, which rely on direct expert observation, are vulnerable to subjectivity and inter-rater variability, while simulator-

derived metrics, although quantitative, are limited by their lack of real clinical context. Artificial intelligence–based video analysis has emerged as a promising approach to overcome these limitations by providing standardized, reproducible, and scalable assessments. In this context, we investigated whether a large language model can assess laparoscopic surgical performance, and how its reliability compares with that of expert raters.

**Aims:** The objective of this study was to evaluate an AI-based model can perform qualitative assessments of surgical performance in accordance with the GOALS criteria. Furthermore, the study aimed to examine the reproducibility and consistency of the AI-generated evaluations across surgical videos.

**Methods:** This prospective observational study was conducted during the 41st Annual Davos Surgical Course (2024). Fifty first- and second-year surgical residents performed laparoscopic cholecystectomy on porcine liver simulation models. All procedures were video recorded, anonymized, and segmented. Blinded expert raters and an AI model independently scored identical video segments using GOALS and a 10-item safety checklist based on international guidelines. Test–retest reliability was evaluated through repeated AI assessments.

**Results:** AI demonstrated excellent test–retest reliability for total GOALS score (ICC 0.91; 95% CI, 0.56–0.94) and good reliability across individual domains. Agreement between AI and expert raters was excellent for total GOALS score (ICC 0.92; 95% CI, 0.88–0.95) and good to excellent for individual components. Bland–Altman analysis revealed minimal bias (mean difference −1.0) and tight limits of agreement.

**Conclusion:** AI achieved expert-level reliability in assessing surgical performance with high reproducibility. While calibration may enhance performance in specific domains, AI-driven assessment provides standardized, objective, and scalable feedback. Larger studies are warranted to support integration into surgical curricula.

### Meta-analysis of Randomised Clinical Trials Comparing Pancreaticogastrostomy vs Pancreaticojejunostomy in Partial Pancreatoduodenectomy

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[1]Chirurgie, Kantonsspital Frauenfeld, Frauenfeld; [2]Department of Surgery, Cantonal Hospital Thurgau, Münsterlingen; [3]Department of Surgery, Cantonal Hospital Thurgau, Frauenfeld

**Background:** In pancreatic surgery, morbidity and mortality remain high. Major complications include postoperative pancreatic fistula (POPF) and postpancreatectomy haemorrhage (PPH), among others. One of the few modifiable factors is the reconstruction technique used to anastomose the pancreatic remnant to the gastrointestinal tract.

**Aims:** To compare the outcomes of pancreaticogastrostomy (PG) and pancreaticojejunostomy (PJ) after pancreatoduodenectomy.

**Methods:** A systematic literature search was performed in PubMed, Web of Science, and the Cochrane Central Register of Controlled Trials to identify randomised controlled trials (RCTs) comparing PG with PJ. Outcomes included mortality, overall complications, POPF, PPH, operation time, and length of hospital stay. Pooled estimates were calculated using a random-effects model. Risk of bias was assessed using the Cochrane RoB 2.0 tool. Certainty of evidence for each outcome was subsequently rated according to the GRADE approach.

**Results:** Thirteen RCTs including 2030 patients were included. There was no difference in mortality (OR 0.98, 95%-CI: 0.61 to 1.59, p=0.94, moderate certainty of evidence) or overall complications (OR 1.13, 95%-CI: 0.70 to 1.80, p=0.62, low certainty of evidence). POPF was less frequent after PG (OR 0.69, 95%-CI: 0.50 to 0.95, p=0.02, very low certainty of evidence). In contrast, PPH occurred less frequently after PJ (OR 1.52, 95%-CI: 1.13 to 2.05, p<0.01, low certainty of evidence). There was no difference in operation time (MD 4.2 min, 95%-CI: −4.8 to 13.1, p=0.36, low certainty of evidence) or length of hospital stay (MD 4.0 days, 95%-CI: −2.1 to 10.1, p=0.20, very low certainty of evidence).

**Conclusion:** Pancreaticogastrostomy and pancreaticojejunostomy yield overall comparable outcomes after pancreatoduodenectomy. Given the similar mortality and overall complication rates, both techniques can be considered equivalent options and should be performed according to surgeon expertise and institutional preference.

### Trajectories of Type 2 Diabetes Following Bariatric Surgery: A Propensity Score-Matched, Sex-Specific Comparative Study

S. Notz[1], M. Egberts[1], B. O. Stueben[2, 3], L. Stern[1], J. Gerullies[1], P. Roser[4], T. Hackert[1], J. Izbicki[1], P. Busch[1], D. Weber[3], O. Mann[1], A. Duprée[1], G. Plitzko[3, 5]
[1]Department of General, Visceral and Thoracic Surgery, University Medical Center Hamburg-Eppendorf, Hamburg; [2]Department of General-, Visceral- and Transplant Surgery, Medical Center University Duisburg-Essen, Essen; [3]Department of General Surgery, Royal Perth Hospital, Perth; [4]III Department of Medicine, University Medical Center Hamburg-Eppendorf, Hamburg; [5]Department of General, Visceral and Thoracic Surgery, Universitätsklinikum Hamburg-Eppendorf – UKE, Hamburg

**Background:** Metabolic and bariatric surgery (MBS) yields high rates of Type 2 Diabetes (T2D) remission. However, the existing literature on sex-specific T2D resolution is inconsistent, often limited by methodological factors, and rarely captures the complete postoperative T2DM trajectory.

**Aims:** To comprehensively evaluate sex-specific T2D trajectories, glycemic control, and medication use following Sleeve Gastrectomy (SG) and Roux-en-Y Gastric Bypass (RYGB) while minimizing potential confounding.

**Methods:** Setting: University Medical Center. Patients with T2D undergoing primary SG or RYGB were included in a retrospective cohort study. A 1:1 propensity score matching created a balanced cohort (n=210) based on age, BMI, surgical procedure, and multiple T2D severity indicators. The overall follow-up rate was 83.7%. T2D trajectories, medication changes, A1C levels, weight loss metrics, and complications were analyzed at 6, 12, 24, and 36 months postoperatively.

**Results:** T2D trajectories, changes in medication and A1C levels showed no significant differences between sexes or between SG and RYGB within either sex group. Overall complication rates did not differ between sexes, but RYGB was associated with significantly higher rates of severe complications (Grade ≥IIIa/b) than SG in both groups. Weight loss metrics were comparable early, but females showed significantly greater weight loss at 24 and 36 months. Predictors for remission included lower age, lower A1C, no insulin use, and higher C-peptide.

**Conclusion:** T2D outcomes after MBS were comparable between females and males, and between procedures, over 36 months. T2D remission was associated with age and baseline disease severity, not sex or procedure type.

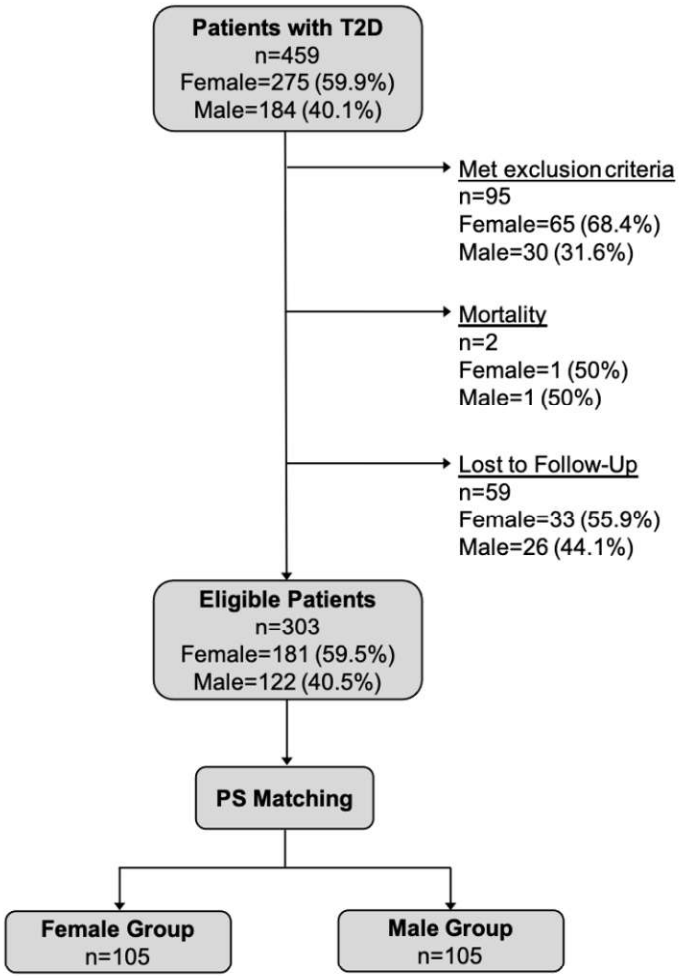
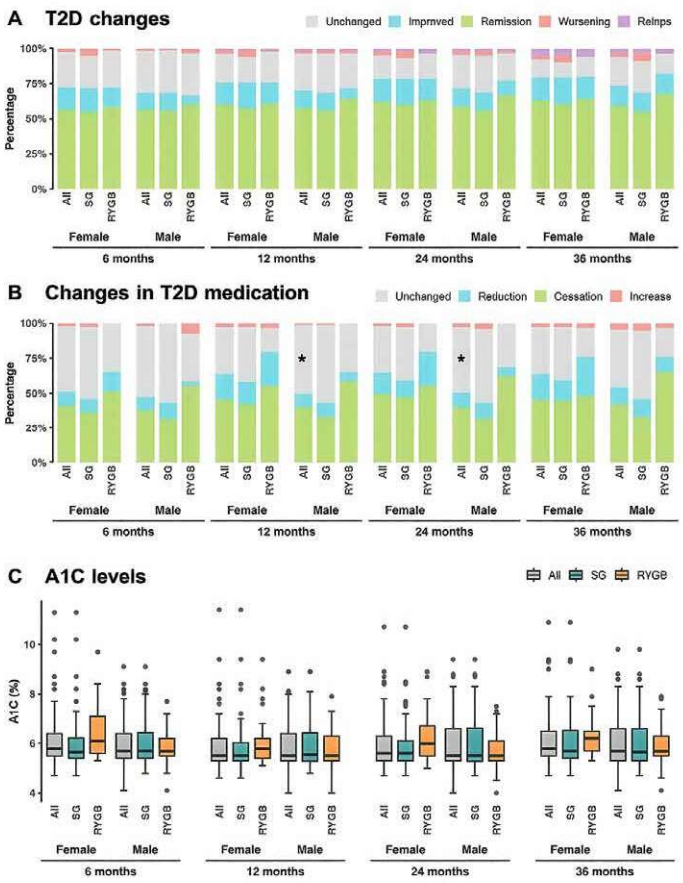
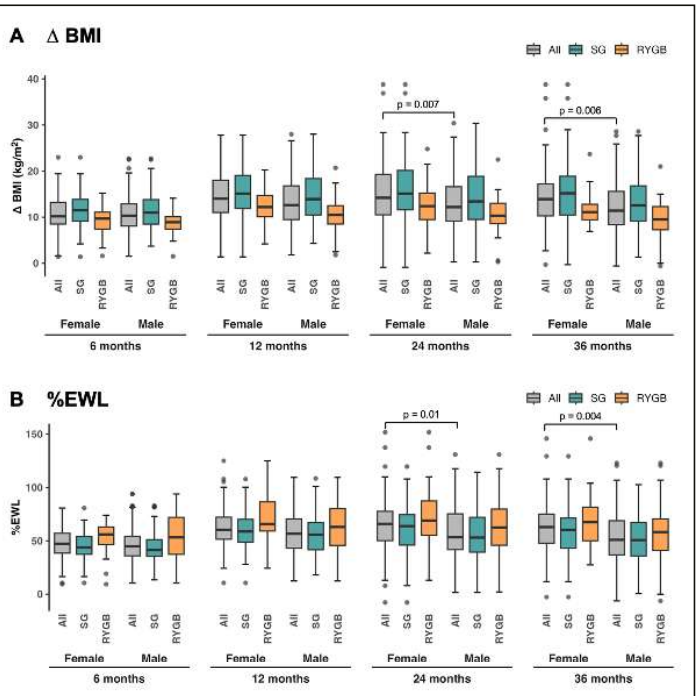



Table 1. Patient flow in the study




Values in A and B represent the percentage of patients in each respective outcome category; * p < 0.05 vs Female.
Boxplots display the median (center line), interquartile range (box), and values within 1.5×IQR from the quartiles (whiskers); data points beyond this range are shown as outliers.

Figure 1. T2D outcomes, changes in T2D medication and A1C levels in the study groups after 6, 12, 24, and 36 months




Boxplots display the median (center line), interquartile range (box), and values within 1.5×IQR from the quartiles (whiskers); data points beyond this range are shown as outliers.
Abbreviations: Δ BMI, Delta Body Mass Index; %EWL, Percentage Excess Weight Loss.

Figure 2. Weight outcomes for the study groups after 6, 12, 24 and 36 months.

## Role of Procalcitonin in Guiding Antibiotic Usage in Acute Pancreatitis: A Randomised Controlled Trial

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**Background:** The American College of Gastroenterology guidelines advise against prophylactic antibiotics for acute pancreatitis. However, 23.5% of cases receive them without evidence of infection. We aim to assess if a Procalcitonin(PCT) based algorithm can reduce antibiotic usage in patients with acute pancreatitis.
**Aims:** To compare antibiotic usage in terms of Defined Daily Dose (DDD), antibiotic usage, Length of hospitalization (LOH), re-admission & mortality rates in both the groups.
**Methods:** This is a single-center, prospective, single-blinded, randomized controlled trial where patients with Acute Pancreatitis were randomized into PCT & non-PCT groups. The PCT group received antibiotics based on PCT values on day 0 of admission, with treatment initiated or continued, if started already, when PCT was ≥1.0 ng/mL and discontinued when PCT was <1.0 ng/mL. Based on PCT, patients were reassessed after 48 hours for starting/ continuing/ stopping antibiotics. PCT values were measured on days 4 & 7 of admission. The other group was treated based on the American Pancreatic Association Protocol. Antibiotic usage, Length of hospitalization, re-admission & mortality rates were analyzed in both groups.
**Results:** 152 patients were enrolled after screening 167 patients. 144 patients were analyzed, 73 in the non-PCT group and 71 in the PCT group. Antibiotic usage proportions were 45.2% in the non-PCT group and 36.6% in the PCT group, showing a 9% reduction which was not statistically significant (p=0.295). Despite subgroup analysis based on the severity of pancreatitis, there were no significant differences in antibiotic duration, hospital stay, readmission, or mortality rates.
**Conclusion:** Procalcitonin-based antibiotic usage algorithm, although reduced the proportion of patients receiving antibiotics, it didn't reach statistical significance despite subgroup analysis based on the severity of pancreatitis.

## Clinical Outcomes after Stereotactic Microwave Ablation for Colorectal Liver Metastases: Single-Center Experience

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**Background:** Colorectal cancer (CRC) is the third most common cancer worldwide, with 25-30% of patients develop liver metastases (CRLM). Although hepatic resection remains the preferred treatment, recurrence occurs in 50-70% of cases. Thermal ablation is increasingly used for unresectable and deep seeded metastases < 3cm. Stereotactic microwave ablation (SMWA) has emerged as a highly precise ablation technique offering planning, navigation and validation during the intervention and the possibility to treat invisible lesions by MRI fusion.
**Aims:** A comprehensive analysis of patients undergoing SMWA for CRLM aims to identify factors influencing recurrence, oncological outcome and overall survival.
**Methods:** Retrospective analysis of a cohort of 89 patients treated at the Bern University Hospital for CRLM with SMWA between 2014 and 2024.
**Results:** A total of 89 patients underwent SMWA, with a mean age of 65.5 years. A total of 56 (62.9%) patients presented with synchronous CRLM at the time of SMWA. A total of 172 lesions in 105 interventions were treated. Post-interventional complications occurred in 5 (5.6%) patients. The overall survival, from the first treatment to last Follow-up was 35.6 (±22) months, disease progression was seen in 65 (73%) patients, whereas local recurrence after SMWA was observed in 30 (17.4%) patients, with a mean recurrence-free survival of 7.8 (±5.2) months. Fifteen (50%) of patients with local recurrence were treated with subsequent surgical resection. The influence of the ablation margin using an ablation validation software and a potential correlation with tumor size and anatomic location will now be assessed in order to identify risk factors for recurrence.
**Conclusion:** In this cohort, post-interventional complications were infrequent, and both overall survival and local recurrence rates were consistent with those reported in the literature following ablation or resection. SMWA for CRLM represents a safe and effective local treatment option.

## Feasibility and Safety of an Automated Chyme Reinfusion System for High-Output Stomas and Enterocutaneous Fistulas

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**Background:** Managing of high-output stomas (HOS) and enterocutaneous fistulas (ECF) is complex, involving risks of dehydration, electrolyte imbalances, and malnutrition. While parenteral nutrition (PN) remains the standard of care, it carries significant risks of infectious and metabolic complications.
**Aims:** Chyme reinfusion (CR) is recognized as beneficial, but its implementation is often limited by logistical constraints. This study aimed to evaluate feasibility and safety of an automated reinfusion device.
**Methods:** We conducted a retrospective, observational, single-center study. Adult patients with HOS or ECF treated with the automated device between January 2022 and December 2025

were included. The system integrates a pump within a standard stoma appliance, magnetically driven by an external controller to allow intermittent CR into the distal bowel. The primary endpoint was technical feasibility, defined as successful use of the device without premature discontinuation due to device failure. Secondary endpoints included complications, changes in PN requirements, and evolution of weight and serum albumin.

**Results:** Twelve patients were included. Technical feasibility was achieved in 10 cases. CR was initiated a median of 37 days after initial surgery for a median duration of 33 days. Regarding nutritional support, three patients discontinued PN and three others reduced requirements. Median weight increased from 61.7 kg to 65.3 kg, and median serum albumin from 25 g/L to 30 g/L by the end of treatment. Device-related difficulties were reported in eight patients (67%), mainly mechanical (catheter occlusion or dislodgement). One severe complication occurred (migration) requiring bowel resection.

**Conclusion:** Automated CR appears technically feasible in selected patients. Although mechanical complications remain frequent, this device represents a significant advancement in promoting patient autonomy and intestinal rehabilitation. Our findings suggest nutritional benefits and a reduced need for PN. Prospective studies are required to further assess safety, patient selection and clinical outcome.