June 2026 • Volume 113 • Supplement 5

BJS

Selected Abstracts of the SCS – Swiss College of Surgeons Annual Meeting 2026
Held in Lucerne, Switzerland
10-12 June 2026

Responsible for this BJS special edition
Markus Zuber, MD, Clarunis, Basel, Switzerland
Fabian Moser, MSc ETH, Medworld, Steinhausen, Switzerland

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OXFORD UNIVERSITY PRESS

Abstract Book

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Incorporating *European Journal of Surgery and Swiss Surgery*

A Journal formed by the union of *BJS*, Acta Chirurgica Scandinavica, publisher of *European Journal of Surgery*, and the Swiss Society of Surgery, publisher of *Swiss Surgery*.

The Journal is specially related to the Acta Chirurgica Scandinavica, Association of Surgeons in Training, Association of Surgeons in Great Britain & Ireland, European Society of Endocrine Surgeons, International Federation for the Surgery and Other Therapies for Obesity, Surgical Infection Society Europe, Sociedad Española de Investigaciones Quirúrgicas, Swedish Surgical Society, Swiss Society of Surgery, STARSurg, and Surgical Research Society.

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Alison Cherrie, Head of Publishing
BJS Academy
BJSEditorial@bjsacademy.com

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Volume 113, Supplement 5

OXFORD

Abstracts

Acute Care Surgery

Abstract citation ID: znag055.001

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

G. N. Weber Estay[1], N. Schaffner[2], P. Antony[3], M. Pfister[3], E. Kalkum[4], F. Hauswirth[3], M. K. Muller[3], P. Probst[3]
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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.

Bariatrics

Abstract citation ID: znag055.002

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.

Abstract citation ID: znag055.003

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.

Abstract citation ID: znag055.004

Staple Line Leaks Following Primary Laparoscopic Sleeve Gastrectomy. A Nationwide Multicenter Analysis

O. Thaher[1,2], M. Elshafei[3,4,5], S. Pouwels[6,7], P. Burri[8], M. Hukauf[9], R. S. Croner[10], C. Stroh[11]

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Background: Staple line leakage (SLL) is a major complication after primary laparoscopic sleeve gastrectomy (PLSG) and is associated with increased morbidity and mortality. This study aimed to identify patient-related and technical risk factors for SLL.

Aims: The aim of this study was to identify factors associated with the occurrence of staple line leakage following primary laparoscopic sleeve gastrectomy (PLSG). In addition, the association between selected technical aspects of the procedure and the incidence of staple line leakage (SLL) was evaluated.

Methods: All adult patients undergoing PLSG between 2005 and 2020 were retrospectively analyzed using data from the German Bariatric Surgery Registry (GBSR). Demographics factors, comorbidities, anthropometrics, perioperative variables, intraoperative events and staple line techniques were evaluated for their association with SLL. Associations with SLL were quantified using odds ratios (OR) with 95% confidence intervals and p-values.

Results: Among 27,542 patients, 309 (1.1%) developed SLL. Of these, 116 patients (37.5%) were male and 193 (62.5%) were female. Male sex was associated with a higher risk of SLL (OR 1.031). Smoking (p = 0.004), arterial hypertension (OR 1.263), and obstructive sleep apnea (OR 1.146) were significant risk factors. Patients with SLL had a markedly higher rate of conversion from laparoscopy to laparotomy (OR 2.801). Both BMI and body weight were significantly associated with leak occurrence (p = 0.047 and p = 0.014, respectively). Intraoperative complications substantially increased the risk of SLL (OR 3.613). The absence of staple line reinforcement was associated with higher leak rates compared with reinforced staple lines or interrupted suturing techniques (OR 1.326 and 1.256).

Conclusion: SLL following LSG is a multifactorial complication influenced by patient-related characteristics and technical factors. While complete prevention may not always be feasible, adherence to standardized surgical techniques and careful preoperative risk assessment may significantly reduce the incidence of SLL.

Abstract citation ID: znag055.005

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[1,3]

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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.

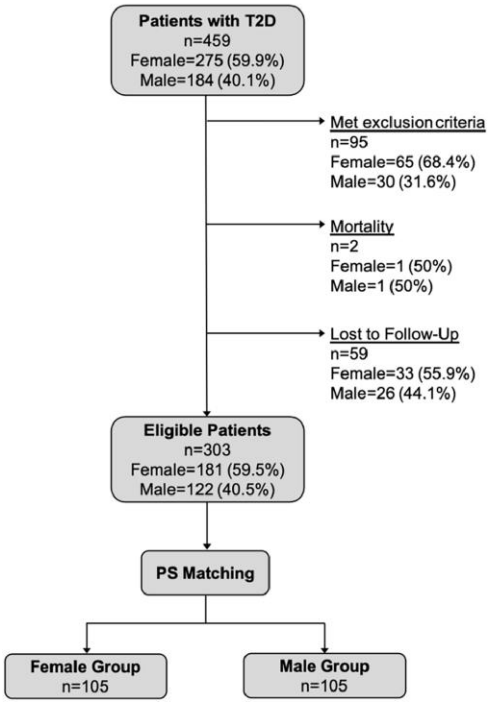
Methods: Setting: University Medical Center.

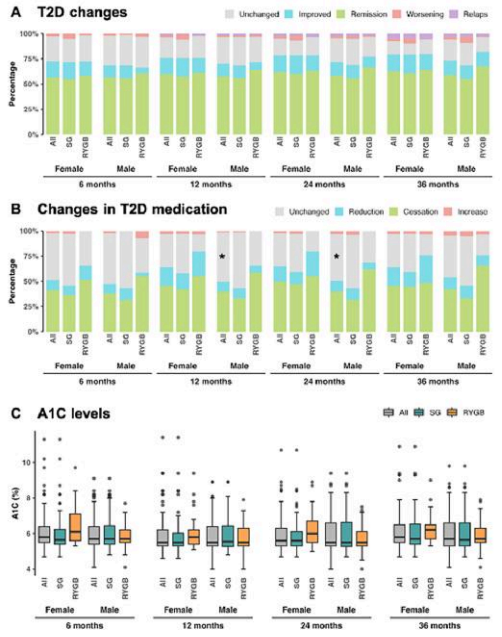
Patients with T2D undergoing primary SG or RYGB were included in a retrospective cohort study. A 1:1 propensity score matching created a balanced cohort (n=210) based on age, BMI, surgical procedure, and multiple T2D severity indicators. The overall follow-up rate was 83.7%. T2D trajectories, medication 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.

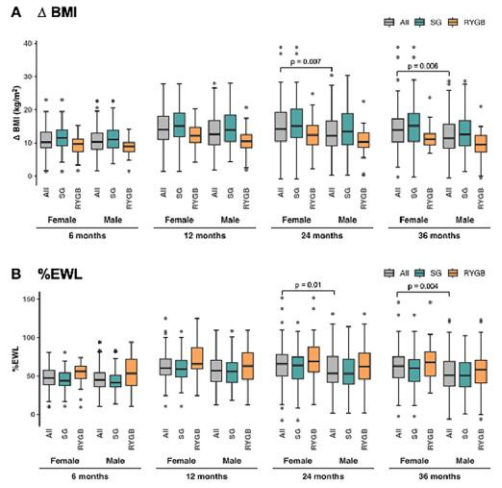
Figure S1: Patient flow in the study.





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 2: Weight outcomes for 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.

Abstract citation ID: znag055.006

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

D. Fontana[1], C. Kaiser[2], F. Abboretti[2], H. Teixeira-Farinha[2], D. Glauser[2], N. Vionnet[3], J. Vieira Barbosa[4], M. Fraga[4], L. Favre[3], S. Mantziari[2]
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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 (pre-operative 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.

Basic Research

Abstract citation ID: znag055.007

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

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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.

Abstract citation ID: znag055.008

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

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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.

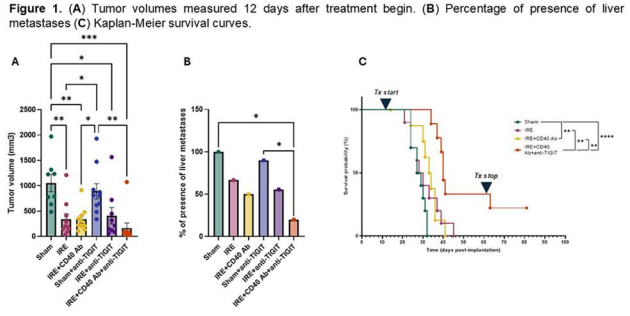

Figure 1. (**A**) Tumor volumes measured 12 days after treatment begin. (**B**) Percentage of presence of liver metastases (**C**) Kaplan-Meier survival curves.

Abstract citation ID: znag055.009

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

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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.

Children

Abstract citation ID: znag055.010

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.

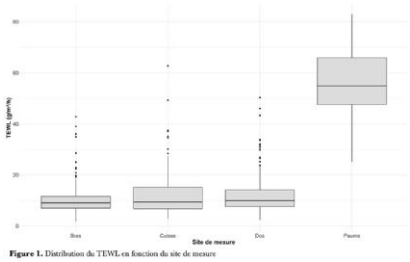

Figure 1. Distribution du TEWL en fonction du site de mesure

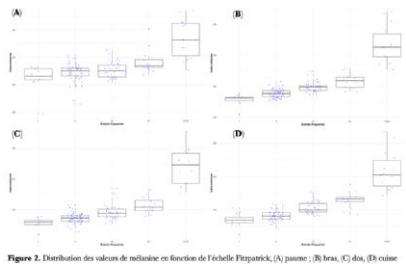

Figure 2. Distribution des valeurs de mélanine en fonction de l'échelle Fitzpatrick, (A) paume ; (B) bras, (C) dos, (D) cuisse

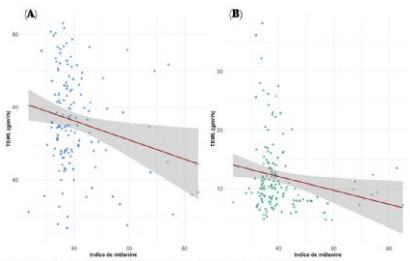

Figure 3. (A) Relation entre le TEWL de la paume de la main et l'indice de mélanine ($r^2 = 0.04235$ $p = 0.01624$) (B) Relation entre le TEWL des zones exposées (bras, dos, cuisse) avec l'indice de mélanine ($r^2 = 0.0387$ $p = 0.01853$)

Abstract citation ID: znag055.011

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.

Abstract citation ID: znag055.012

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 (Figure I). 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 I). 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.

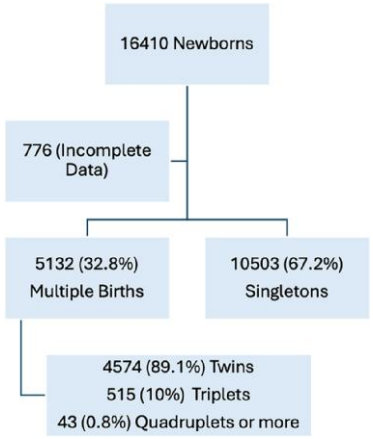

Figure 1

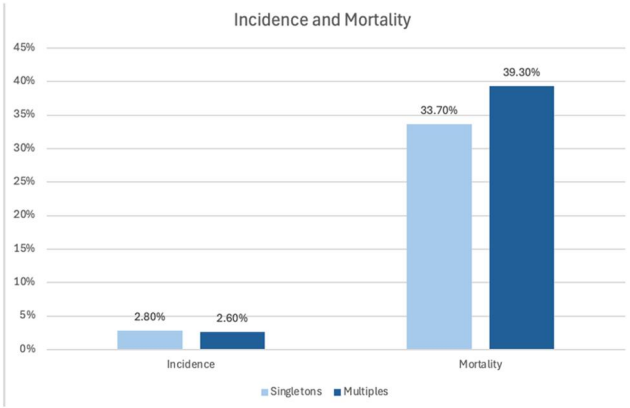

Figure 2

Abstract citation ID: znag055.013

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.

Abstract citation ID: znag055.014

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.

Abstract citation ID: znag055.015

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.

Abstract citation ID: znag055.016

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.

Abstract citation ID: znag055.017

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.

Abstract citation ID: znag055.018

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.

Abstract citation ID: znag055.019

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.

Education, Training, Professional Politics

Abstract citation ID: znag055.020

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.

Abstract citation ID: znag055.021

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

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[2]*Department of Clinical Research, University Hospital Basel, Basel*

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.

Abstract citation ID: znag055.022

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.

Abstract citation ID: znag055.023

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.

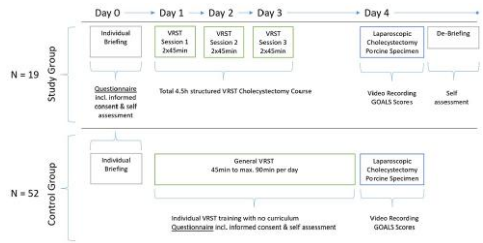

Figure 1

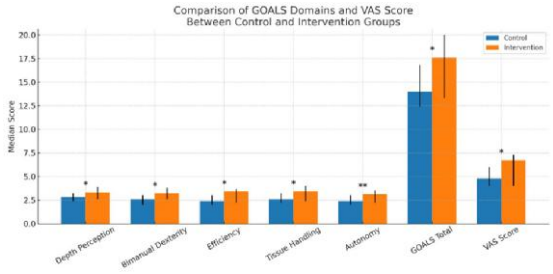

Figure 2

Abstract citation ID: znag055.024

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.

Endocrine

Abstract citation ID: znag055.025

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.

Abstract citation ID: znag055.026

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.

Hepatopancreaticobiliary (HPB)

Abstract citation ID: znag055.027

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.

Abstract citation ID: znag055.028

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.

Abstract citation ID: znag055.029

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

Abstract citation ID: znag055.030

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.

Figure 1. Cost Structure and Drivers of Robotic Liver Resection

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.

Figure 1

Abstract citation ID: znag055.031

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.

Abstract citation ID: znag055.032

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).

Abstract citation ID: znag055.033

Interdisciplinary Step-Up Strategy for Superinfected Walled-Off Necrosis: Sinus Tract Endoscopic Necrosectomy Versus Laparoscopic-Assisted Necrosectomy

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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.

Abstract citation ID: znag055.034

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.

Abstract citation ID: znag055.035

Meta-Analysis of Randomised Clinical Trials Comparing Pancreaticogastrostomy vs Pancreaticojejunostomy in Partial Pancreatoduodenectomy

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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.

Abstract citation ID: znag055.036

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.

Abstract citation ID: znag055.037

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.

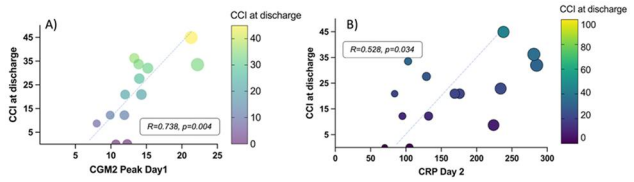

Figure 1. CGM Correlation of glucose measurement and complications. Linear Regression revealed a linear correlation of CGM peak levels on day 1 (A), p=0.004) and CRP on day 2 (B, p=0.034) with complications, displayed as CCI.

Abstract citation ID: znag055.038

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.

Abstract citation ID: znag055.039

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.

Hernia (Inguinal, Abdominal, etc.)

Abstract citation ID: znag055.040

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.

Abstract citation ID: znag055.041

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

Lower GI

Abstract citation ID: znag055.042

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.

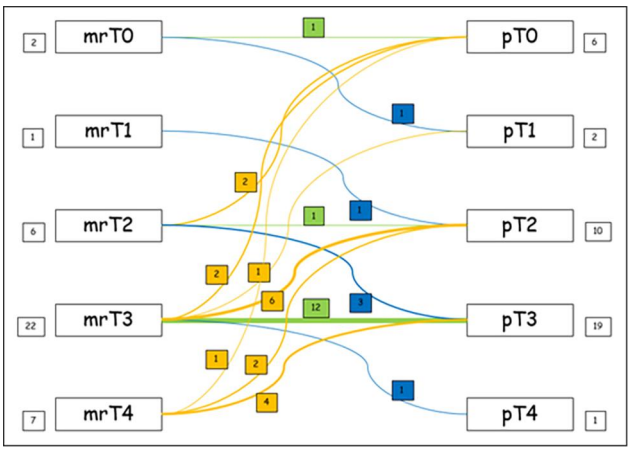

Figure 1. Diagram showing preoperative mrT compared to postoperative pT staging (yellow: radiological understaging, blue: radiological overstaging, green: correct staging)

Abstract citation ID: znag055.043

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.

Abstract citation ID: znag055.044

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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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.

Abstract citation ID: znag055.045

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

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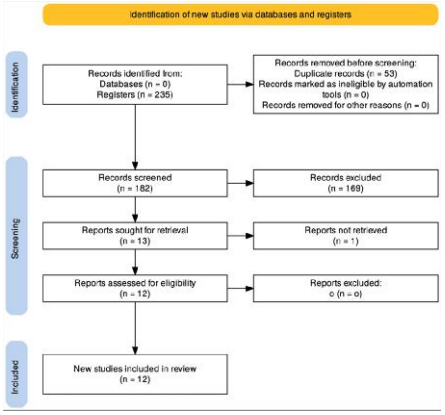
Background: Anastomotic leakage (AL) is a serious and potentially life-threatening complication following colorectal surgery, associated with increased morbidity, mortality, and impaired oncologic outcomes. Growing evidence suggests that the gut microbiome influences anastomotic healing and may represent 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.



Abstract citation ID: znag055.046

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

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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 1A : MULTIVARIABLE ANALYSIS FOR OVERALL COMPLICATIONS

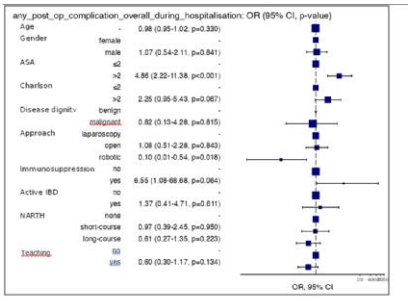

FIGURE 1A. Adjusted odds ratios (95% ci) for (a) overall postoperative complications and (b) severe complications in the matched cohort. Models adjust for age, sex, asa, charlson, dignity, surgical approach, immunosuppression, active ibd, and preoperative radiotherapy; robustess clustered by matched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

Table 3: Surgical data after propensity score matching

Item		No teaching[1] N = 187	Teaching[1a] 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	Dissection	19 (10.1)	21 (11.2)	41 (11.0)	0.889
	Reaction	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 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. IAE: intraoperative adverse event. HAR: high anterior resection. LAR: low anterior resection. APR: abdominoperineal resection. TME: total mesorectal excision.

Table 4: Postoperative outcomes after propensity score matching

Complication		No teaching[1] N = 187	Teaching[1a] 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.

Abstract citation ID: znag055.047

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.

Abstract citation ID: znag055.048

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.

Abstract citation ID: znag055.049

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.

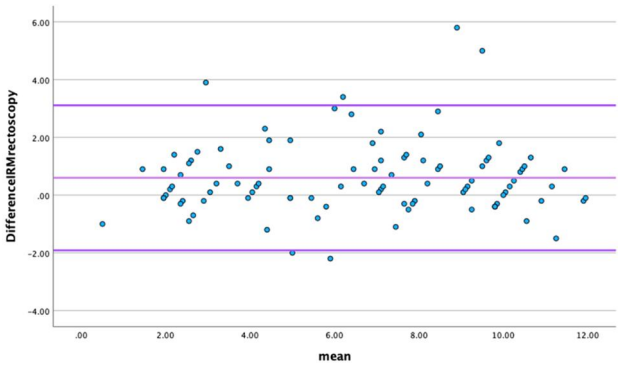

Figure 1 : Bland Altmann plot

Thorax

Abstract citation ID: znag055.050

"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.

Abstract citation ID: znag055.051

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.

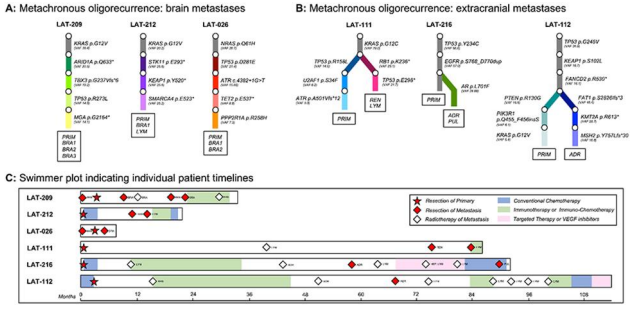

Figure 1: A and B: genetic evolution among patients with metachronous oligometastatic NSCLC and brain metastases (A) or extracranial metastases (B). C: Swimmer plot indicating individual patient

Abstract citation ID: znag055.052

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

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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

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

Abstract citation ID: znag055.053

Early Complications After Surgical Stabilization of Rib Fracture – A Retrospective Cohort Study

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Background: In recent years, interest in the surgical stabilization of rib fracture (SSRF) has increased considerably due to growing evidence demonstrating lower rates of pneumonia, improved respiratory mechanics, and reduced mortality. However, substantial uncertainty persists regarding optimal patient selection for SSRF. Systematic documentation of complications following SSRF is essential for internal quality assurance in trauma centres. Furthermore, the development of a risk stratification score for patients undergoing SSRF could serve as a valuable clinical decision-making tool and may aid in patient selection.

Aims: To evaluate the incidence of in-hospital complications after SSRF and their classification according to Clavien-Dindo.

Methods: Retrospective single-center analysis of 579 patients who underwent SSRF between 2008 and 2023. Logistic regressions were conducted for subgroup analysis.

Results: During hospitalization, 275 complications occurred in 186 patients (32.2%), including 66% of grade I and II according to Clavien-Dindo. Most observed complications were pulmonal and thoracic (36%), followed by cardiac (13%), and general surgical (12%). Univariate analysis showed that age, ASA score, polytrauma, number of fractured and fixed ribs, flail chest, interval trauma-surgery, bilateral rib fractures and higher Charlson Comorbidity Index were independent predictors of any in-hospital complication. On multivariate analysis, ASA score and flail chest were identified as the only predictors associated with in-hospital complications. Risk prediction model showed that the overall risk of any in-hospital complication was 32% and decreased to 18% in patients < 75 years with low ASA score and no flail chest. However, among patients > 75 years with flail chest and higher ASA scores (IV to V), the risk increased to 67%.

Conclusion: SSRF can be safely performed in most patients; however, careful patient selection and perioperative management are required in older frail patients to prevent or reduce high-grade complications.

Abstract citation ID: znag055.054

From VATS to RATS: Extending Minimally Invasive Approaches to Advanced and Complex Lung Cancer Resections

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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.

Abstract citation ID: znag055.055

Optimizing Saphenous Vein Harvest Site Closure: A Comparison of PRINEO and Traditional Staples in CABG Patients

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Background: Complications at the saphenous vein harvest site, including surgical site infection, wound dehiscence and prolonged drainage, remain underexplored in cardiac surgery despite their impact on recovery, length of hospital stay and healthcare costs. Up to 24% of patients undergoing coronary artery bypass grafting (CABG) experience such complications. Skin closure of vein harvest sites is traditionally performed using skin staples. Alternative closure systems such as PRINEO combine an adhesive layer with a reinforcing mesh designed to support wound edge approximation and protection.

Aims: To compare postoperative outcomes of saphenous vein harvest site closure using traditional skin staples versus the PRINEO adhesive mesh system in patients undergoing CABG.

Methods: This retrospective single centre cohort study included adult patients undergoing CABG with saphenous vein grafts between January 2018 and October 2024. Patients receiving exclusively arterial grafts were excluded. Patients were grouped according to harvest site closure technique: staples or PRINEO. Primary outcomes were local complications including surgical site infection, wound dehiscence and prolonged drainage. Secondary outcomes included length of hospital stay, need for reintervention and 30 day mortality.

Results: A total of 747 patients were included. Mean age was 62.4 years and 83.4% were male. Preoperative risk factors and operative variables were comparable between groups. Surgical site infection occurred in 3.58% of patients in the PRINEO group and 12% in the staple group (P<0.01). Wound dehiscence or prolonged drainage occurred in 5% versus 20%, respectively (P<0.01). Thirty day mortality did not differ. Length of hospital stay was shorter in the PRINEO group.

Conclusion: In this cohort, PRINEO was associated with fewer local wound complications and shorter hospital stay compared with staple closure. Prospective studies are warranted to confirm these findings.

Abstract citation ID: znag055.056

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

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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.

Transplantation

Abstract citation ID: znag055.057

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.

Abstract citation ID: znag055.058

Kidney Transplant After Bariatric Surgery

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Background: Obesity in kidney transplant (KT) recipients is associated with increased perioperative complexity and a higher risk of delayed graft function (DGF). Bariatric surgery is increasingly used in selected candidates, but real-world data on post-transplant outcomes and longitudinal renal function after prior bariatric surgery remain limited.

Aims: To compare early clinical outcomes, survival, and 1-year eGFR trajectories after KT across normal-weight, obese, and bariatric-history recipients.

Methods: We conducted a retrospective single-center cohort study including adult KT recipients transplanted between 01/2019 and 09/2024. Patients were stratified into Normal-weight, Adipose, and Bariatric-history cohorts. Baseline and perioperative variables are reported as median (Q1–Q3) or n (%). Group comparisons used Kruskal–Wallis and Pearson's chi-squared tests. Outcomes included length of stay (LOS), DGF, and overall survival up to 36 months (Kaplan–Meier; log-rank). Post-transplant renal function was assessed by eGFR up to 1 year.

Results: A total of 348 recipients were included (normal-weight n=272, obese n=61, bariatric-history n=15). Age differed across cohorts (55 [39–65], 59 [54–67], 57 [48–59] years; p=0.014), while sex distribution was similar (female 33%, 38%, 47%). BMI differed markedly (24.0 [21.0–26.0], 33.0 [31.0–34.9], 29.8 [26.5–37.1]; p<0.001). Warm ischemia time differed (27 [23–31], 29 [24–32], 24 [21–29] minutes; p=0.041), whereas cold ischemia time did not (p=0.20). LOS increased with adiposity (5 [4–7], 7 [5–12], 6 [5–18] days; p=0.002). DGF occurred in 28%, 48%, and 47%, respectively (p=0.006). At 1 year, mean (SD) eGFR was 48.4 (19.7), 40.2 (13.0), and 43.6 (23.5) mL/min/1.73m², respectively. Estimated 36-month survival was 94%, 90%, and 93%, with no evidence of between-group differences (log-rank p>0.05).

Conclusion: Obesity was associated with higher DGF rates, longer LOS, and lower 1-year eGFR after KT. Recipients with prior bariatric surgery had comparable 36-month survival and intermediate renal function outcomes, although inference is limited by small sample size.

Abstract citation ID: znag055.059

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.

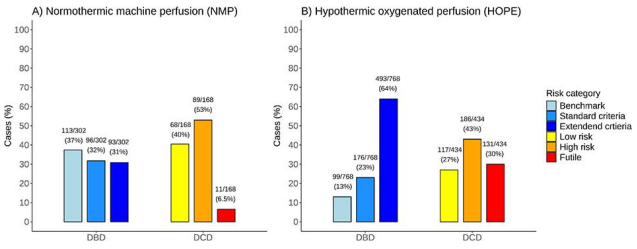

Figure 1. Graft risk in NMP and HOPE stratified by graft type. Benchmark case was defined as primary transplant with MELD <20 and BAR score <9, extended criteria as either BMI >30kg/m2, donor age >65 years, CIT >12h. DCD grafts were categorized as defined

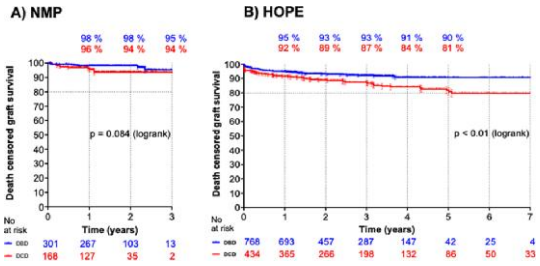

Figure 2. Death-censored graft survival in liver transplantation following NMP and HOPE stratified by graft type. Abbreviations: NMP (Normothermic Machine Perfusion), HOPE (Hypothermic Oxygenated Perfusion), DBD (Donation after Brain Death), DCD (Donation after circulatory death)

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.

Trauma

Abstract citation ID: znag055.060

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

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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.

Abstract citation ID: znag055.061

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

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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.

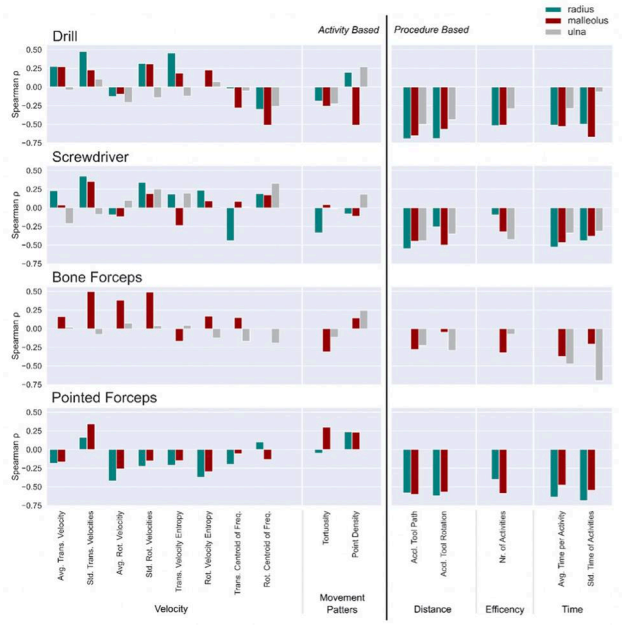

Figure 2: Spearman correlation coefficients between average GRS scores and DBM, stratified by tool and procedure type (radius, malleolus, ulna). Each bar shows the strength and direction of the correlation. Higher absolute values indicate stronger associa.

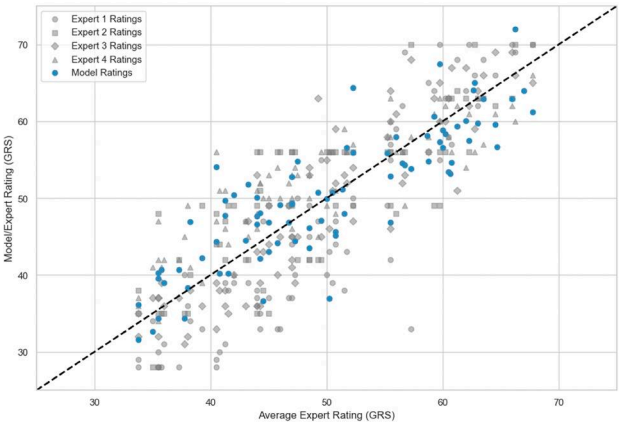

Figure 3: The average GRS score is plotted against the GRS scores predicted by the linear mixed-effects model using leave-one-out cross-validation (blue dots). Individual expert ratings are shown in light gray for reference.

Abstract citation ID: znag055.062

Is There a Relation Between Muscle Mass Surrounding Fractures and Acute Compartment Syndrome Incidence? A Retrospective Cohort Study Examining Extra-articular Tibial Fractures

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Background: Acute compartment syndrome (ACS) following tibial fractures is a frequent and potentially catastrophic complication when not promptly identified.

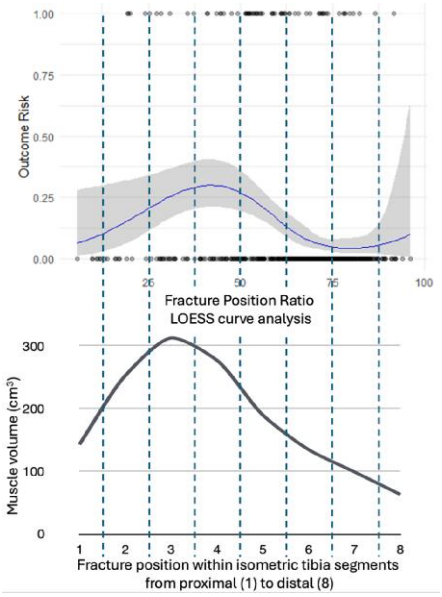
Aims: The aim of this study was to compare muscle mass and ACS incidence rate around extra-articular tibial fracture sites. This could potentially highlight muscle mass as an ACS risk factor.

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.



Upper GI

Abstract citation ID: znag055.063

Achieving Symptom Control in the Treatment of Gastroparesis: From Pills to Pacing

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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, Enterra™).

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.

Abstract citation ID: znag055.064

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.

Abstract citation ID: znag055.065

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

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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.

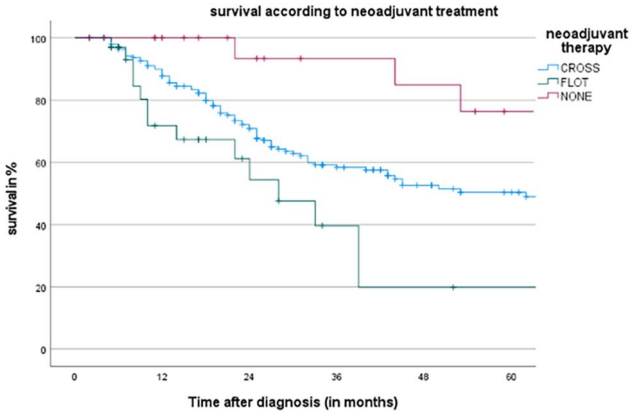

Figure 1: Survival curves stratified by preoperative neoadjuvant therapy.

Abstract citation ID: znag055.066

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.

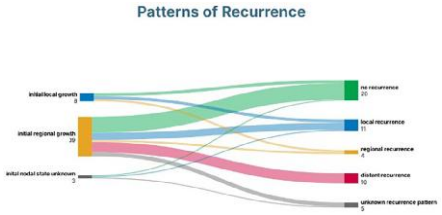

Figure 1: Patterns of recurrence in patients managed with a watchful waiting strategy

Abstract citation ID: znag055.067

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

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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.

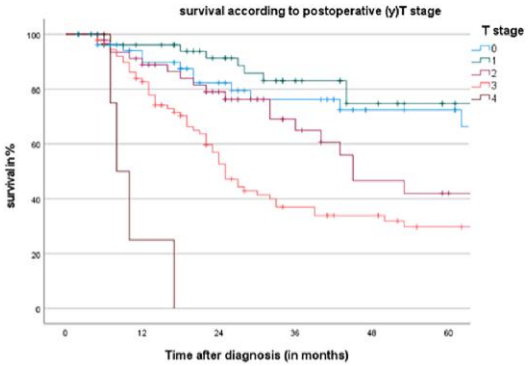

Figure 1: Overall survival according to postoperative histopathological T stage.

Vascular

Abstract citation ID: znag055.068

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

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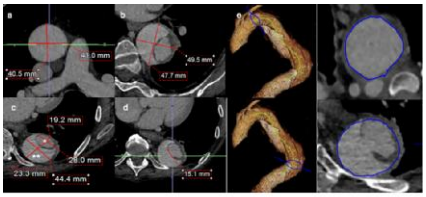
Background: Failure of conservative management in patients with initially uncomplicated acute type B aortic dissection (TBAAD) remains clinically relevant.

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

Abstract citation ID: znag055.069

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

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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.

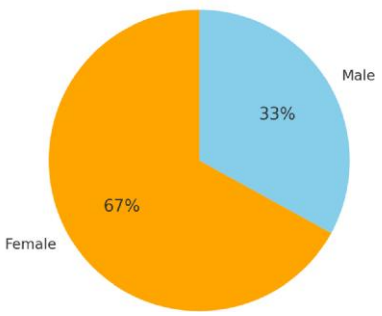


Figure 2. Indications.

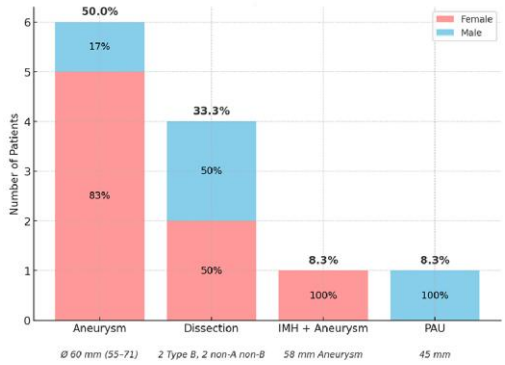
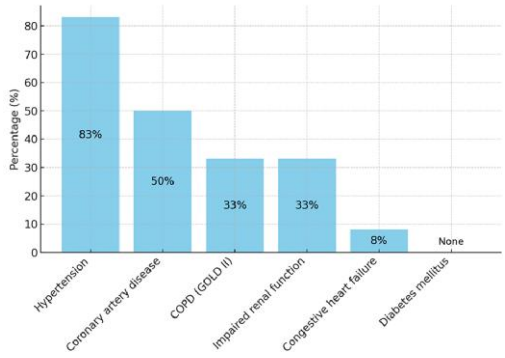


Figure 3. Patient comorbidities.



Abstract citation ID: znag055.070

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.**

Abstract citation ID: znag055.071

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.

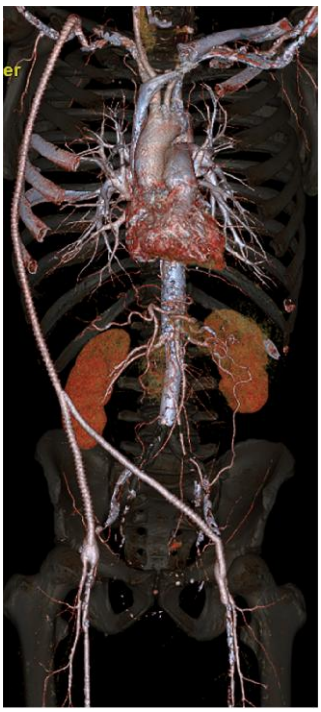

Figure Axillobifemoral bypass in a patient with extended aortoiliac occlusive disease

Abstract citation ID: znag055.072

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.

Abstract citation ID: znag055.073

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.

Abstract citation ID: znag055.074

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.

Abstract citation ID: znag055.075

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.

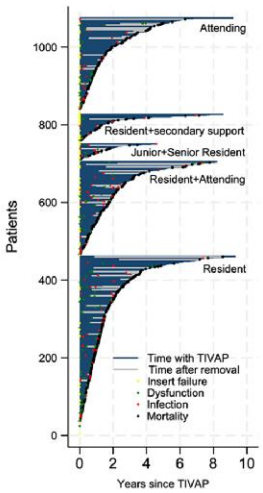
Aims: Primary aim was to assess the safety of TIVAP implantation performed by residents via the percutaneous subclavian vein approach and to compare complication rates across different levels of surgical supervision.

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 (Table.1). Residents performed 42.9% of procedures independently. Percutaneous subclavian vein technique was used in 95% of cases (Table.2). Pneumothorax occurred in 2.1% of patients, chest tube insertion in 1.0%, and no hemothorax was observed (Table.3). Overall complication rates did not differ significantly between surgeon groups after adjustment (Figure.2). Residents operating independently showed no increased risk compared with attending surgeons (Figure.2). Pneumothorax was most frequent in cases requiring secondary attending support (Figure.1). Independent predictors of complications included higher body mass index, anticoagulation, immunosuppression, and pre-existing venous devices (Figure.3).

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 4. Clinical course over 10 years by surgeon group.



Abstract citation ID: znag055.076

Sex Relater Outcomes After Endovascular Repair of Complex and Thoraco-Abdominal Aneurysms: The SERENA Study

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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.

Abstract citation ID: znag055.077

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 reinterventions 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.

Abstract citation ID: znag055.078

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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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.

Abstract citation ID: znag055.079

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.

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.png

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.png

Abstract citation ID: znag055.080

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.

Abstract citation ID: znag055.081

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

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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=78) demonstrated a higher rate of shrinkage (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.

Abstract citation ID: znag055.082

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 α 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.

Varia

Abstract citation ID: znag055.083

Oncological Outcomes After Cytoreductive Surgery and HIPEC for Colorectal and Appendiceal Peritoneal Metastases: A Retrospective Cohort Study

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Background: Cytoreductive surgery (CRS) combined with hyperthermic intraperitoneal chemotherapy (HIPEC) is an established treatment for peritoneal metastases from colorectal cancer (PM-CRC) and appendiceal tumors, with favorable outcomes reported in pseudomyxoma peritonei. However, oncological outcomes vary by tumor entity and disease burden.

Aims: This study aimed to evaluate oncological outcomes and identify prognostic factors for cancer-specific survival (CSS) and disease-free survival (DFS) following CRS/HIPEC for PM-CRC and appendiceal peritoneal metastases.

Methods: This retrospective single-center cohort study included 135 patients treated with CRS/HIPEC for PM-CRC or metastatic appendiceal tumors, including low- and high-grade appendiceal mucinous neoplasms (LAMN, HAMN) and appendiceal carcinoma (AC), between 2014 and 2024. Primary endpoints were CSS and DFS; secondary endpoints included postoperative morbidity and major complications. Survival was analyzed using the Kaplan-Meier method with log-rank testing for comparison between tumor entities. Prognostic factors were assessed using univariate and multivariate Cox proportional hazards models.

Results: The cohort comprised 37 LAMN, 4 HAMN, 28 AC and 67 PM-CRC patients. Complete cytoreduction (CC-0/1) was achieved in 93% of cases. Median peritoneal cancer index was 11. The median overall survival was not reached for LAMN and HAMN, was 57.9 months for AC, and 31.4 months for PM-CRC, with significant differences between tumor entities (p<0.001). Positive lymph node status was associated with reduced CSS (HR 4.61, 95% CI 2.31-9.22; p<0.001) and DFS (HR 3.84, 95% CI 2.29-6.46; p<0.001). Small bowel resection was associated with reduced CSS (HR 1.79, 95% CI 1.02-3.09; p=0.04) and DFS (HR 1.75, 95% CI 1.11-2.77; p=0.02). Incomplete cytoreduction was associated with shorter CSS (HR 2.43, 95% CI 1.14-5.15; p=0.02).

Conclusion: CRS/HIPEC provides favorable long-term outcomes in selected patients with peritoneal metastases, particularly those with appendiceal tumors. Tumor entity, lymph node status, completeness of cytoreduction, and small bowel resection significantly influence oncological outcomes, emphasizing the importance of careful patient selection.