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ABSTRACTS

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SCS – SWISS COLLEGE OF SURGEONS ANNUAL MEETING 2025

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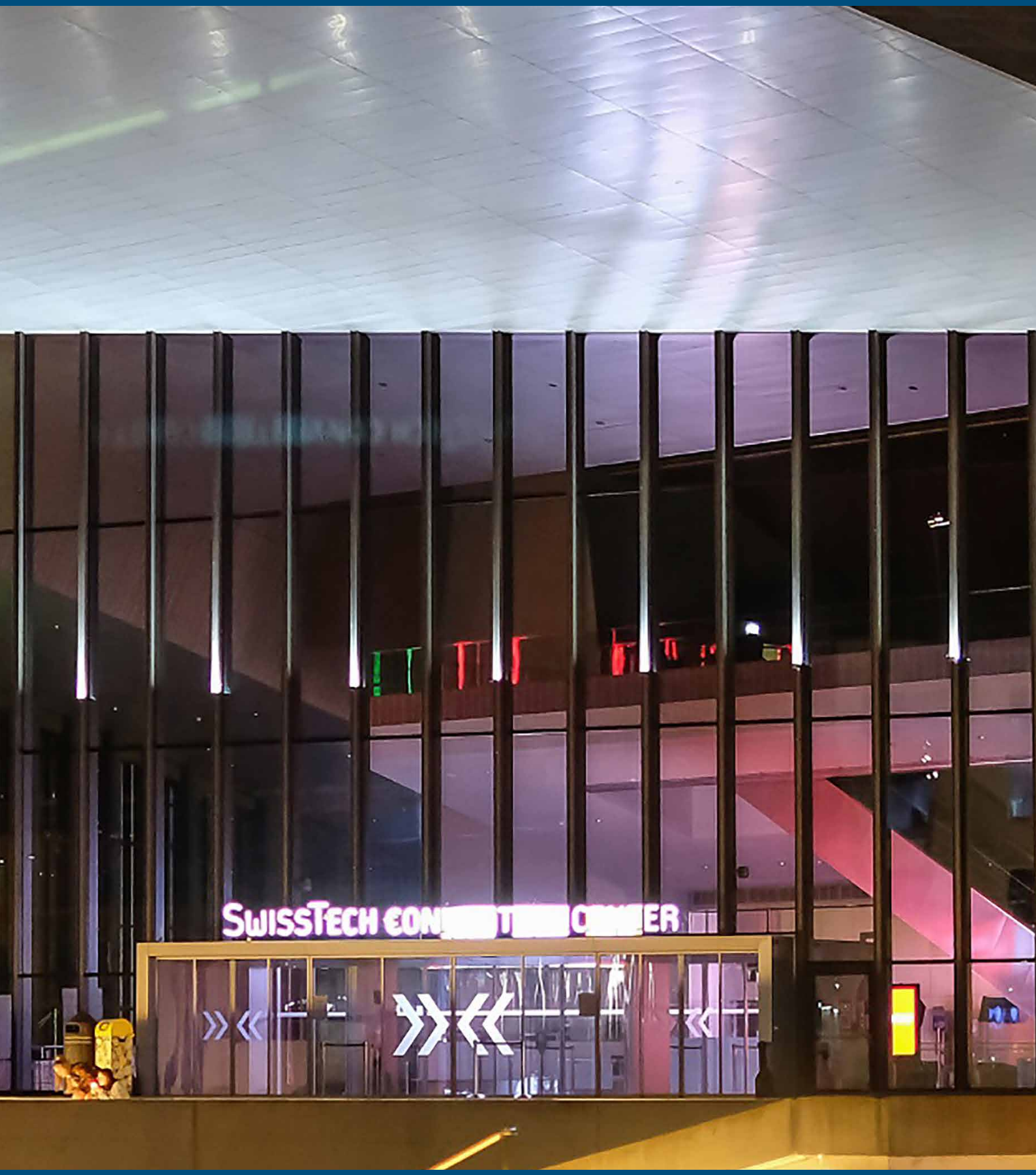

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capitole
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NOCTURNES JUSQU'À MINUIT
LES VENDREDIS 1ER, 8 ET 15 OCTOBRE
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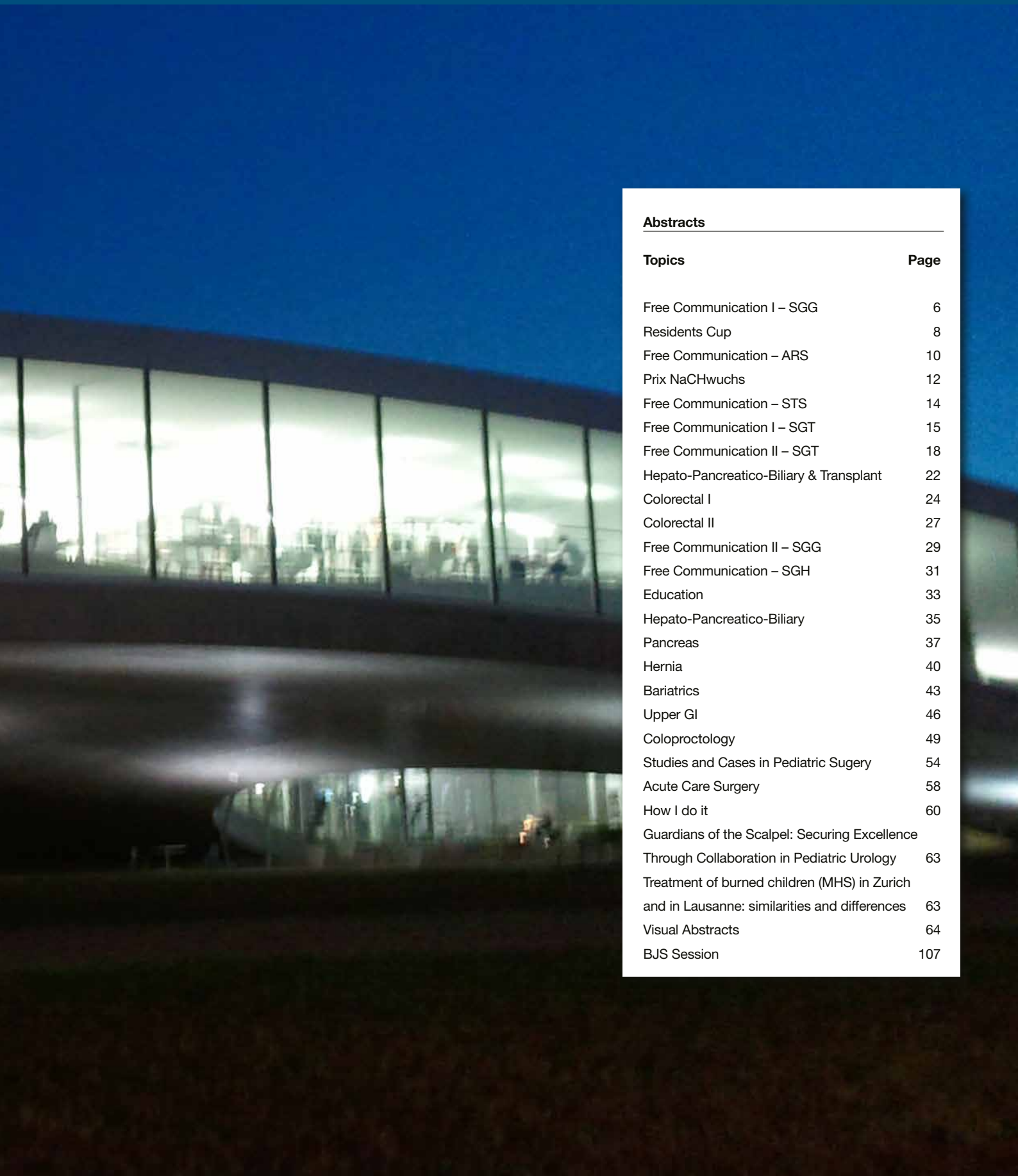

Abstracts

Swiss College of Surgeons

Impressum

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Free Communication I – SGG

Prevalence, Phenotypes, and Long-Term Outcomes of Cardiac Complications After Arterial Vascular Surgery

V. Thommen[1], D. Menosi Gualandro[1], C. Puelacher[1], F. Cardozo[2], D. Bolliger[3], L. Steiner[3], L. Gürke[4], E. Mujagic[4], C. Müller[1]
[1]Cardiology and Cardiovascular Research Institute Basel, CRIB, University Hospital Basel, Basel; [2]Unidade de Medicina Interdisciplinar em Cardiologia, Instituto do Coração, Hospital das Clínicas, HCFMUSP, Faculdade de Medicina, Universidade de São Paulo, São Paulo; [3]Department of Anesthesiology, University Hospital Basel, Basel; [4]Department of Vascular Surgery, University Hospital Basel, Basel

Background: Vascular surgery patients are at particular high-risk for cardiac complications after surgery.
Aims: To determine the incidence and phenotypes of cardiac complications after arterial vascular surgery and to assess long-term mortality and major adverse cardiac events according to different phenotypes of these cardiac complications.
Methods: Consecutive high-risk patients undergoing arterial vascular surgery between 2014 and 2019 were included. The incidence of perioperative myocardial infarction/injury (PMI) was determined, and its aetiology was centrally adjudicated by two independent physicians. PMI aetiologies were hierarchically classified into "extra-cardiac" if caused by a primarily extra-cardiac disease such as severe sepsis or pulmonary embolism; and "cardiac", further subtyped into type 1 myocardial infarction (T1MI), tachyarrhythmia, postoperative acute heart failure (pAHF), or likely type 2 myocardial infarction (IT2MI). All-cause death as well as major adverse cardiac events (MACEs) including acute myocardial infarction, pAHF (both only from day 3 to avoid inclusion bias), life-threatening arrhythmia, and cardiovascular death were assessed during 1-year follow-up.
Results: Among 2'265 patients (median age 71 years, 73% male), PMI occurred in 423 (18.7%) with the incidence strongly dependent on the type of arterial vascular surgery. 267/2'265 patients died (11.8%) and at least one MACE occurred in 325/2'265 patients (14.3%) within 1 year. Outcomes differed substantially according to aetiology: in patients with extra-cardiac PMI, T1MI, tachyarrhythmia, pAHF, and IT2MI, 67%, 24%, 45%, 47%, and 18% died and 63%, 50%, 73%, 73%, and 20%, patients had MACE within 1 year, respectively, in comparison to 8% and 10% in patients without PMI (Figure 1, Graphical Abstract).
Conclusion: The incidence of PMI after arterial vascular surgery is high and related to high rates of mortality and MACE, with extra-cardiac, tachyarrhythmias, and pAHF being associated with worse prognosis.

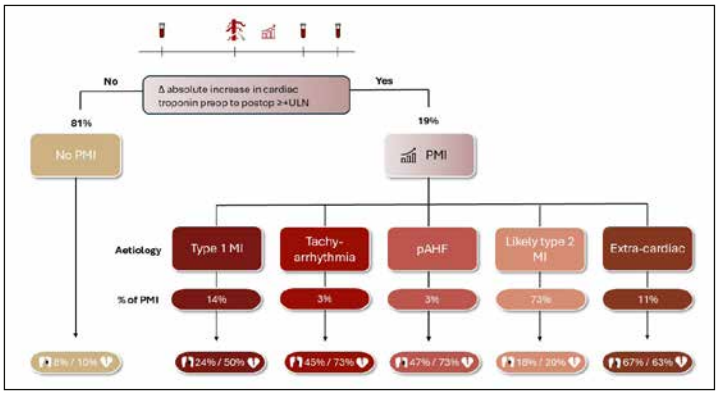

Figure 1. Graphical Abstract

Isolated Femoral Endarterectomy and Profundoplasty Without Revascularization of a Femoropopliteal Occlusion in Patients With Chronic Limb Threatening Ischemia

F. Moehle, E. Mujagic, T. Wolff
Vascular Surgery, University Hospital Basel, Basel

Background: There is a widely accepted dogma that patients with CLTI and peripheral ulcers need a continuous vascular pathway down to the foot for successful wound healing. Nevertheless, in patients with concomitant common femoral / profunda artery stenosis and femoropopliteal occlusion it is sometimes decided to leave the femoropopliteal occlusion untreated and only perform profundoplasty +/- iliac artery stenting.
Aims: The aim of this study was to evaluate the outcome in these patients.
Methods: Retrospective analysis of consecutive patients.
Results: Between 2014 and 2023 33 limbs in 30 patients with CLTI received femoral endarterectomy, profundoplasty (+/- iliac stenting) without treatment of a femoropopliteal occlusion. The decision not to treat the femoropopliteal occlusion was the lack of an adequate vein for bypass surgery in 5, patient morbidity in 7, small lesion not justifying extensive surgery in 7, very good collateralization from the profunda artery in 3, unsuccessful attempt of femoropopliteal recanalization in 3 and in 9 patient no clear reason for the decision could be discerned. Nearly all patients were in WIfI stage 3. No patient was lost to follow-up.
12 limbs (36%) needed femoropopliteal revascularization because of wound progression (8 bypass surgery, 4 endovascular) and 1 patient (3%) had major amputation. The strategy to not treat the femoro-popliteal occlusion thus failed in 13 (39%) of limbs. In all 20 limbs that did not require femoropopliteal revascularization, complete wound healing was documented. 16 patients (53%) died during follow-up. One year after profundoplasty 4/12 patients with femoropopliteal revascularization but only 2/18 patients without femoro-popliteal revascularization had died. (Figure 1)
Conclusion: In approx. two thirds of our patients with limited wounds the strategy to only perform profundoplasty and leave a femoro-popliteal occlusion untreated was successful. Our data do not allow us to identify risk factors for success or failure of the strategy chosen. The patients who required secondary bypass surgery or endovascular revascularization had a higher mortality.

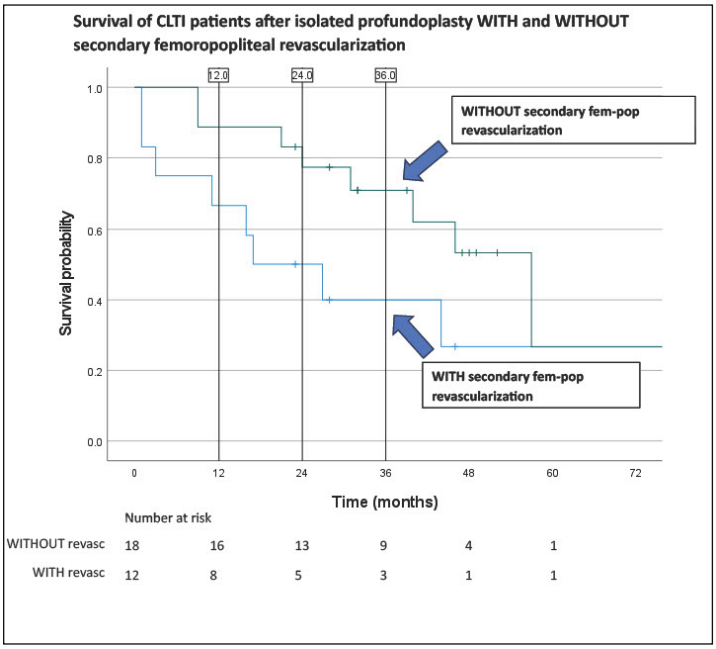

Figure 1. CLTI isolated profundoplasty survival v2

"Endovenectomy" of a Chronically Thrombosed Femoral Vein for Arterial Reconstruction in a Patient With IV Drug Use and Recurrent Bovine Pericardial Graft Infection

M. Giardini, E. Mujagic, T. Wolff
Basel

Background: A 53-year-old male with a history of intravenous drug use underwent replacement of the common femoral artery with a bovine pericardial graft due to an infected pseudoaneurysm in 2020. In 2024 he presented with reinfection and bleeding. Part of the graft was replaced, again with a graft from bovine pericardium. The patient was known to have bilateral chronic thrombosis of the femoral and saphenous veins.
Aims: To describe the use of a chronically thrombosed femoral vein as an arterial conduit in the treatment of infected bovine pericardial grafts, particularly in a patient with a history of intravenous drug use and chronic vein thrombosis.
Methods: In 2025, following recurrent reinfection and a ruptured pseudoaneurysm, approximately 15 cm of the ipsilateral thrombosed femoral vein was harvested. An "endovenectomy" was performed by eversion of the entire vein segment (Figure 1-3). The vein was anastomosed to the distal external iliac and superficial femoral artery, with the deep femoral artery reintegrated into the vein graft.
Results: A postoperative CT scan demonstrated a regular lumen of the vein graft with a diameter of 8–9 mm. No morbidity related to vein harvesting was observed, as the venous outflow of the leg was unaffected due to the pre-existing thrombosis.
Conclusion: To our knowledge this is the first description of the use of a chronically thrombosed femoral vein as an arterial conduit. Our strategy may be the only way to achieve a reconstruction with a fully biological graft, particularly in intravenous drug users with limited venous options due to chronic thrombosis of the femoral and saphenous veins. A further advantage lies in the fact that no morbidity from harvesting the femoral vein is incurred, as the venous outflow of the leg is not affected by resecting a thrombosed vein. The case also highlights the challenge of reinfection in arterial reconstructions involving bovine pericardium and underscores the need for alternative strategies in complex scenarios. Long-term durability remains to be assessed.

Figure 1. "Endovenectomy" eversion

Figure 2. "Endovenectomy" process

Figure 3. "Endovenectomy" result

Incidence and Risk Factors of Surgical Site Infections in Vascular Surgical Procedures of the Groin

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[1]Vascular Surgery, University Hospital Basel, Basel; [2]Vascular Surgery, Kantonsspital Aarau, Aarau

Background: The reported incidence of surgical site infections (SSI) in vascular surgery procedures in the groin varies from 8% to a staggering 30%. SSI represent a major burden in postoperative care, cause hospital readmissions and reoperations and generate costs. In the presence of prosthetic grafts, SSI are even more problematic.
Aims: To investigate the incidence of SSI following unselected open vascular surgery procedures in the groin in a real-world setting and to explore potential factors associated with SSI
Methods: Retrospective analysis of consecutive patients undergoing any arterial surgery in the groin in two teaching hospitals between 2011 and 2022. Primary endpoint is SSI at 30 days for all patients and occurrence of SSI at 90 days for those patients with implants. To identify factors associated with SSI within 30 days, univariable and multivariable logistic regression analyses were performed using prespecified variables.
Results: Mean age was 70.7 (11.5) years and 1993 patients (67.1%) were male. While 1094 patients (36.9%) received a patch and 1195 (40.3%) underwent endarterectomy, 1514 (51%) had concomitant bypass surgery. Out of 2967 patients, 180 (6.1%) experienced SSI at 30 days and 27 (0.9%) had SSI at 90 days. On univariable logistic regression, diabetes (OR 1.923, 95%CI 1.411-2.611, p=0.001), patch reconstruction (OR 1.848, 95%CI 1.329-2.56 for bovine pericardial patch and OR 1.915, 95%CI 1.095-3.18 for autologous vein patch p=0.004), endarterectomy (p=0.005) lymphatic complications (OR 3.515, 95%CI 2.385-5.094, p<0.001) were associated with significantly increased odds of experiencing SSI. Duration of surgery (p=0.631) and concomitant bypass surgery (p=0.325) were not associated with the odds of having SSI. On multivariable analysis, only diabetes (OR 1.67, 95%CI 1.18-2.33, p=0.004) and lymphatic complications (OR 3.03, 95%CI 1.98-4.53, p<0.001) remained significantly associated with the odds of having SSI.
Conclusion: In this series, the SSI rate was lower than expected and some otherwise accepted risk factors could not be confirmed.

From EVAR to Open Repair: Addressing Endograft Infections in Abdominal Aortic Aneurysm Patients Since 20 Years

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Background: Endovascular aortic repair (EVAR) is the preferred treatment for abdominal aortic aneurysms but can lead to rare, life-threatening infections requiring open surgical repair with endograft explantation. Bovine pericardial tube grafts offer an effective solution for in situ reconstruction in aortic infections. We report outcomes of patients undergoing open conversion after EVAR infection.
Aims: To present our experience using Bovine pericardial bifurcated grafts to treat infected EVARs.
Methods: This retrospective single-center study from 2004 to 2023 assesses EVAR patients who underwent endograft explantation for infection. Symptoms included fever and pain, with diagnosis confirmed by imaging and microbiology. Endpoints were recurrent infection, reinterventions, graft complications, and mortality.
Results: During this period, nine underwent endograft explantation due to infection, of which eight were replaced with bovine pericardial graft and one with silver impregnated graft. Patient demographics are detailed in Table 1. The mean time to infection diagnosis was 15±18 months post-EVAR and follow-up period was 19±32 months, with no cases of recurrent aortic infection observed during this time. Two patients had early reintervention: one for acute limb ischemia caused by occluded graft limb followed by graft thrombectomy and one for relevant bleeding with retroperitoneal hematoma requiring urgent evacuation. Late reinfection occurred in one patient, requiring reintervention 12 years after the initial endograft explantation, originally replaced with a silver impregnated graft. In total four patients died during follow-up, two of them aortic-related.
Conclusion: This review highlights the low re-infection rates and minimal complications with physician-made bovine pericardial grafts for EVAR infections. No recurrent infection nor aneurysm ruptures were observed. Long-term follow-up is crucial for early detection and management of these rare but serious infections. Bovine pericardial grafts are an excellent choice for in situ reconstruction. Further research is needed to develop preventive strategies and rapid treatments.

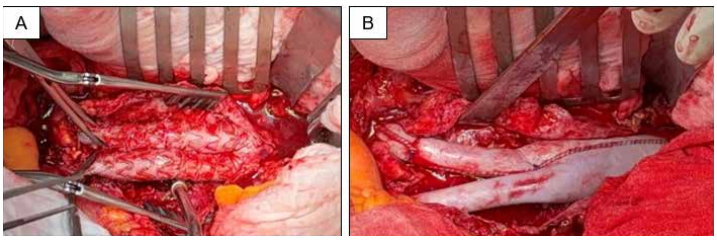

Figure 1. (A, B): The intraoperative surgical site showing the infected EVAR graft (A, on the left) and the bovine bifurcated pericardial graft reconstruction after removal of all infected tissue and blood flow reconstruction (B, on the right)

	1	2	3	4	5	6	7	8	9	Total
Age at EVAR infection (years)	69	81	78	84	73	80	67	80	65	Mean 75.9
Male patients, n (%)	+	+	+	+	+	+	+	+	+	9 (100)
Hypertension, n (%)	+	+	+	+	+	+	+	-	+	8 (90)
Diabetes Mellitus Type 2, n (%)	+	-	-	-	+	+	-	+	-	4 (44)
Renal insufficiency, n (%)	-	+	-	+	-	-	-	+	-	3 (33)
COPD, n (%)	+	-	-	+	-	+	-	-	+	4 (44)

Table 1

Trial of conservative treatment, n (%)	-	-	-	-	-	-	+	-	+	2 (22)
Antibiotic treatment duration, (months)	3	0.25	5.5	0.75	3.4	3	88	6	19	Median 3.4
Bovine pericardial graft replacement, n (%)	+	+	+	+	+	+	-	+	+	8 (90)
Early reinterventions, n (%)	-	+	-	-	-	-	-	-	+	3 (22)
Late reinterventions, n (%)	-	-	-	-	-	-	+	-	-	1 (11)
Mortality, n (%)	-	+	-	-	-	-	+	+	+	4 (44)

Table 2

Systematic Evaluation on Occupational Staff Health in Interventional Environments with Chronic Low Dose Exposure (SHIELD Study)

A. Reeg[1], L. Lauter[2], Y. Braun[2], N. Attigah[1], M. Hakimi[1]
[1]Department of Vascular Surgery, University Teaching and Research Hospital, Lucerne; [2]Global Clinical Marketing Surgery, Siemens Healthineers, Forchheim

Background: Radiation exposure for operating room personnel, particularly those performing complex endovascular procedures, has increased considerably over recent years. Those high dose X-ray applications require high resolution imaging quality. The detrimental effects of radiation on a physical and cellular level have been well documented. However, to what extent this translates into clinical manifest disease remains unclear.
Aims: This systematic review aims to comprehensively analyze the available literature on radiation induced health implications in endovascular surgery, interventional cardiology, and orthopedic surgery.
Methods: MEDLINE (via PubMed) and Embase were searched using keywords, medical subject heading (MeSH)-terms and Entree-terms "occupational health", "vascular surgery", "dose" and "radiation" to identify relevant peer-reviewed studies in English published between 2013-2024. For other specialties than vascular surgery, the term was replaced with "cardiology" and "orthopedics".
Results: In vascular surgery literature, of 221 screened articles one met the inclusion criteria, demonstrating increased expression of DNA damage and repair markers in surgeons performing endovascular aortic repairs. For interventional cardiology, the search yielded 335 articles, with 9 studies eligible for inclusion addressing lens opacities and DNA damage as documented health outcomes. Regarding orthopedic surgery, 41 studies were screened, with one eligible study elaborating on increased breast cancer risk in female orthopedic surgeons.
Conclusion: Relevant evidence exists regarding chronic low-dose exposure leading to early cataracts, DNA damages, increased carotid atherosclerosis and increased cancer risk. While radiation-induced lens opacities can potentially occur at relatively low doses, the rate of progression into a vision-impairing cataract is debated. Similarly, potential health impacts of radiation-induced DNA damage have been extensively studied, but clear links to specific adverse health outcomes and quantifiable risk increases are lacking. Considering the increase in endovascular procedures, large-scale cohort studies are necessary to assess clinical endpoints over long period of time.

Preoperative Simulation With AI-Assisted Software Could Identify the Risk of Postoperative Type Ia Endoleak After Evar in Hostile Neck Anatomy

C. Schürmann[1], J. Beck[2], M. Marxer[3], D. Kotelis[1], V. Makaloski[1] (
[1]Department of Vascular Surgery, Inselspital, Bern University Hospital, Bern; [2]Medical Faculty, University of Heidelberg, Heidelberg; [3]Medical Faculty, University of Bern, Bern

Background: Type Ia endoleak (Ia EL) is a major complication of endovascular aortic repair (EVAR), associated with treatment failure and increased risk of late rupture. Hostile neck anatomy significantly elevates the risk of type Ia EL, necessitating meticulous preoperative planning and adjunctive measures such as endoanchors. This study investigates the utility of AI-assisted preoperative simulation for predicting and preventing type Ia EL in patients with hostile neck anatomy undergoing EVAR.
Aims: An AI-assisted tool may predict EL1a after EVAR and may be a promising step in preventing early or late preventable complications mostly due to graft size discrepancies.
Methods: Ten cases treated with Endurant (Medtronic) between 2011 and 2024, with known follow-up outcomes, were analyzed. Preoperative CT scans were sent to Medtronic's core lab, and two suggested main body sizes were evaluated using AI-assisted simulation software (PlanOP™ Endoleak Risk Index, Predisurge). Both Predisurge and Medtronic were blinded to the implanted main body size and patient outcomes. Simulation predictions were compared to postoperative results.
Results: The AI-assisted simulation predicted type Ia EL in nine of the ten patients. By June 30, 2024, eight patients developed type Ia EL during follow-up (mean interval 44±36 months), requiring either proximal extension with fenestrated/branched grafts or open surgical conversion. Two patients without type Ia EL had shorter follow-up durations of 6 and 2 months. The simulation demonstrated a sensitivity of 90%. Notably, five main body implantations matched core lab recommendations, while four were undersized, and one patient was excluded due to severe angulation (>60°).
Conclusion: The AI-assisted simulation showed high sensitivity and predicted all type Ia EL. In one patient with short follow-up the simulation had false positive prediction, reflecting one of the simulation disadvantages concerning the time frame, in which a type Ia EL could be expected. The AI-assisted software could become an excellent instrument for predicting and preventing type Ia EL after EVAR.

Case	3Mensio		Simulation 1 Predisurge		Simulation 2 Predisurge		SmartPlan Pro suggestion	Bern
	D1A	D1B	Stent Ø	ERI	Stent Ø	ERI		
1	25mm	28mm	28mm	Yes	32mm	Yes	32mm	28mm (no EL)
2	22mm	24mm	25mm	Yes	28mm	No	28mm	25mm (EL Ia)
3	20mm	22mm	23mm	Yes	25mm	No	25mm	28mm (EL Ia)
4	30mm	32mm	32mm	Yes	36mm	Yes	36mm + ESAR	36mm (EL Ia)
5	25mm	26mm	28mm	Yes	32mm	Yes	32mm + ESAR	25mm (EL Ia)
6	30mm	32mm	32mm	Yes	36mm	No	36mm + ESAR	32mm (EL Ia)
7	20mm	19mm	23mm	Yes	25mm	Yes	25mm + single ChEVAR	20mm (EL Ia)
8	27mm	29mm	32mm	Yes	36mm	Yes	36mm	28mm (EL Ia)
9	21mm	21mm	25mm	Yes	28mm	No	28mm	25mm + ESAR (no EL)

Table 1. Predisurge

Residents Cup

Primary Aortic Mural Thrombi as an Embolic Source in Younger, Healthy, Female Patients

T. Popp[1], D. Müller[2], M. Hugas[2], P. Kissling[2]
[1]Surgery, Bürgerspital Solothurn, Solothurn; [2]Vascular Surgery, Bürgerspital Solothurn, Solothurn

Background: Primary aortic mural thrombi (PAMT) are a rare source of limb threatening arterial embolization. In most cases, ischaemia is the first clinical manifestation. While no treatment guidelines exist, various therapeutic regimens have been proposed. This report aims to highlight the clinical presentation, surgical management and outcomes of acute arterial occlusion resulting from PAMT in two young female patients.
Case Presentation: Case 1 involved a 38-year-old woman with a 3-day history of progressive bilateral leg pain. Imaging revealed multiple embolic arterial occlusions of varying ages and a floating thrombus of the infrarenal aorta (see Figure 1). Case 2 concerned a 44-year-old female with sudden pain, pallor, and paresthesia of the right leg. Imaging confirmed thromboembolic occlusion of the tibiofibular trunk as well as chronic occlusion of all lower right leg arteries and a floating mural thrombus of the proximal right common iliac artery. Both underwent emergent femoro-popliteal and crural embolectomy, followed by staged open thrombectomy (see Figures 2-3), which we favored over an endovascular approach. In case 1, complications included impaired perfusion and compartment syndrome, requiring venous bypass and fasciotomy. Case 2 experienced sufficient perfusion restoration after embolectomy without further interventions. Both patients showed favorable outcomes upon discharge and at follow-up after 6 weeks and 6 months.
Conclusion: While aortic mural thrombi are typically associated with atherosclerosis, aneurysms or hypercoagulable states, they can also occur in the non-diseased vessel. Although conservative and endovascular treatment have importance in this entity, surgical thromboendarterectomy may be the appropriate measure, especially in the event of acute embolization in young, otherwise healthy patients. The cases presented demonstrated the importance of considering PAMT as an embolic source and showed favorable outcomes after surgical therapy in both multiple bilateral and localized occlusions.

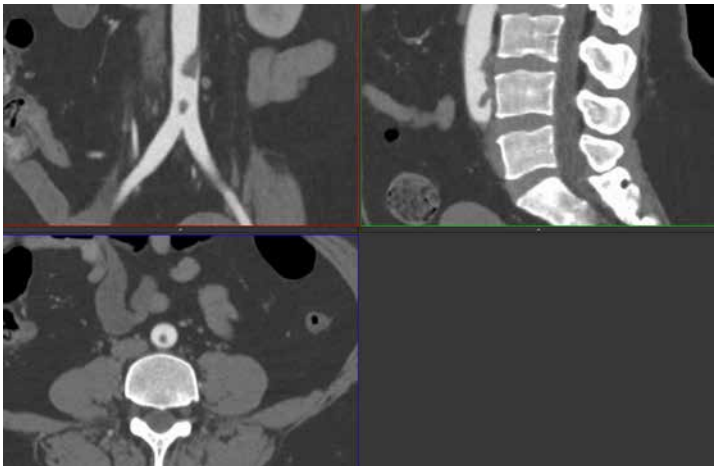

Figure 1. CT imaging showing the infrarenal thrombus formation in case 1

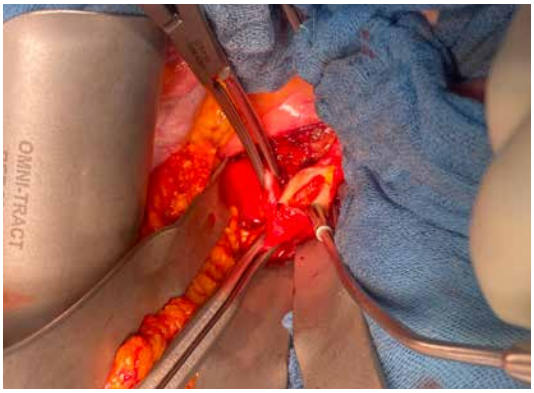

Figure 2. Intraoperative image showing the floating mural thrombus in the right common iliac artery in case 2

Figure 3. Intraoperative image showing the completed patch angioplasty following open thrombectomy in case 2

Treatment of a Symptomatic High Flow Arteriovenous Fistula With the "Revision Using Distal Inflow" (RUDI) Technique: A Case Report

C. M. Fragati, M. Fitzgerald, A. Robaldo, M. Bernasconi
Locarno

Background: Revision using distal inflow (RUDI) is currently proposed in patients with hemodialysis (HD) access-induced distal ischemia (HAIDI) or having a high blood flow access (HFA). Vascular access related high flows (HF) are common with brachial artery-based fistulas. We describe the case of a patient with episodes of angina pectoris, dyspnoea on exertion and marked hemorrhaing during dialysis puncture due to a 3 L/min HF proximal radio-cephalic fistula. Revision of the arteriovenous fistula with distalisation of the anastomosis using an ulno-cephalic inverted saphenous vein graft was performed.
Aims: The aim of our case report is to highlight the complexity and importance of surgical intervention in the case of high flow arteriovenous fistula.
Methods: After careful study with Echocolour-Doppler and CT scan it is decided to distalise the anastomosis of the ulnar artery. The previous anastomosis was closed and an interposition with the great saphenous vein fed from the ulnar artery (4cm from the bifurcation) and the cephalic vein was performed.
Results: The post-operative hospitalization was uncomplicated. There was a reduction in flow rate from 3 to 1.3 L/min, with good functioning of the arteriovenous fistula and resumption of dialysis sessions. Additionally, the patient had no more angina like pain on physical exertion.
Conclusion: Multiple vascular access sequelae, including HF, pose a challenge to the vascular surgeon. RUDI effectively reduces access flow in a high-flow HD vascular access and is a valid surgical option in the treatment of Steal Syndrome. An autologous vein is preferred as an interposition graft.

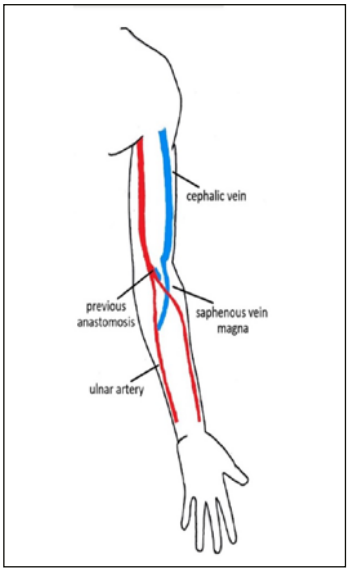

Figure 1. Diagram of the arterial-venous system of the upper arm

Figure 2. Anterior view of angiovenous CT reconstruction of the left upper limb

Suprarenal Caval Filter Extraction in a Pregnant Patient: A Surgical Success Without Vena Cava Clamping

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[1]Visceral Surgery, Lugano Regional Hospital, Ospedale Regionale di Lugano, EOC Lugano, Lugano; [2]Vascular Surgery, Lugano Regional Hospital, Ospedale Regionale di Lugano, EOC Lugano, Lugano; [3]Radiology, Lugano Regional Hospital, Ospedale Regionale di Lugano, EOC Lugano, Lugano

Background: Infrequent yet critical complications such as filter migration can arise during endovascular procedures. In severe cases a surgical explantation is needed.
Case Presentation: We report a successful surgical removal without clamping the vena cava, reducing the risk of hemodynamic instability, vein bleeding and thrombosis. This case involves a 30-week pregnant patient with unilateral deep vein thrombosis of the iliac-femoral axis, a condition with heightened thromboembolic events. Anticoagulant therapy was initiated. Due to fetal growth restriction, a cesarean delivery required temporary anticoagulation discontinuation and cava filter placement, which was located at the suprarenal level but resulted in tilting. Given the patient's hemodynamic stability and to avoid additional radiation exposure in pregnancy, the removal attempt was deferred. Another attempt to remove the caval filter was made after delivery. Based on literature review, a midline laparotomy was performed, followed by the rightward rotation of the descending colon and duodenum, which allowed to expose of the inferior vena cava, the right and left renal veins. The suprarenal juxtahepatic vena cava was isolated, and trial clamping was well tolerated. The distal hook of the filter was identified near the confluence of the inferior vena cava and the left renal vein, with its distal margin extending outside the vessel into the periadventitial area. A purse-string suture with tourniquets was placed around the filter hook. The vena cava was incised under continuous flow. The filter was pushed externally and inserted into a 10 Fr introducer, which was advanced into the vena cava to encapsulate and safely withdraw the filter, ensuring effective extraction. The purse-string suture was tightened and knotted, achieving hemostasis. Follow-up at three months revealed no complications.
Conclusion: Preoperative literature review is crucial in challenging cava filter extraction, highlighting alternative approaches like maintaining continuous venous flow and using purse-string sutures to avoid vena cava clamping and its possible complications.

High-Grade Leiomyosarcoma of the Inferior Vena Cava With Infiltration of the Right Kidney and Adrenal Gland

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Background: High-grade leiomyosarcoma (LMS) of the inferior vena cava (IVC) is a rare and aggressive malignancy, often presenting with significant local invasion. We report a case of a 55-year-old male with IVC LMS involving the right kidney and adrenal gland, highlighting diagnostic challenges, surgical management, and postoperative progression.
Case Presentation: A 55-year-old male presented with right-sided paravertebral pain localized to the thoracolumbar junction, accompanied by significant weight loss. MRI revealed a large mixed mass involving the IVC and extending into the hepatic portal. Hormonal screening suggested adrenal carcinoma, and FDG-PET did not indicate distant metastasis. The patient underwent an en bloc resection, including right adrenalectomy, right nephrectomy, vena cava resection with total vascular exclusion, and reconstruction using a Gore-Tex interposition graft. Pathological analysis confirmed a pT2, R0 high-grade LMS of the IVC with infiltration of the right kidney and adrenal gland. Following surgery, the patient was referred to the interdisciplinary Sarcoma Board at Bern University Hospital for follow-up and postoperative treatment. Due to

the high risk of recurrence and metastasis (5-year disease-free survival [DFS] rate of 35%), the patient was evaluated for adjuvant chemotherapy. The patient received adjuvant chemotherapy with doxorubicin and dacarbazine. However, after 4 cycles, progressive lesions in the chest wall and lung were noted. A thoracic CT scan confirmed the chest wall nodule's progression, which was resected with an R0 margin. Histology confirmed metastatic disease. The Sarcoma Board recommended active surveillance following the resection.
Conclusion: This case underscores the challenges of managing IVC LMS, a rare and aggressive malignancy. Despite initial surgical resection and adjuvant chemotherapy, metastasis to distant sites occurred, emphasizing the need for ongoing surveillance in high-risk patients. Leiomyosarcoma of the IVC requires a multi-disciplinary approach, including aggressive surgery and adjuvant therapy, followed by vigilant long-term monitoring for recurrence or metastasis. Active surveillance remains essential for managing the potential for metastasis after initial treatment, especially given the high risk of recurrence and metastasis in these patients.

Interlobar Renal Artery Aneurysm: A Case Report of Superselective Liquid Embolization
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Background: Renal artery aneurysms, though rare, represent potentially life-threatening conditions, with an incidence of 0.3 to 2.5%. The risk of rupture is 3-5%, with mortality rates of 10% in the general population and up to 60% in pregnant women. Treatment indications are guided on risk factors for rupture (diameter > 20-30 mm, growth rate > 0.9 mm/year, pregnancy) and symptoms. Surgical repair or endovascular approaches (stenting, embolization) are selected according to aneurysm localization and morphology; In rare cases, partial or total nephrectomy may be required. This case report aims to present the effectiveness of selective liquid embolization in treating interlobar renal aneurysms.
Case Presentation: A 27x16 mm saccular renal aneurysm was Incidentally detected during an abdominal CT-scan of a 56-year-old male. The aneurysm had an interlobar localisation at the superior pole of the left kidney, featuring a narrow neck and perfused by three afferent arterioles. The patient was asymptomatic, with normal renal function. Considering the aneurysm's size and interlobar location, endovascular management by Onyx-embolization was planned after multidisciplinary board discussion. Onyx-18 is a permanent occlusive agent routinely used in liquid embolization of cerebral arteriovenous malformations. Under general anaesthesia, the intervention was conducted using a transfemoral approach. A selective Cone Beam CT (CBCT) angiography of the renal artery enabled detailed multiplanar reconstruction of the lesion, facilitating precise 3D-guided embolization of all afferent vessels. A total of 2 ml of Onyx-18 was administered. Final CBCT-angiography confirmed complete exclusion of the aneurysm while maintaining renal perfusion, despite a small focal infarction at the superior pole. Postoperative recovery was uneventful and the patient was discharged after 2 days, with preserved renal function.
Conclusion: Superselective liquid embolization is a reliable and effective endovascular technique for treating interlobar renal artery aneurysms, ensuring optimal preservation of renal parenchymal perfusion, even in challenging anatomies. Small parenchymal infarctions may occur, without clinical implications.

Primary Aorto-Enteric Fistula: A Case Report
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Background: Primary aorto-enteric fistula (PAEF) is a rare and life-threatening condition characterized by a direct connection between the aorta and the gastrointestinal tract (GI). It accounts for less than 0.2% of all causes of GI bleeding. While secondary AEF occur after aortic surgery, PAEF are extremely rare. Their poor prognosis is largely due to challenges in diagnosis and low clinical suspicion.
Case Presentation: We describe the case of an 83-year-old male, who presented with hematochezia and melena. He had a history of coronary artery disease and anticoagulant use for a prior pulmonary embolism. There was no history of abdominal aortic aneurysm (AAA). Gastroscopy revealed no clear bleeding source, but a hemostatic clip was applied for suspected angiodysplasia. Six days later, another episode of melena occurred. CT angiography subsequently revealed an undiagnosed infrarenal AAA in direct contact with a duodenal diverticulum, raising high suspicion of an aorto-enteric fistula (Figure 1). Therefore we decided for surgical exploration. During surgery, an aorto-duodenal fistula was confirmed between the fourth part of the duodenum and the aortic aneurysm (Figure 2). Infrarenal clamping was possible prior to further dissection of the duodenum showing a clear connection between the aortic aneurysm and the intestinal lumen. The aortic aneurysm was repaired using a self-made bovine pericardium tube graft and a transverse seromuscular suture of the duodenum. We used a transmesocolic omental flap to cover the vascular reconstruction. The patient recovered well. Tissue biopsy identified Lactococcus lactis and Streptococcus mitis / oralis. Consequently, antibiotic treatment was continued according to the regimen for graft infection, with a treatment duration of 6 months.
Conclusion: Clinicians should remain aware of aorto-enteric fistula, particularly in elderly patients presenting with obscure gastrointestinal bleeding, regardless of the presence of a known AAA.

Intraoperative Physician-Modification of an Iliac Limb With One Fenestration for the Lower Right Renal Artery as a Rescue Measure for Falsely Planned Fevar
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Background: Custom-made fenestrated grafts (FEVAR) became standard approach for treating juxtarenal aortic aneurysms. Although the production time can stretch up to four months, the biggest benefit of the customization is it`s adjustment to patient`s anatomy. Physician-made fenestrated endografts (PMEG) evolved over time to accommodate various anatomies, especially in an emergency setting. We present a case treated with a custom-made 4x FEVAR and one physician-modified iliac limb to accommodate the lower right renal artery (RRA).
Case Presentation: We present a 77-year-old male with open surgical repair in 2014 using a tube graft for juxtarenal aortic aneurysm (60mm). Eight years later, a follow-up CT scan revealed two anastomotic aneurysms (proximal 54mm) and distal (69mm). A 4x custom-made-FEVAR was planned based on the CT scan merged from two scans, a thoracic and an abdominal one. Both, the planning and the implantation site have overseen a lower RRA, equally large (5mm) as the upper RRA, thus manufacturing a 4x instead of 5x custom-made FEVAR. We proceeded with implanting the custom-made FEVAR while simultaneously preparing a physician-modified right iliac limb (Endurant II, 13/13/82mm) to preserve the lower RRA. After 4xFEVAR completion, right iliac limb PMEG was advanced, and the target vessel was catheterized and preserved with bridging stents via ipsilateral femoral approach. The final angiography revealed complete exclusion of the aneurysm, without type I or III endoleaks, and adequate position of all bridging stents. Two-year follow-up CT scan demonstrated patent bridging stents without endoleak and completely excluded aneurysm.
Conclusion: This case emphasizes the importance of adaptability in complex aortic endovascular procedures. Initially planned as a 4-fenestrated FEVAR, the procedure was modified to include a surgeon-modified iliac limb to accommodate the second right renal artery, ensuring renal perfusion and, therefore, improving the outcome of the patients.

Rapid Sac Shrinkage After EVAR
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Background: Vascular endograft infection is a rare but severe postoperative complication of EVAR. This may be complicated by enteric fistulation. Its pathogenesis remains unclear up to this date.
Case Presentation: This case reports of an 81y old male patient 4 months after endovascular aortic repair of an asymptomatic 5.5 cm abdominal aortic aneurysm presenting with fever and elevated CRP of 160mg/l. Blood cultures revealed Parvimonas micra, frequently found in patients with chronic periodontitis. A CT scan showed peri-graft air and significant aneurysm sac shrinkage to 3.5 cm. Due to peri-graft air, fever, abnormally elevated inflammatory markers, and positive blood cultures, a vascular endograft infection was diagnosed according to the MAGIC criteria. Additionally, due to the air and the extraordinarily rapid sac shrinkage (from 5.5 cm to 3.5 cm in 4 months) an aortoduodenal fistulation was postulated. Esophagogastroduodenoscopy did not show a bowel wall defect. An aortoduodenal fistula was confirmed intraoperatively. Open surgical repair consisting of complete graft explantation, in situ reconstruction with a physician made xenopericardial graft and closure of the duodenal fistulation, debridement and omentoplasty was performed. The patient died on postoperative day 25 due to bowel ischemia.
Conclusion: A secondary aortoduodenal fistula represents a life threatening complication. Open surgery including the above-mentioned steps is recommended for curative treatment. An extraordinarily rapid sac shrinkage may be a sign of fistulation. The role of routine examination of dental status prior to aortic surgery is unclear.

Free Communication – ARS

Preoperative Enterosignatures Predict Surgical Site Infections After Abdominal Surgery
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Background: The relationship between preoperative intestinal microbiota composition and the development of surgical site infections (SSIs) following abdominal surgery is not well understood.
Aims: The aim of this study was to characterize the preoperative rectal microbiota using the novel concept of enterosignatures (ESs) in patients undergoing abdominal surgery and assess their association with SSIs.
Methods: In this prospective cohort study, preoperative rectal microbiota from 133 patients undergoing abdominal surgery was profiled using 16S rRNA sequencing. ESs were calculated using high-quality genus-level taxonomy, simplifying complex microbial compositions into five generalizable patterns: Bacteroides, Firmicutes, Prevotella, Bifidobacterium, or Escherichia-dominated profiles.
Results: A total of 519 bacterial species were identified within the 133 patients. The Firmicutes ES was found to be a significant risk factor for SSIs, while the Prevotella ES was associated with a reduced risk of SSIs. Combining these into the Firmicutes-to-Prevotella ES ratio (ES-Firm-Prev ratio) yielded a stronger association with SSIs (median [IQR] log ES-Firm-Prev ratio: no SSI,

0.21 [-0.43, 1.33] vs. SSI, 8.24 [2.17, 8.5]; p = 0.001). Machine learning and logistic regression models confirmed the ES-Firm-Prev ratio as a significant predictor of SSIs, independent of clinical covariates (OR, 1.39; 95% CI, 1.08-1.78; p = 0.01).
Conclusion: The ES-Firm-Prev ratio is a robust, independent predictor of SSIs in patients undergoing abdominal surgery and may serve as a novel biomarker to identify high-risk patients preoperatively.

Expression Levels of GATA6 in Human Peritoneal Macrophages
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Background: The important role of GATA6+ tissue macrophages in wound healing has been demonstrated by our group in the murine peritoneal cavity [2]. Investigations regarding the existence and significance of these GATA6+ macrophages in humans have been researched only modestly possibly due to limited access and published studies are controversial [3, 4].
Aims: I aim to isolate peritoneal immune cells from different anatomical regions and improve the immune cell sampling process. Then on I will investigate the function of peritoneal macrophages.
Methods: We developed a robust workflow to isolate primary peritoneal cavity immune cells from the peritoneal fluid and omental biopsies obtained during laparoscopic surgeries of diverse patient cohorts. The isolated immune cells were analyzed with flow cytometry and real-time PCR to investigate the levels of GATA6 expression in these patients. Furthermore, omental biopsies were stained with H&E to identify milky spots as possible GATA6+ macrophage storage place.
Results: Our study demonstrates that factors such as neoadjuvant chemotherapy, patient sex or BMI, peritoneal fluid volume, nor the peritoneal rinsing fluid temperature correlate with the immune cell yield from the peritoneal fluid. Importantly, the analysis of GATA6 expression by flow cytometry and real-time PCR showed patient dependent expression variations.
Conclusion: We observed that neither the patients' medical treatment nor their BMI significantly affected the number of immune cells isolated from the peritoneal fluid. Furthermore, we were able to show that levels of GATA6 expression are varying in the patient cohort. This study aims to provide insight into the human peritoneal immune cell composition, depicting differences from murine models to humans and will significantly contribute to the understanding of the function peritoneal macrophages leading to therapeutical applications.

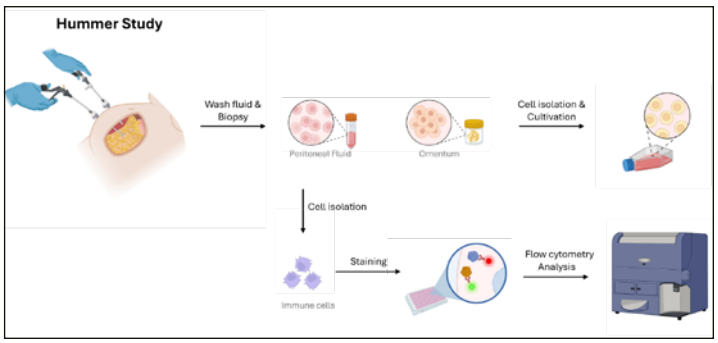

Figure 1. Workpipeline

Plasma Fibronectin Released by Peritoneal Macrophages Promotes Remote Skin Wound Healing
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Background: Large peritoneal macrophages (LPMs), located in the peritoneal cavity, are essential for local tissue repair. However, their contribution to tissue repair at distant sites remains unclear.
Aims: This study investigates the role of LPM activation in skin wound healing at remote sites
Methods: A novel mouse model combining peritoneal stimulation (PS) with a skin injury was used to assess LPM-mediated effects on remote skin wound healing. Dual Cre and Flippase fate-mapping tracked GATA6-expressing LPMs to evaluate their migratory behavior. Parabiosis experiments and administration of activated peritoneal fluid were conducted to identify the role of circulating factors. Proteomic and transcriptomic analyses were used to characterize LPM-secreted molecules. Fluorescently labelled fibronectin was tracked in plasma and skin wounds.
Results: Activation of LPMs trough PS significantly accelerated healing of remote skin wounds. Removing LPMs or using mice lacking LPMs abolished the beneficial effect. Adoptive transfer of LPMs but not B-cells after LPM depletion was sufficient to rescue the phenotype. Fate-mapping demonstrated that LPMs did not migrate to distant wounds after activation. Parabiosis and peritoneal fluid transfer experiments indicated the role of LPM-derived circulating signaling molecules in remote skin wound healing. Proteomic and transcriptomic analyses identified fibronectin as critical mediator, as adoptive transfer of LyzMcre Fnflox peritoneal cells failed to rescue the impaired remote wound healing phenotype in LPM deficient mice. Protein-coding fibronectin isoforms transcribed by LPMs, correspond to the soluble plasma. Fluorescently labelled fibronectin was detected in the plasma and incorporated into skin wounds following adoptive transfer of Fngfp/gfp peritoneal cells and PS.
Conclusion: LPMs act as a source of circulating fibronectin, facilitating extracellular matrix formation and promoting wound healing at remote sites. These findings reveal a novel endocrine role for LPMs in systemic tissue repair, and challenge the traditional perspective, that plasma fibronectin is exclusively liver derived.

Characterization of Liver Sinusoidal Endothelial Cell and Immune Cell Subpopulations during Mouse Liver Regeneration
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Background: The specialised liver sinusoidal endothelial cells (LSEC) are important in normal liver physiology, and their dysfunction has been implicated in many diseased states of the liver. Primarily, their phenotype in normal or diseased liver has been assessed by immunofluorescence studies, but their characterisation remains limited.
Aims: In this study, we aim to characterise subsets of endothelial cells and immunoinflammatory populations associated with liver homeostasis using the high-dimensional flow cytometry.
Methods: We established an antibody panel of 18 antibodies to identify surface antigens on endothelial cells and immune cell populations. We isolated non-parenchymal liver cells (NPLC) from wild-type Bl6/57 mice using OptiPrep™ Density gradient combined with gradient centrifugation and performed cell population analysis on a full spectral flow cytometer. First dimensionality reduction of 3 full panel-stained NPLC using the t-distributed Stochastic Neighbor Embedding (t-SNE) algorithm for visualising high-parameter single-cell data and to characterize cell populations defined by it.
Results: First analysis allowed us to distinguish in the Stab2+/CD31+/CD45- LSEC population, a population high for Lyve1/CD146/CD54/CD32 representing LSEC from zone 2/3 of the liver lobule as well as a population low for Lyv1/CD146/CD54 representative for the LSEC population in zone 1. Other cell clusters expressing high CD45/CD16/CD38 or high CD45/CD54 can be distinguished. Identification of the different cell populations and optimising reference controls are ongoing.
Conclusion: Identification of endothelial cell populations and immune cell populations by full spectral flow cytometer in the healthy mouse is ongoing. As a second step, we will look forward to identifying new cell populations during regenerative conditions.

Extended EVLP Protocol Combined Normothermic and Subnormothermic Conditions for Reconditioning and Preservation of Damaged Rat Donor Lungs
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Background: Ex vivo lung perfusion (EVLP) has been developed to evaluate the quality of donor lungs before transplantation. EVLP may also serve as a platform, allowing administration of various therapies to the lungs.
Aims: We explored whether a mixed EVLP protocol combining normothermic and subnormothermic conditions would improve the quality of damaged rat donor lungs.
Methods: Rats were assigned into 2 groups (n=5 per group): Normothermic EVLP (Nth) and Normothermic/Subnormothermic EVLP, (N/Sth). In both groups lungs were kept in situ for 1h at room temperature, warm ischemia, then lungs were flashed with cold Perfadex® and kept for 1h at 4°C. Heart-lung blocks were mounted on the EVLP. In the Nth group lungs were perfused under normothermic conditions at 37°C for 6h. In the group N/Sth lungs were also perfused for 6h, first 3h under normothermia, then the perfusate temperature was reduced to 22° C, as well as ventilation and perfusion rates were also slow down to the end of EVLP. At the end of EVLP perfusates and lung tissues were collected and frozen at -80°C for further analysis.
Results: Lungs in the N/Sth group displayed improved compliance, and reduced edema, associated with reduced perfusate levels of lung endothelial and epithelial cell damage markers (vWF, SP-D, sPECAM-1), cytokines (IL-1β, and TNF-β) and lactate, comparing to Nth group. Moreover, increased production of cell protective proteins such as HSP70, antiapoptotic proteins (Bcl-2, Bcl-xL) and antioxidant (SOD2) was observed in N/Sth group.
Conclusion: Combination of normothermic and subnormothermic conditions during EVLP could be a promising experimental model providing improved cytoprotective status and preserved function of damaged donor lungs in an extended EVLP model. Our findings demonstrated that combination of normothermic and subnormothermic conditions during EVLP, allows safe extension of EVLP for possible treatments engaging prolonged perfusion time, while maintaining lungs in stable physiological state.

Exosomal RNA Profiling Identifies GAS5 and Other Long Noncoding RNAs as Circulating Diagnostic Biomarkers for Pleural Mesothelioma
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Background: Pleural mesothelioma (PM) is a rare but highly lethal cancer for which early, non-invasive diagnostic tools are critically lacking. RNAs secreted by tumor cells via exosomes

(Exo) are detectable in plasma and have emerged as promising biomarkers for non-invasive disease diagnosis.
Aims: This study aimed to compare the RNA cargo of exosomes secreted by primary PM cells with those from non-PM cells, to identify circulating biomarkers that potentially could be used as blood-based diagnostic biomarkers for PM.
Methods: Primary cell cultures were established from pleural effusions of 12 PM and 7 non-PM patients. Exosomes were isolated from cell culture supernatants using iZON qEV columns, followed by total RNA extraction using the mirVana PARIS kit and RNA sequencing. Sequencing reads were mapped to the human reference genome (GRCh38), and differential expression analysis was performed using DESeq2 to identify RNAs enriched in PM-derived exosomes. Candidate RNAs were validated in exosomes and plasma samples from PM and non-PM patients.
Results: We identified 2,089 RNAs upregulated in PM-derived exosomes ($p < 0.05$, Fig. 1A), with the majority comprising long noncoding RNAs (lncRNAs) (34%), pseudogenes (30%), and protein-coding genes (27%). Enriched biological processes included proliferation, protein secretion, and epithelial-mesenchymal transition, all hallmarks of tumorigenesis (Fig. 1B). Among the lncRNAs, GAS5 – a gene previously implicated in cancer – emerged as a particularly promising candidate for PM diagnosis. Quantitative-PCR validation confirmed significantly higher GAS5 expression in exosomes from PM compared to non-PM samples (Fig. 1C).
Conclusion: This study provides a comprehensive analysis of exosome-secreted RNAs in PM, identifying candidate biomarkers for blood-based diagnostic tests. Our findings underscore the critical role of the PM secretome in understanding PM biology and highlight GAS5 as a strong diagnostic candidate. We are currently validating these biomarkers in pleural effusion and plasma-derived exosomes to further establish their clinical utility.

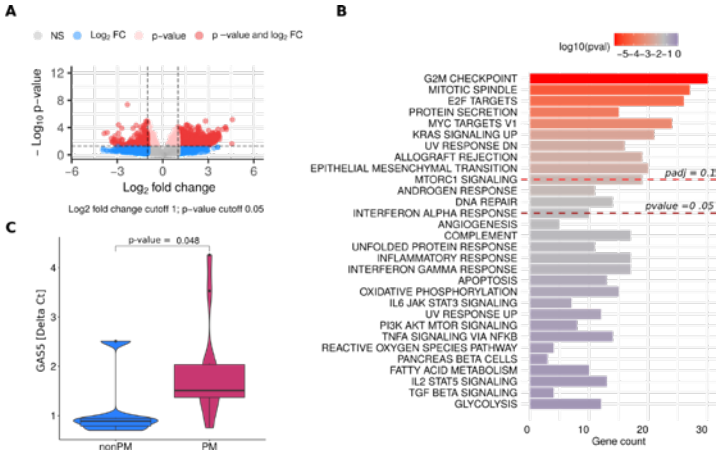

Figure 1. An overview of the study. A. Results of a differential gene expression analysis of cargo genes in pleural mesothelioma (PM) secreted-exosomes (n=12) and nonPM-secreted exosomes (n=7). NS - not significant; FC - fold change. B. Gene set enrichment

NeoAdjuvant or Adjuvant Use of Immune Checkpoint Inhibitors in Surgery for Hepatocellular Carcinoma

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Background: Hepatocellular carcinoma (HCC) often recurs after curative hepatectomy. Immune checkpoint inhibitors (ICIs), such as anti-PD-1 therapies, show promise into diminishing recurrence, but the optimal timing for ICI administration (pre- or post-hepatectomy) remains unclear. We hypothesize that neoadjuvant ICIs may be more effective in decreasing recurrence and enhancing survival outcomes, while adjuvant treatment could be hindered by immunosuppression induced by surgery.
Aims: To assess survival and recurrence rates between neoadjuvant and adjuvant regimens and evaluate their effects on tumor growth.
Methods: C57BL/6 mice were injected with bioluminescent RIL-175 HCC cells into the right median lobe. In the first experiment, mice underwent curative hepatectomy and were treated with anti-PD-1 either in a neoadjuvant or adjuvant setting compared to a sham treatment with isotype antibodies. In the second experiment, hepatectomy of the left median lobe was performed, leaving the tumor in place, allowing assessment of tumor growth which was monitored using intra-vital imaging system. Immune tumor microenvironment was assessed by flow cytometry.
Results: Neoadjuvant anti-PD-1 therapy significantly reduced recurrence rates compared to sham (35% vs. 68%, p=0.041) and improved survival (p=0.0373), while adjuvant therapy showed no significant benefit (recurrence 50% vs. 68%, p=0.253). Neoadjuvant therapy slowed tumor growth compared to adjuvant therapy (p=0.016). Anti-PD-1 immunotherapy without surgery enhanced CD8+ T cell migration in the tumor and reduced exhaustion markers, while these effects were abolished post-hepatectomy (CD8+CD103+, no surgery 17% vs hepatectomy/adj-ICI 5.72%, p=0.014).
Conclusion: Neoadjuvant anti-PD-1 therapy improves survival, recurrence and tumor growth reduction compared to adjuvant therapy in our mouse model, suggesting that neoadjuvant treatment may be more effective. These findings support further investigation into neoadjuvant ICI strategies.

Comparison of Elastic Stable Intramedullary Nailing Versus Retrograde Screw Fixation for Pubic Ramus Fractures – A Biomechanical Study

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Background: Recently, elastic stable intramedullary nailing (ESIN) devices have been proposed as an alternative to retrograde screw fixation in the treatment of superior ramus fractures.
Aims: The aim of this study was to compare the biomechanical stability of ESIN in pubic ramus fractures versus retrograde screw fixation.
Methods: Standardized pubic ramus fractures (Nakatani type II) were created in fresh-frozen paired hemipelves. Fractures were either stabilized with a 6.5mm cannulated screw (n=4) or a 3.5mm Stainless Steel Elastic Nail System (n=4). Cyclic loading protocol was applied with increasing axial force (1500 cycles, 250-750 N). Outcome parameters were fracture mobility over time, fracture displacement and construct survival. Descriptive and opto-metric methods were used to describe the mode of failure.
Results: Amongst all hemipelves, no construct failure was observed. There was no significant difference in mean vertical fracture displacement between the groups (ESIN 0.07 mm, SD 0.12 versus screw 0.04 mm, SD 0.05; p=0.773). After 500 cycles at 250 N, mean vertical fracture displacement was 0.09 mm (SD 0.16) in the ESIN group and 0.03 mm (SD 0.04) in the screw group (p=0.773). After subsequent 500 cycles at 500 N in the vertical plane, mean fracture displacement increased to 0.35 mm (SD 0.31) in the ESIN group and to 0.14 mm (SD 0.17) in the screw group (p=0.281). With a maximum load of 750 N, after 500 cycles, mean fracture displacement was 0.58 mm (SD 0.51) in the ESIN group and 0.31 mm (SD 0.26) in the screw group (p=0.376). There was no difference between the implants regarding the accumulated fracture movement over time (ESIN 494 mm*cycles, SD 385 versus screw 220 mm*cycles, SD 210; p=0.259).
Conclusion: In this in-vitro biomechanical study, fixation of superior ramus fracture using ESIN was not different in construct survival, relative motion to fracture, and fracture displacement when compared to retrograde screw fixation

DNA Replication Stress in Metabolic Dysfunction-Associated Steatohepatitis

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Background: MASLD is an increasing health global problem characterized by the accumulation of liver-fat. MASLD patients can progress to MASH, a more severe stage of the disease characterized by liver inflammation and an oxidative stress background. These two hallmarks are believed to drive HCC formation, although the molecular mechanisms are not well understood.
Aims: Characterize the molecular mechanisms that drive inflammation and oxidation stress backgrounds in MASH livers to cause HCC formation.
Methods: MC4R KO mice were fed with a chow or a western diet and harvested at 33-38 weeks to develop MASLD and MASH, respectively. These mice do not feel satiation and therefore gain weight quicker. WT mice under a chow diet were used as a control healthy group. Liver samples were collected and embedded in paraffin for histology, or snap frozen for RNA/protein extraction.
Results: We first confirmed that MASH livers, unlike control or MASLD, present high immune infiltration (histology) and upregulated inflammation response (RNAseq). MASH livers in addition have an upregulated response to oxidative stress (RNAseq) and accumulate 8-oxo-2'deoxyguanosine (histology), one of the major products of DNA oxidation, which is also observed in MASLD livers. When keeping the MASH mice for longer periods (45-68 weeks) they all develop HCC tumors (reticulin staining). DNA oxidation is likely to induce mutations when amplified, therefore we checked for replication stress: MASH livers presented significantly more Ki67 hepatocyte protein expression (histology quantification) and had an upregulation of genes involved in cell cycle (RNAseq). Moreover, genes and proteins involved in different DNA damage repair pathways were upregulated (RNAseq, WB).
Conclusion: MASH inflammation and oxidative stress lead to chronic proliferation, which will amplify the mutations and generate more DNA damage by replication stress, ultimately driving to HCC formation.

Prix NaCHwuchs

Incidence and Predictive Factors of Perforated Appendicitis in Children and Adolescents Before, During and After the Covid-19 Pandemic and Long-Term Complications After Appendectomy

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Background: The COVID-19 pandemic disrupted healthcare systems globally, potentially delaying medical care for conditions like appendicitis. It is known that depending on the duration of symptoms perforated appendicitis may lead to serious peri- and postoperative complications.

This may lead to an impaired long-term quality of life.
Aims: The aim of this study is to assess whether the COVID-19 pandemic and related health care restrictions had an influence on the incidence of perforated appendicitis in our region. Furthermore, we aimed to investigate predictive parameters for perforated appendicitis and gain knowledge to use this for amelioration of the management of this potentially life-threatening disease.
Methods: A retrospective, single center cohort analysis was conducted on children and adolescents under the age of 18 who underwent appendectomy for appendicitis between 1st January 2016 and 31st December 2022. 506 Patients were stratified into three periods: pre-pandemic, pandemic, and post-pandemic. Data on demographics, pathology, clinical presentation, laboratory values, time of symptoms, readmission on emergency room (ER) before treatment, hospital length of stay and complications were analyzed.
Results: Perforation rate was not significantly higher during the pandemic (22.5%) compared to pre-pandemic (23.6%) and post-pandemic (29.0%) periods ($p = 0.331$). Duration of symptoms was significantly shorter (38.24h) compared to pre- and post-pandemic (49.64h) periods ($p < 0.05$). There was no difference in complication rates compared to the non-pandemic periods. Predictive parameters for perforation are CRP (Cutoff 46.5mg/l), relative neutrophile count (Cutoff 79,4%) and duration of symptoms (Cutoff 30h).
Conclusion: In our region the COVID-19 pandemic did not lead to an increased incidence of perforation and therefore more complications. It even showed a reduction due to significantly reduced duration of symptoms, possibly due to less waiting time in the ER. We found predictive parameters for perforation. This guides clinicians to a more accurate management with better selection of operation technique and reduction of complication rates.

Balanitis and Lichen Sclerosus: A Case Series
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Background: Acquired phimosis and its complications are among the most common indications for a surgical referral in children. Aetiology is based on chronic inflammation with an autoimmune component. Differential diagnosis includes, post-traumatic scar tissue, balanoposthitis and lichen sclerosus (LS). Treatment options include first a conservative approach with topical corticosteroids followed by circumcision if conservative management fails.
Aims: To report a series of 8 cases of LS in male children.
Methods: 8 male children were included in this study, each presenting a history including persisting phimosis, foreskin ballooning during micturition, balanoposthitis, dysuria, use of abdominal musculature during micturition or prior generalized viral infection with genital involvement. Clinical examination showed an atrophic, hypopigmented foreskin and meatal narrowing with a pathological uroflowmetry. No extragenital lesions were found.
Results: Conservative treatment was attempted in all 8 cases, to no avail. Circumcision was performed in all cases, with meatoplasty in 3/8 children. Complete clinical response at 6 weeks post-operatively was observed in 7/8 patients. In one case, post-operative topical corticosteroids were necessary, given an obstructive pattern on post-operative uroflowmetry. Histological examination confirmed the clinical LS suspicion. Follow-up consisted of repeated clinical examination and in some cases uroflowmetry. There was no recurrence at 1-year follow-up.
Conclusion: LS can lead to urethral narrowing and ultimately bladder dysfunction if not treated appropriately. Careful physical examination, close follow-up and appropriate medical and surgical management is important in order to optimize outcomes. This case series illustrates the clinical aspects of LS, the need for a histopathological diagnosis in order to optimally tailor management and the important role of circumcision as a definitive solution. Furthermore, there exists no paediatric randomized controlled trials examining the exact type and duration of topical corticosteroids used to treat LS conservatively.

Prospective evaluation and Follow-up of Testicular Torsion by Twist Score in Children
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Background: To enable prompt surgical treatment in high suspicion of testicular torsion and guidance for the use of sonography for intermediate risk scores only, the TWIST score was established in 2013 by Barbosa et al and has been implemented in our institution in 2022.
Aims: Our aim was to evaluate current use of the TWIST score at our institution, adherence to our institution's recommendations and perform a survey-based clinical follow-up.
Methods: Single center prospective observational cohort study on children with acute testicular pain based on a follow-up questionnaire and patient's clinical data. Patients were labeled by our emergency staff and contacted by our study doctor first by mail, including consent form and a 13 question survey regarding recovery, and later also by phone call to clear questions. If consent was given, the patients clinical data was collected from our patient information system. Data was entered into REDcap and analyzed using R Studio.
Results: Of 100 eligible patients, 40 male patients with median age of 11 years (IQR 8;13) participated. TWIST score was considered low risk (0-1 points) in 30% (12/40), intermediate (2-4 points) in 55% (22/40) and high risk (5-7 points) in 15% (6/40) of patients. Surgery was performed in 11 of 40 patients (27.5%) of which 9 (82%) had testicular torsion and 2 (18%) had hydatida torsion. Patients with high risk scores all had intraoperatively confirmed testicular torsion. Based on our follow-up questionnaire and clinical database, no testicular torsion was missed.
Conclusion: The TWIST score provides a triage tool for patients with testicular pain and enables a more objective assessment of clinical findings. All patients with high risk scores were operated due to testicular torsion and no testicular torsion was missed in patients with low and intermediate TWIST score.

Establishment of a 3D-Immunofluorescence Spatiotemporal Imaging Approach Utilizing Supervised Machine Learning Segmentation
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Background: Short bowel syndrome is a malabsorptive disorder, characterized by a lack of functional small intestine commonly seen after major intestinal resections. A potent treatment approach involves promoting crypt fission, which facilitates the growth of new tissue. Studies employing helminth infections in mice have demonstrated an augmented rate of crypt fission in the small intestine.
Aims: Our objective is to characterize methods (e.g. helminth infections) aiming to increase the surface area of the small intestine (i.e. promote crypt fission) in mice and humans.
Methods: We utilized an immunofluorescence staining for vasculature, lymphatics and stem-cells. Whole tissue segments of mouse and human small intestine were assessed using a novel three-dimensional spatiotemporal imaging approach. Subsequent analysis of 3D images was performed exploiting supervised machine learning segmentation and classification into vasculature, lymphatics and small intestinal stem-cells.
Results: We were able to establish a protocol for a spatiotemporal imaging approach in the small intestine utilizing supervised machine learning segmentation. Preliminary results in helminth infected mice indicate that the fissioning rate of crypts increases from 8.5% at steady state to 26.1% upon infection with H. polygyrus at day 14, representing a method for inducing small intestinal growth. Our protocol has been adapted to and piloted in human small intestinal samples.
Conclusion: Three-dimensional spatiotemporal imaging of mouse and human small intestine with subsequent machine learning segmentation and classification is feasible and introduces a novel approach for studying various human disease and treatment methods.

A Preliminary Decision Score for Limb-Sparing Surgery vs. Amputation in Pediatric Osteosarcoma
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Background: Decisions regarding surgical strategies for limb osteosarcoma in children and adolescents are complex. While limb-sparing surgery is the primary goal, amputation may be required in cases of extensive local invasion or advanced disease. These decisions are heavy for both surgeons and patients, yet they often rely on clinical judgment rather than systematic, evidence-based tools.
Aims: This study aims to propose and preliminarily validate a preoperative score to identify patients at higher risk of requiring amputation, offering a more objective framework for surgical planning.
Methods: A scoring system was developed based on literature review and clinical observations, incorporating demographic, clinical, anatomical, radiological, and histological parameters. Major criteria were weighted at 10 points, while minor criteria added 5 points. This retrospective, single-center study included 20 pediatric patients treated at a tertiary hospital between 1994 and 2018. Patients were divided into two groups based on treatment outcomes: (A) "successful limb-sparing surgery" (no recurrence or surgical revision within five years) and (B) "amputation" (primary or secondary and failed limb-sparing surgery within five years). The score was calculated for all patients at diagnosis.
Results: The amputation group showed significantly lower scores for local recurrence (Median = 5.0 vs. 15.0; $p=0.030$) and surgical revision (Median = 2.0 vs. 10.0; $p=0.037$). Five-year mortality ($p=0.028$) and metastasis development ($p=0.022$) were also significantly different. The scoring system demonstrated moderate inter-rater reliability ($\kappa=0.696$).
Conclusion: This preliminary score shows promise as a decision-making tool not only for guiding initial surgical strategies and improving outcomes, but also for reducing family psychological distress with early strategy awareness and adjusted expectations. Lower scores appear to be correlated with more severe disease, underscoring its potential to identify high-risk patients systematically. Further validation with larger cohorts is needed.

Outcomes of Colonic and Gastric Tube Transplants after Caustic Esophageal Burn in Children: A 33-Year Review
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Background: Accidental caustic burns of the esophagus in children represent a significant global health challenge, often necessitating esophageal reconstruction.
Aims: This study aims to compare the efficacy and morbidity related to esophagus replacement with colonic and gastric tube transplants in a pediatric population followed for caustic stenosis.
Methods: This retrospective study was conducted at a tertiary pediatric surgery unit. Children were treated from January 1989 to December 2022. We compared colonic and gastric tube esophageal replacement. Short-term (within 30 days) and mid-term outcomes and complications were reviewed. Chi-square test for categorical data analysis.
Results: A total of 124 children with caustic esophageal burns were included. Among them, 23 (18.5%) had a gastric tube transplant for esophagus replacement and 101 (81.5%) a colonic transplant. During surgical intervention, we found a significantly higher risk of complications when using a colonic transplant (34%, $p < 0.001$). For postoperative short-term and mid-term complications, there was no significant statistical difference comparing the two techniques.

26% of children required a reoperation, with a higher risk in the gastric tube transplant group ($p < 0.001$). For endoscopic dilatation after surgery, there was also a significantly higher number of children with a gastric tube transplant ($p = 0.005$). Overall, 97.6% recovered full normal oral feeding.
Conclusion: In our study, colonic and gastric tube replacement are both good options for pediatric esophageal replacement after a caustic injury, with effectiveness in the long term. Gastric tube transplants showed a slightly higher risk of reoperations and higher number of dilatations post-surgery, but our groups are not really comparable due to the much higher number of colonic transplants. However, both surgical options have to be considered during surgery, depending on the surgical anatomy of the patient. Our future research will focus on assessing long-term quality of life and potential risk of neoplastic complications.

Free Communication – STS

Comparative Biomechanical Analysis of Radial Neck Plate Versus Tripod Fixation in Mason Type III Radial Fractures: A Human Cadaveric Study
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Background: Proximal radius fractures, particularly Mason Type III, represent a challenge in elbow surgery due to their complexity and impact on joint function. Using the conventional radial-neck plate is a reliable treatment option, that can cause soft tissue irritation and restricted range of motion. A novel tripod fixation approach, using three crossed screws, should minimize such complications and preserve range of motion.
Aims: This study aims to compare the biomechanical competence of conventional radial neck plating versus tripod fixation in a Mason Type III fracture model
Methods: Sixteen paired human cadaveric radii underwent a standardized osteotomy to simulate a transverse neck fracture with an additional 50:50 head split component and split into two groups – Group 1 fixed with a conventional radial-neck plate with two additional canulated headless compression screws (HCS) and Group 2 stabilized with tripod fixation (three cruciated 40 mm HCS) and two additional HCS. Biomechanical tests assessed stiffness in anteroposterior and mediolateral bending, axial compression, pronation, and supination.
Results: No significant differences were found in stiffness across the comparisons: mediolateral bending: tripod:195±132N/mm, plate: 91±47 N/mm ($p=0.067$), anteroposterior bending: plate: 168±105N/mm tripod: 145±108N/mm ($p=0.670$), axial compression: plate: 643±337N/mm vs. tripod: 642±188N/mm ($p=0.998$), pronation: plate 0.15±0.10Nm/°, tripod: 0.23±0.23Nm/°($p=0.336$), and supination: plate: 0.17Nm/°, Tripod: 0.25±0.21Nm/° ($p = 0.351$). Cycles to failure under axial compression were recorded with the plate group showing 4078±3173 cycles and the tripod group 4763±5288 cycles, $p\geq0.4$. Load-to-failure was noted at 586±222N for plate and 789±337N for tripod, $p\geq0.4$.
Conclusion: From a biomechanical perspective the tripod technique with two additional HCS showed comparable performance compared to plate fixation with two additional HCS in transverse radial neck fractures with an additional head split component. With potentially less soft tissue irritation and necessary secondary hardware removal the tripod technique seems to be a valid alternative to conventionally used plate osteosynthesis techniques.

Precontoured Low-Profile Single Plates vs Conventional Plates for Midshaft Clavicle Osteosynthesis: A Retrospective Comparison
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Background: Implant related irritation and thus re-operation for implant removal are one of the main disadvantages of clavicle plate osteosynthesis. Preshaped low-profile clavicle plates were introduced in recent years, with the aim to improve fit and reduce plate prominence.
Aims: This study aims to show whether modern low-profile implants can decrease implant-related irritation and thus reduce re-operations.
Methods: All patients that underwent single-plate osteosynthesis for midshaft clavicle fractures between between 2019 and 2024 at one trauma-center were included. Patients were categorized into two treatment groups: Synthes 3.5mm LCP plates or Synthes 2.7mm VA-LCP low-profile clavicle plates. Treatment groups were compared regarding healing, complications, and removal rate.
Results: 113 patients were included, 60 with a 2.7 VA-LCP, and 53 with a 3.5mm LCP. There were no significant differences in reintervention rate (56.8% versus 52.2%, $p = 0.66$), infection (3.8% versus 0%, $p = 0.22$), and non-union (0% versus 4.9%, $p = 0.24$). Hardware irritation accounted for 88% versus 87% of reinterventions respectively.
Conclusion: Low-profile clavicle single plating shows similar results in terms of complication and healing rates compared to conventional plating. Despite the design aiming for reduced plate-prominence, it does not demonstrate a significant reduction in removal rates. This suggests that low-profile designs do not sufficiently address the problem of implant-related irritation in clavicle osteosynthesis. Further design improvements and alternative fixation techniques may be considered.

Addressing Surgical Workforce Challenges in Switzerland: Mentorship and Innovative Solutions
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Background: Switzerland faces a critical shortage of medical professionals, especially in surgical fields, due to an aging workforce, increasing demand for part-time work, and complex training requirements. The growing gap between retiring specialists and newly trained surgeons is exacerbated by bureaucratic hurdles and insufficient attraction of young talent to surgical disciplines.
Aims: To explore innovative strategies for mitigating the workforce shortage, with a focus on mentorship programs involving retired surgical experts to improve clinical education and patient care quality in regional hospitals.
Methods: A mentorship project was initiated at Spital Oberengadin, where retired chief surgeons collaborated with junior doctors in the emergency department. This involved interactive patient assessments, hands-on training, and supervised procedures such as wound management and joint reductions. Feedback was collected from participants to evaluate stress levels, learning outcomes, and overall satisfaction.
Results: The mentorship program significantly enhanced the clinical reasoning and practical skills of young doctors while improving operational efficiency. The initiative was widely appreciated, earning recognition from the Swiss Institute for Continuing Medical Education (SIWF). Additionally, applications for surgical assistant positions in Samedan increased, demonstrating a renewed interest in surgical careers among medical graduates.
Conclusion: Mentorship programs leveraging the expertise of retired surgeons offer a viable solution to the surgical workforce crisis in Switzerland. Expanding such initiatives across regional hospitals could address training gaps, retain talent, and ensure the sustainability of high-quality surgical care.

Ortho-Geriatric Co-Management – Is There a Return on Investment?
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Background: The global number of operatively treated proximal femoral fractures is steadily growing. This clinical condition profoundly impacts not only patients' health but also the costs of the global healthcare systems. Models of care based on orthogeriatric co-management (OGCM) have suggested promising clinical outcomes compared to the standard of care (SOC) model in the treatment of frail elderly patients.
Aims: The goal of this study was to evaluate the clinical benefits of OGCM in relation to the expected increased daily costs due to the interdisciplinary and interprofessional approach, involving highly specialized and costly personnel.
Methods: A retrospective cohort study investigating clinical outcomes in two comparable cohorts of patients aged 75 and older, who underwent surgical treatment for proximal femoral fractures in 2023 was conducted. The two cohorts differed in their perioperative care protocols: one followed an OGCM (n = 143), while the other adhered to a SOC protocol (n = 141). Main outcome measures were readmission, revision, morbidity and mortality rates at 30 days and one-year post-surgery, as well as in-hospital costs.
Results: Findings revealed a positive impact for patients treated under the OGCM protocol, with a downward trend in readmission (36.2% vs 39.7%, $p = 0.676$), surgical revision (8.4% vs 12.4%, $p = 0.485$) and mortality (24.1% vs 31.7%, $p = 0.781$) rates one-year post-surgery. From an economic perspective, the daily costs associated with an OGCM were significantly higher, but the overall costs during the hospitalisation period were slightly lower due to a reduced length of stay.
Conclusion: OGCM clearly demonstrated a beneficial tendency across all aspects of our investigations, along with a positive financial impact reflected in lower direct costs. Although not statistically significant, we believe it justifies the effort in personnel resources and additional therapy sessions.

Advancing Trauma Training: Survey Study on Simulation Training and Shock Room Management for Resident Doctors
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Background: Simulation is a cornerstone of modern medical training, particularly for managing polytraumatized patients. Traditional teaching often falls short in preparing residents for the complexities of trauma care, making innovative approaches like Advanced Trauma Life Support (ATLS) courses and simulation training essential for improving skills, teamwork, and decision-making under high-pressure conditions.
Aims: This survey evaluated the prevalence and effectiveness of shock room training among resident doctors, its impact on confidence and skill application in trauma care, and areas for improvement in medical education.
Methods: An anonymous online survey was distributed to resident doctors in Switzerland, Aus-

tria, and Germany involved in trauma shock room care. Participants across specialties and training levels provided data analyzed using Excel and statistical methods, including p-values and chi-square tests. Ethical approval was not required for this survey-based study. Participation was voluntary.
Results: Among 124 participants (85 females, 37 males, 1 diverse, 1 undisclosed), training levels and hospital types significantly influenced ATLS course participation ($p = 0.033$, $p = 0.002$). ATLS attendees reported higher confidence scores (mean: 3.67 vs. 2.91, $p = 0.0024$). Functional ID badges, prevalent in university hospitals (83.33%), were positively perceived, especially by female participants. Supervisor support and communication ratings were highest in cantonal hospitals, while unprofessional communication was reported most frequently in university hospitals (25% "often").
Conclusion: ATLS courses and simulation training significantly enhance residents' confidence and skills in trauma care, with differences in the utilization of these tools depending on hospital type and training level. Introducing trauma training earlier in medical education, increasing its implementation in regional hospitals, and fostering collaborative organizational cultures are essential steps to ensure equitable and effective trauma education. These measures can ultimately improve patient outcomes and address systemic inequalities in healthcare training.

A Single-Centre Retrospective Study on the Impact of Omitting Preoperative Antibiotic Prophylaxis on Wound Infections in Minor Orthopedic Implant Removals
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Background: The use of preoperative antibiotic prophylaxis (POAP) in elective implant removal (IR) is controversial due to a lack of evidence-based recommendations. First-generation cephalosporins, which are commonly used in IR, are believed to reduce wound infection risks. However, the potential for serious side effects had raised concerns about their necessity.
Aims: This study intended to evaluate whether omitting POAP in small IR increases the risk of wound infections.
Methods: This retrospective, single-centre cohort study was conducted at a level I trauma centre in Switzerland, including patients who underwent IR between January 1, 2016, and December 31, 2021. The IR procedures involved the upper extremities (UEs), such as the clavicle, olecranon, radius and ulna, as well as the lower extremities (LEs), such as the patella, tibia, fibula, (bi)malleolar and foot. Postoperative follow-up included clinical and radiological evaluations 6 weeks after surgery. The outcomes assessed were deep wound infections, wound healing complications, refractures, persistent pain, bleeding, and neurovascular injuries.
Results: Of the 273 patients (mean age: 42.1 ± 14.5; 44% female), 117 (42.9%) received POAP. In the LE group (n = 141) 51.1% received POAP; in the UE group (n = 132) 34.1% received POAP. Eleven (4.0%) wound-healing disorders were documented, with five (4.3%) in the POAP group and six (3.8%) in the non-POAP group ($p = 1.0$). No deep wound infections were observed.
Conclusion: Withholding POAP in elective IR procedures did not significantly increase wound infection rates in our cohort, suggesting it may be unnecessary in uncomplicated IR.

The Use of 3D Computer-Assisted Navigation and Its Influence on Radiation Exposure and Operation Time in the Surgical Treatment of Fragility Fractures of the Pelvis
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Background: Percutaneous screw fixation is increasingly being used for stabilization of pelvic fragility fractures (FFP) in the elderly. Performing this procedure using 2D fluoroscopy is challenging due to the complex anatomy of the pelvis. 3D computer-assisted navigational imaging techniques have emerged to facilitate the procedure.
Aims: This study compares traditional 2D fluoroscopy with 3D computer-assisted navigation regarding radiation exposure and operation time in patients with FFP.
Methods: This retrospective study included patients treated with percutaneous screws for FFP between 1st of January 2017, and 31th of May 2023. Patients were divided into two groups: those treated with conventional 2D fluoroscopy (2D-CF) and those with 3D computer-assisted navigation (3D-CAN). Data on demographics, ASA scores, fracture types and operative parameters were collected. The outcomes were intraoperative fluoroscopy time, operation time and complications. Statistical analyses were conducted, with statistical significance determined at $p<0.05$.
Results: Eighteen patients were included in each group. There were no significant differences in baseline patient characteristics between the groups. Compared to 2D-CF (190.3 ± 86.9 seconds, p=0.000), 3D-CAN showed a significant reduction in fluoroscopy time (78.4 ± 33.7 seconds). The mean operative time was also significantly higher in 2D-CF (85.0 ± 28.1 minutes, p=0.007) versus 3D-CAN (62.1 ± 18.3 minutes). In 3D-CAN no screw-related complications were observed.
Conclusion: In surgical treatment of pelvis fragility fractures percutaneous screw fixation with 3D computer-assisted navigation systems significantly reduces patient radiation exposure and operative time in comparison to conventional intraoperative 2D imaging.

Utility of the 6-Weeks Outpatient Visit After Osteosynthesis of Lower Extremity Fractures
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Background: According to the standard postoperative follow-up protocol, every patient with the most common lower extremity fractures will be seen six weeks after surgery.
Aims: To investigate the usefulness of routine six-week outpatient visits and X-rays in patients following surgery for the most common lower extremity fractures, including proximal femur, femoral shaft, tibial shaft and malleolar fractures.
Methods: This retrospective study examined surgically treated patients with the most common lower extremity fractures at a Level 1 trauma center from January 2020 to March 2024. It focused on two outcomes: the incidence of abnormalities found on six-week post-operative X-rays and their consequences, and the incidence of deviations from the local standard post-operative treatment and follow-up protocol. Each was categorized as requiring additional imaging, reinterventions, deviation from standard postoperative weightbearing or range of motion (ROM) restrictions, or additional follow-ups. X-ray abnormalities were defined as any differences between the intraoperative (or direct postoperative) X-ray and the six-week follow-up X-ray. If an abnormality was detected, the hospital records were reviewed to determine its consequences.
Results: A total of 275 patients were included. Abnormalities on X-rays at six weeks were found in 6% of patients. Of all the X-rays, only 2% had clinical consequences, and of those only two patients were asymptomatic. Deviations from standard care based on the entire outpatient visit occurred slightly more frequently (9%), but rarely led to reinterventions.
Conclusion: Clinical consequences from X-ray results were rare during the routine six-week follow-up after surgery for common lower extremity fractures. Complications requiring reintervention were infrequent. In most cases with clinical consequences, the lack of progress during rehabilitation was the reason for the deviation. This suggests that, instead of a routine follow-up, a more selective six-week follow-up – i.e. seeing only symptomatic patients – should be considered.

Correlation Between Vitamin D and Musculoskeletal Injuries – A Systematic Review
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Background: It is commonly recognised that maintaining the health of the musculoskeletal system depends heavily on vitamin D. However, the relationship between vitamin D level and the frequency of musculoskeletal injuries is yet uncertain.
Aims: Gathering the available information regarding the connection between vitamin D levels and musculoskeletal injuries was the aim of this systematic review.
Methods: Seven electronic databases were searched to find relevant studies for this review. The search technique used Boolean operators to connect MeSH terms and free-text phrases, improving the sensitivity and specificity of the search results. The evaluation included studies that looked into the connection between vitamin D status and damage to the musculoskeletal system.
Results: A high frequency of low vitamin D levels was observed by the 12 included studies in people with musculoskeletal symptoms or injuries. This highlights the significance of vitamin D screening and supplementation in these populations. Certain vitamin D metabolites have been linked to the occurrence of injuries in some studies, indicating that the levels and balance of these metabolites may affect the risk of injuries. However, there have been conflicting findings about how vitamin D supplementation affects muscular function and exercise-induced muscle injury; certain studies have found no appreciable changes. Regarding the advantages of vitamin D supplementation in lowering the incidence of stress fractures in athletes, consistent results have been noted. According to one study, genetic variations may have an impact on how vitamin D and musculoskeletal health are related.
Conclusion: The reviewed studies collectively demonstrated a complex relationship between vitamin D status and musculoskeletal injuries. While a high prevalence of low vitamin D levels was consistently reported, the effects of vitamin D supplementation on various musculoskeletal outcomes varied. The findings underscore the need for further research to elucidate the underlying mechanisms and develop targeted interventions for different populations, considering factors such as vitamin D metabolites, supplementation dosage, and genetic variations.

Free Communication I – SGT

Piloting Lung Cancer Screening: Tumor Detection Rate, Psychological Distress and Incidental Findings
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Background: Lung cancer constitutes the leading cause of cancer-related deaths in Switzerland. Since 2019, a pilot study evaluating the feasibility and efficacy of low-dose CT lung cancer screening (LCS) program in Switzerland is ongoing.
Aims: This analysis summarizes the findings and obstacles of a screening program.
Methods: 307 participants (178 males, median age: 62 years) smokers (200 active) or ex-

smokers were included in the lung cancer screening consisting of an interview and a low-dose CT. In a subset of 140 participants (62 females) psychological distress was assessed using a visual analog scale (Range: 0-10). Furthermore, to assess coronary artery calcification (CAC) as incidental finding, the SHEMESH score was utilized. Imaging was scored by two experienced radiologists using a score ranging from 0 to 12.

Results: 11 cancers have been detected (3.58%), 9 lung cancers (2.93%) in stage AIS (1), stage I (3), stage IIIA (3, all incidental N2), stage IV (2), 1 thymoma, 1 thyroid cancer. Most of the participants experienced only minor psychological distress, however some instances of significant stress were reported (Figure 1A). There was a trend for higher reports of psychological distress in females compared to males ($p = 0.053$). 22.8% participants had a SHEMESH score between 4 and 12 (Figure 1B), of which 28.6% (20 participants) described symptoms potentially indicating CAC. Participants with a SHEMESH scores above 4 were advised to consult a specialist.

Conclusion: Employing low-dose CT scans as a screening modality led not only to detection of multiple malignancies; it was also seen that careful consideration of incidental finding and their implication is important within screening programs. Overall, only minimal psychological distress was reported.

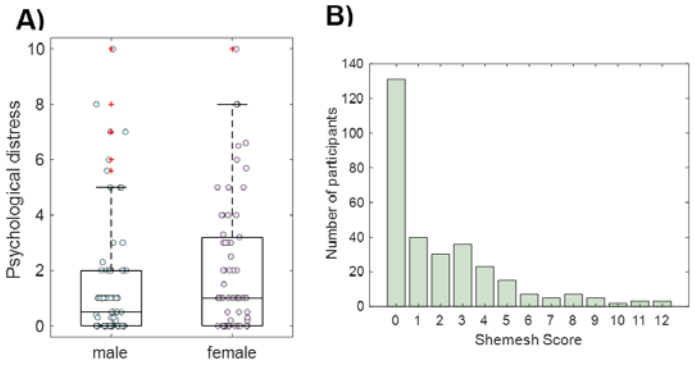

Figure 1. A: Psychological distress reports using a visual analogue scale in males and females, B: Number of participants per SHEMESH score

Real Time Imaging of the Non-Small Cell Lung Cancer Immune Microenvironment Modulation by Low Dose Photodynamic Therapy

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Background: Immune checkpoint inhibitors (ICIs) have significantly improved the outcome of non-small cell lung cancers (NSCLCs). However, cancer response to ICIs occurs in a fraction of patients and correlates with tumor-infiltrating lymphocytes (TILs) presence. Thus, methods to increase TILs within lung cancer are urgently needed. Previously, in a murine model of malignant pleural mesothelioma, we described a mechanism by which low dose photodynamic therapy (L-PDT) enhanced vascular expression of E-selectin, favoring TILs recruitment, and improving tumor control.

Aims: Here, we hypothesized that a similar mechanism existed in NSCLC and could be further potentiated by ICIs.

Methods: We developed a murine model with a chest window allowing real time imaging by two-photon microscopy of lung adenocarcinoma (LUAD, 344-SQ-GFP, KrasG12D; p53R172HΔG mutant) growing in C57BL/6-CD2-dsRed transgenic mice. We determined the impact of L-PDT±E-selectin blocking antibodies (EBA) on CD2+TILs recruitment over 30 days. In a separate experiment, we assessed the impact of L-PDT±EBA on tumor growth, survival, and spontaneous metastasis development. Finally, we characterized the LUAD immune microenvironment and TILs immune checkpoint expression 1 and 5 days after L-PDT by flow cytometry.

Results: L-PDT significantly enhanced CD2+TILs recruitment, with an increase observed at 1 day that lasted up to 20 days post-treatment compared to controls. L-PDT was significantly associated with improved tumor control (-42%), reduction in metastasis development (-50%) and increased animal survival (+26%) compared to the control group. Interestingly, this phenotype was abrogated to control levels when L-PDT was combined with EAB. Further analysis of the tumor immune microenvironment confirmed the recruitment of CD8+T lymphocytes 1- and 5-days following L-PDT with increased PD-1 expression day 5 post-treatment.

Conclusion: L-PDT triggers, through vascular E-Selectin, durable infiltration of NSCLCs by TILs which improve tumor control, impair metastasis development, and enhance animal survival. The increased PD-1 levels on CD8-T cells following L-PDT suggest a favorable combination with PD1/PDL1 inhibitors.

Post-Operative Volume Changes in Residual Lung Lobes After Thoracoscopic Segmentectomy for Early Stage Non-Small Cell Lung Cancer

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Background: Pulmonary segmentectomy is a valid alternative to lobectomy in early-stage non-small cell lung cancer (NSCLC), however little is known about post-operative compensatory volume changes.

Aims: We aim to investigate overall trends in volume changes of residual lung lobes over time after segmentectomy.

Methods: We retrospectively reviewed patients who underwent pulmonary segmentectomy for early-stage NSCLC in our institution from 2017 to 2022. Pre-operative lung lobe volumes were computed from 3D lung models (Materialize®) and compared to residual lung lobes at 6 and 12 months post-operatively.

Results: Thirty patients (median age: 66 (62-73), sex ratio M/F: 14/16) underwent VATS segmentectomy with systematic lymphadenectomy (Table 1). On the right side, median loss of volume of lobes was -62.4% (p-value = 0.03) for S1 segmentectomy (n=6), -38.9% (p-value > 0.05) for S2 (n=5) and -35.5% (p-value > 0.05) for S6 (n=4) at 12 months. Compensatory expansion was predominant in lower lobes for upper segmentectomy, respectively +24.2% (p-value > 0.05) for S1 and +22.2% (p-value > 0.05) for S2, whereas compensation in middle lobe was present for S1 segmentectomy (+17%, p-value = 0.03) and for S6 (+14.9%, p-value > 0.05). For the left side, median loss of volume was -73.0% (p-value = 0.03) after upper trisegmentectomy (n=6), -34.8% (p-value > 0.05) after lingulectomy (n=3) and -37.4% (p-value = 0.03) after S6 segmentectomies (n=6). Compensatory expansion was predominant in lower lobes for upper left segmentectomies (+31.4%, p-value = 0.03), whereas compensation of median upper lobe volume was +11.4% (p-value = 0.03) for lower left segmentectomy at 12 months. Median total lung volume was not significantly different for among type of segmentectomies at 12 months, except for left S6 (-6.6%, p-value = 0.03) (Table 2).

Conclusion: Volume compensation mechanism occurs after segmentectomy. Reduction in volume may be more affected during upper lobe segmentectomy compared to lower lobe segmentectomy.

Number of patients, n	30
Sex (male), n (%)	14 (46.6)
Age (years), median (IQR)	66 (62-73)
BMI (kg/m²), mean ± SD	24.8 ± 3.6
Charlson comorbidity index, mean ± SD	5.4 ± 1.6
Preoperative lung function (%), mean ± SD	
FEV1	78.2 ± 20.3
DLCO	64.0 ± 19.8
Histology, n (%)	
Adenocarcinoma	24
Squamous cell carcinoma	4
Other	2
TNM classification	
T1a(mi) or AIS	5
T1a	3
T1b	9
T1c	3
T2a	9
T3	1
Segmentectomy, n (%)	
Right S1 segmentectomy	6 (20.0)
Right S2 segmentectomy	5 (16.7)
Right S6 segmentectomy	4 (13.3)
Left upper trisegmentectomy	6 (20.0)
Lingulectomy	3 (10.0)
Left S6 segmentectomy	6 (20.0)
Dissected lymph nodes, median (IQR)	8 (4-12)
Postoperative stay (day), median (IQR)	4 (2-5)

Table 1. Patient characteristics

Change rate at 12 months	Left upper lobe	Left lower lobe	Right upper lobe	Right middle lobe	Right lower lobe	Left lung	Right lung	Total lung
Right S1 segmentectomy								
Median [%]	2.2	4.3	-62.4	17.0	24.2	2.4	-10.1	-4.7
95% CI	-6.7, 7.8	-17.8, 26.3	-82.1, -56.9	7.1, 22.0	-0.4, 63.4	-12.4, 17.1	-18.1, 6.7	-15.5, 11.4
p-values	0.56	1	0.03	0.03	0.06	0.31	0.06	0.31
Right S2 segmentectomy								
Median [%]	0.3	2.2	-38.9	6.4	22.2	1.4	-3.2	-1.2
95% CI	-1.7, 4.1	-1.5, 15.2	-49.2, -28.8	1.9, 44.4	8.9, 39.1	-1.6, 6.6	-10.6, -0.9	-6.4, 2.5
p-values	0.63	0.19	0.06	0.06	0.06	0.44	0.06	1
Right S6 segmentectomy								
Median [%]	5.0	11.7	-3.3	14.9	-35.5	8.2	-16.1	-4.6
95% CI	-10.7, 10.8	-21.2, 19.6	-17.8, 11.8	-17.9, 26.0	-51.0, -17.0	-15.7, 14.1	-28.0, 1.8	-21.9, 7.3
p-values	0.63	0.88	0.63	0.38	0.13	0.88	0.25	0.63
Left upper trisegmentectomy								
Median [%]	-73.0	31.4	2.9	2.6	3.8	-20.9	5.7	-7.7
95% CI	-81.8, -58.6	9.8, 102.5	-9.0, 14.2	-1.5, 21.1	-11.5, 35.6	-35.2, 9.4	-8.8, 19.2	-20.7, 14.3
p-values	0.03	0.03	0.31	0.06	0.44	0.06	0.31	0.31
Lingulectomy								
Median [%]	-34.8	6.4	0.1	1.5	6.9	-9.6	3.5	-6.0
95% CI	-42.6, -28.0	3.9, 14.8	-2.2, 5.0	-7.2, 7.1	-2.1, 8.7	-22.4, -6.7	-2.7, 6.3	-9.2, 0.2
p-values	0.25	0.25	0.75	1	0.5	0.25	0.5	0.5
Left S6 segmentectomy								
Median [%]	11.4	-37.4	2.9	-1.3	-1.9	-15.9	1.4	-6.6
95% CI	5.2, 16.1	-41.5, -32.1	-2.9, 13.1	-11.7, 6.0	-13.7, 3.9	-18.7, -11.9	-9.0, 4.5	-12.6, -3.5
p-values	0.03	0.03	0.22	0.44	0.44	0.03	0.84	0.03

Table 2. Volume change rate at 12 months after surgery

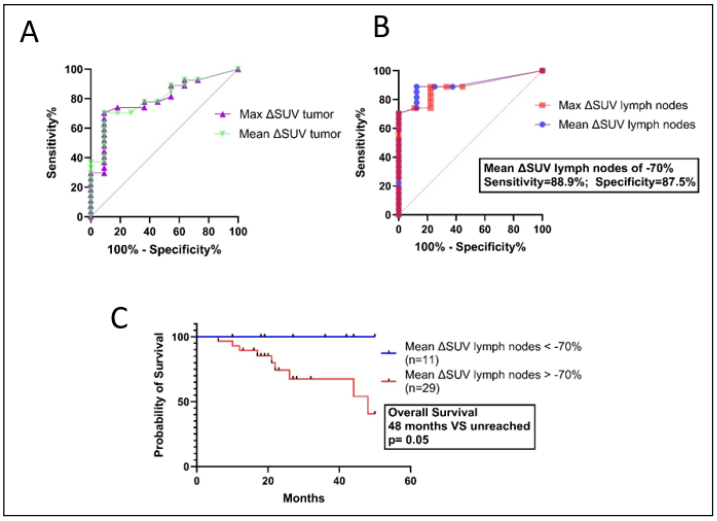

Figure 1. The value of PET-CT in predicting the response of stage III N2 NSCLC managed by neoadjuvant chemo- immunotherapy. A. Area under the curve (AUC) analysis of the change in maximum and mean ASUV of the tumor before and after neoadjuvant chemo-immunotherapy to predict complete pathological response. B. AUC analysis of the change in maximum and mean ASUV of the lymph nodes before and after neoadjuvant chemo-immunotherapy to predict complete pathological response (CR). A reduction of 70% in mean ASUV had a sensitivity of 88.9% and a specificity of 87.5% for pCR prediction. C. Kaplan-Meier overall survival analysis between patients with higher or lower lymph node mean ASUV of 70%

The Value of PET-CT in Predicting the Response of Stage III N2 Non-Small Cell Lung Cancer Managed by Neoadjuvant Chemo-Immunotherapy

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Background: Neoadjuvant chemo-immunotherapy has become a standard for management of resectable stage III non-small cell lung cancer (NSCLC) patients with improved overall survival. Post-induction radiological re-staging, commonly performed with CT scan, is crucial in surgical planning.
Aims: This study evaluates the predictive value of PET-CT scan after neo-adjuvant chemo-immunotherapy to predict tumor response and patient survival.
Methods: We analyzed, in our prospectively collected database, 68 resectables stage III N2 NSCLC patients treated by neoadjuvant chemo-immunotherapy followed by surgery between 2017 and 2023. Forty patients underwent PET-CT both pre- and post-induction. Surgical resections, histopathological assessments and survival follow-up, were recorded. We measured changes (ΔSUV) in mean and maximum SUV of tumors and tumor involved lymph nodes before and after induction therapy. We computed ΔSUV related to pathological response and survival using receiver operating characteristic and Kaplan-Meier analysis respectively.
Results: Over 40 patients, 23 were women and 17 men. Mean patient age was 63.5±8.0 years. Surgeries consisted in lobectomy (88%), bilobectomy (10%) and segmentectomy (2%). 38% were minimal invasive approaches. R0 and R1 resection occurred in 93% and 7% (lymph node capsular effraction) patients respectively. Complete pathological response (pCR) occurred in 27% patients. Mean and max tumor ΔSUV predicted pCR (Mean: AUC=0.8013, p=0.004; Max: AUC=0.7980, p=0.004 Fig 1A). ΔSUV of lymph nodes provided stronger predictive value (Mean: AUC=0.9028, p=0.006; Max: AUC=0.8848, p=0.006, Fig 1B). Statistical analysis of tumor and node ΔSUV showed that a mean lymph node ΔSUV of -70% was the best predictor of pCR with a sensitivity of 88.89% and a specificity of 87.50% (Fig 1B). This -70% in mean lymph node ΔSUV change correlated with overall survival in our cohort (Fig 1C).
Conclusion: Mean ΔSUV of lymph nodes on PET-CT between pre and post chemo-immunotherapy of stage III N2 NSCLC predicts pCR and overall survival with good sensitivity and specificity.

Salvage Surgery After Nonoperative Treatment of Initially Unresectable Stage IIIB-IV Non Small Cell Lung Cancer

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Background: Despite the current advancements in systemic treatment, cancer persistence, progression or recurrence remain common after nonoperative treatment of unresectable non-small cell lung cancer (NSCLC). In this situation, lung resection frequently remains among the last options to achieve local cancer control.
Aims: We aimed to assess the outcomes of salvage lung resection in patients with stage IIIB-IV NSCLC.
Methods: Patients with stage IIIB-IV NSCLC who underwent anatomical lung resection between 2003 and 2024 after initial nonoperative treatment were identified from a prospectively maintained database.
Results: 42 patients were included in the analysis. Median age was 61.5 (IQR 51.8 – 67.5) years and 57.1% were male. The cohort included 9 UICC stage IIIB/C patients and 33 stage IV patients. Nonoperative treatment included definitive chemoradiotherapy in 19 cases (45.2%), immuno- or chemoimmunotherapy in 21 cases (50%) and targeted therapy in 10 cases (23.8%). The indication for lung resection was local recurrence in 4 (9.5%) patients, (oligo) progression under active treatment in 9 (21.4%) patients and (oligo)persistence under active treatment in 29 (69%) patients. Resections included 1 segmentectomy, 14 standard lobectomies, 15 extended lobectomies, 2 bi-lobectomies and 10 (extended) pneumonectomies. 66.7% (n=28) of all resections were performed by thoracotomy, 16.7% (n=7) by VATS and 16.7% (n=7) by RATS. Median overall survival was 27.0 months (IQR 11.0-69.5 months). R0-resection was achieved in 88.1% of all cases. Overall survival was significantly improved if R0-resection was achieved (median OS 71.0 [40.0-131.0] months versus 11.0 [10.0-14.0] months, p<0.001).
Conclusion: Salvage surgery remains a valuable option for patients with advanced NSCLC and cancer persistence, progression or recurrence after initial nonoperative treatment and can provide a substantially prolonged long-term survival. In this heavily pretreated population, extended resections with high surgical complexity are common. The achievement of R0-resection is essential as further treatment options are often not available.

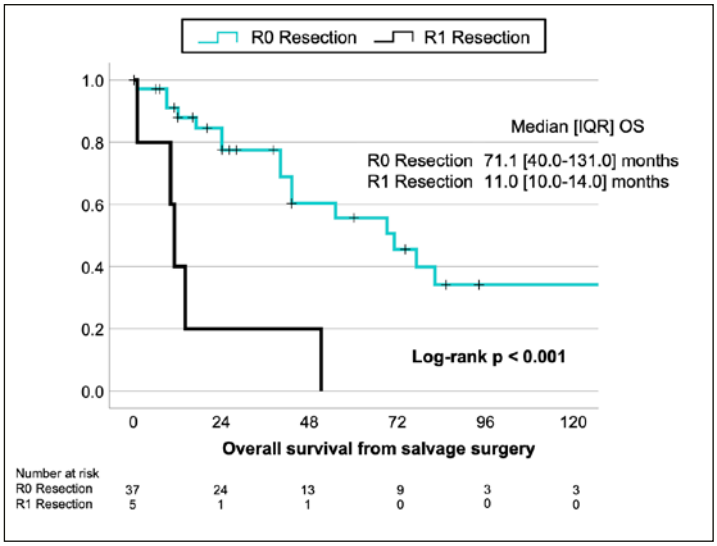

Figure 1

Complex Chest Wall Defect Coverage – Challenge for Thoracic and Plastic Surgery – A Case Presentation

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Background: Successful thoracic wall reconstruction aims to restore interior thoracic integrity, maintain and protect pulmonary mechanics, and reduce deformities. Muscle flaps are used to cover defects and promote healing. However, issues like seroma formation and muscle atrophy remain. A multidisciplinary approach is sometimes crucial for effective management. We present a very complex case of a 67-year-old female patient and the extensive treatment that the patient received; an example of the importance of interdisciplinary surgical collaboration.
Case Presentation: A 67-year-old female patient with neuroendocrine carcinoma underwent a complex treatment course involving oncological, infectious, and challenging anatomical complications. The patient developed empyema and bronchus stump insufficiency multiple times, leading to multiple stump revisions and thoracotomies. Thoracic wall reconstruction was performed several times with multiple coverage materials: pericardial patch, Gore-Tex Mesh, left latissimus dorsi muscle, VRAM-Plastic (vertical rectus abdominis musculocutaneous flap). Also, left latissimus dorsi muscle, omentum majus flap, left pectoralis major muscle were used for stump coverage. The patient also had an ipsilateral lymph node tumor recurrence and lastly chemo-radio therapy. The patient had concomitant comorbidities: malnutrition, polymicrobial empyema, neoadjuvant chemotherapy, radio-chemotherapy for tumor recurrence and multiple ischemic cerebral insults. Despite many surgeries, muscle flaps were successfully strategically used to close the thoracic wall, especially in presence of intrathoracic infection. Patient survived to date four months after surgery. We utilized several muscle flaps for thoracic wall closure and, with intrathoracic infection aside, they presented by each revision as viable and preserved. Cross-disciplinary cooperation resulted in successful salvage of the patient.
Conclusion: An interdisciplinary collaboration requires joint planning and execution. This ensures correct function and healing, leading to improved patient satisfaction and recovery in the challenges of thoracic wall reconstruction with soft tissues.

Figure 1. Preparation of left pectoralis major muscle

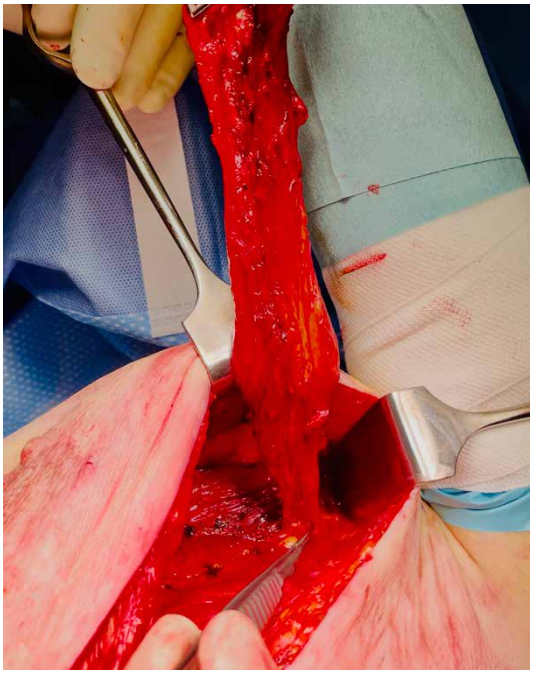

Figure 2. Left pectoralis major muscle with a thoracoacromialis

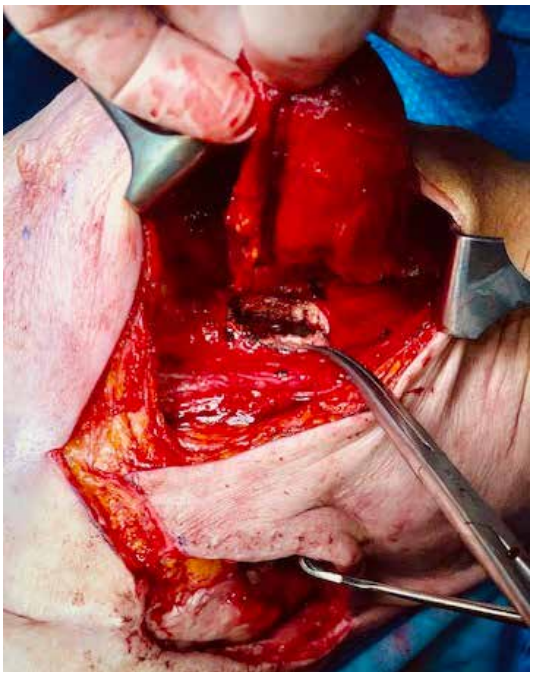

Figure 3. Left pectoralis major muscle prepared for reposition thorugh fenestrated thoracic wall

Free Communication II – SGT

3D Reconstruction Could Help Identify Patients Who May Benefit from Lung Resection

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Background: The guidelines for surgical planning are based on research data from open lobar resections. The loss of functional lung volume can range from 0 to 10% per segment, sometimes we see a benefit in pulmonary function. The degree of variation in postoperative pulmonary function depends on numerous factors. The aim of this pilot study was to examine the correlation between 3-D simulations (Fig. 1) of preoperative functional lung volume and the measured postoperative pulmonary functions.
Aims: Does the simulation of post-operative functional lung volume reduction with the three-dimensional (3D) reconstruction software Visible Patient™ (VP) allow to better identify patients suitable for anatomical lung resection than conventional methods?
Methods: This single-centre pilot study included 20 patients (10 females; age 68 ± 10 years) who underwent VATS resection of the right upper lobe between October 2020 and October

2022. Software based 3-D simulations of preoperative lung volume based on HRCT-scans were correlated with the measured pre- and post-operative pulmonary function and compared with results of the 5% per segment rule, and the model proposed by Brunelli et al in 2005.
Results: Patients (8/20) with increased postoperative FEV1[l] 2.40 (0.56) from 2.30 (0.55) compared to decreased FEV1 2.30 (0.52) from 2.60 (0.63) showed a lower proportion of healthy tissue in preoperative VP simulations 76 (18)% vs. 89 (10)%, p=0.045. Fig2&3. Predictions using conventional methods underestimate the actual measured postoperative FEV1. Calculations using the 5% rule 2.04 (0.47) vs. 2.26 (0.58) correlated better than the Brunelli model 1.74 (0.32) vs. 1.85 (0.40). The measured postoperative DLCO [mmol/(min*kPa)] remained constant 6.34 (2.28) from 6.32 (2.51) in the FEV1 increase group.
Conclusion: This pilot study indicates that the 3D reconstruction software VP has the potential to better identify patients who could benefit from surgery than conventional methods. However, further multicentric studies are required to confirm our initial results.

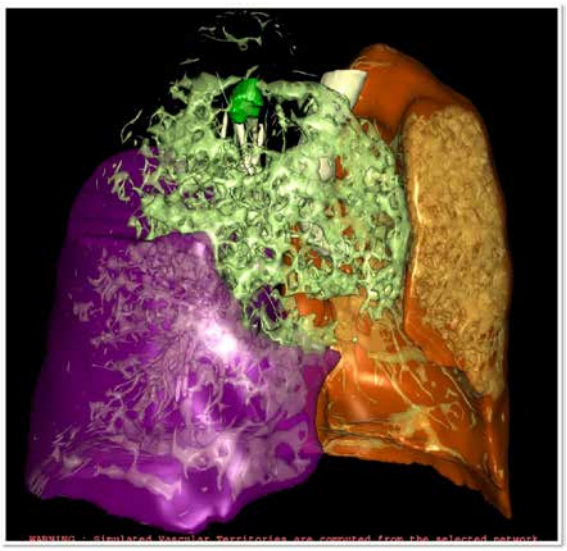

Figure 1. Figure Example of a 3D reconstruction with identification of non-functional tissue

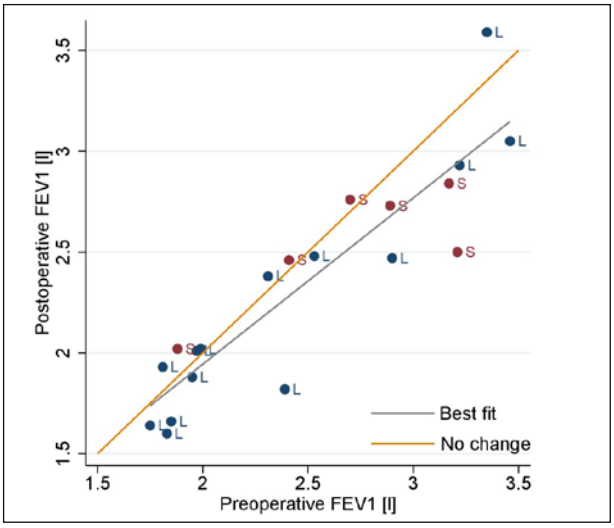

Figure 2. Pre- and postoperative measurements of FEV1

Descriptive Statistics	Decrease (N = 12)	Increase (N = 8)	P
FEV1 [l]			
pre-operation measured	2.60 (0.63)	2.30 (0.52)	0.29
post-operation measured	2.30 (0.55)	2.40 (0.56)	0.71
using 5 % rule	2.26 (0.58)	2.04 (0.47)	0.4
using Brunelli formula	1.85 (0.40)	1.74 (0.32)	0.52
DLCO [mmol/(min*kPa)]			
pre-operation measured	6.23 (1.68)	6.32 (2.51)	0.93
post-operation measured	5.69 (1.49)	6.34 (2.28)	0.45
using 5 % rule	5.43 (1.58)	5.63 (2.37)	0.82
using Brunelli formula	6.20 (1.69)	6.32 (2.73)	0.9
Simulated organ volume [%]			
pre-operation healthy tissue/total tissue	87 (11)	75 (17)	0.06
remaining ipsilateral healthy tissue/ total remaining ipsilateral tissue	88 (9.1)	78 (13)	0.07
remaining healthy tissue/ remaining tissue (pretotal - OP)	89 (10)	76 (18)	0.045

Figure 3. Lung function measurements, calculations and tissue simulations for patients with reduced and increased postoperative FEV1

Activation of cGAS-Dependent Necroptosis During Cold Static Preservation of Lungs Relies on Calcium

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Background: Prolonged cold static preservation (CSP) of lungs has been previously described to engage a type of cell death termed necroptosis. cGAS/STING is an innate immune sensor system for the presence of double-stranded (ds)DNA within the cytosol. We identified that intracellular calcium and mitochondrial (mt)DNA release in the cytosol are potential triggers of cGAS/STING which subsequently activate necroptosis.
Aims: This investigation aims at understanding the role played by the cGAS/STING system, notably in the activation of necroptosis, using a cellular in vitro model of CSP.
Methods: L2 rat lung epithelial cells were maintained at 4°C with 50% Oβ to mimic CSP. Activation of cGAS/STING/TBK1 pathway was assessed via phosphorylated TBK1 (p-TBK1). Necroptosis was evaluated by detecting phosphorylated MLKL (p-MLKL) and LDH activity. Cytosolic mtDNA was detected by qPCR of cytochrome b (CytB) mitochondrial gene on DNA isolated from cytosolic fractions of cells. mtDNA localization and mtROS production were monitored by confocal microscopy. Preservation with a Ca2+-free solution and the calcium chelator BAPTA-AM were respectively used to study the role of extra and intracellular calcium. Various drugs were employed during CSP to test the mechanisms of mtDNA release. Inhibitors of cGAS, STING and RIPK1 have been used as controls for inhibition of cGAS/STING and necroptosis.
Results: cGAS/STING activation is key in triggering necroptosis during CSP. Inhibiting cGAS/STING blocked necroptosis; inhibiting necroptosis did not reduce p-TBK1. CSP-exposed cells showed increased cytosolic mtDNA and mtROS. Calcium depletion in the preservation solution or intracellular calcium chelation significantly reduced pTBK1 and totally blocked necroptosis. Inhibiting known mtDNA release mechanisms did not block cGAS activation or necroptosis.
Conclusion: Calcium influx and mtDNA release trigger cGAS-dependent necroptosis during CSP. Understanding mtDNA release mechanisms may lead to strategies – like reducing calcium or adding cGAS/STING inhibitors – to improve organ viability in transplantation.

The Impact of Abdominal Normothermic Regional Perfusion on Short-Term Outcomes of Lung Transplantation After Donation After Circulatory Death

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Background: Normotermic regional perfusion of abdominal organs (aNRP) has been introduced to improve the outcomes of abdominal transplants from donation after circulatory death (DCD) donors. However, the lungs are susceptible to additional warm ischemic injuries during aNRP, which is a well-known risk factor for the development of primary graft dysfunction (PGD) in lung transplantation (LTx).
Aims: In the present analysis we wanted to assess the impact of aNRP on the early outcomes of DCD-LTx.
Methods: Using a prospectively maintained database, we compared the short-term outcomes of patients receiving DCD lungs obtained after aNRP versus the standard rapid recovery technique from the initiation of the aNRP program as of 2020 at a single center. PGD3 within the first 72h was the primary outcome measure followed by hospital stay and graft survival.
Results: The cohort consisted of 41 DCD LTx (33 standard and 9 aNRP) between 01/2020 and 06/2024. Baseline recipient and donor characteristics, recipient comorbidities, and diagnosis, and EVLP rate did not differ significantly between both groups. Expectedly, functional warm ischemic time, from hypotension (MAP<50mmHg) until pulmonary flush, was markedly longer in the aNRP group (71±12 min) than in the standard (34±17 min), p<0.001 (Figure A). PGD3 within 72h was 28% in the standard DCD versus 0% in the aNRP group (p= 0.08). ICU (16 vs 7 days, p=0.2) and hospital stay (40 vs. 29 days, p=0.5) were comparable between the standard and aNRP groups. Kaplan-Meier survival curves did also not differ significantly between two groups, p=0.8 (Figure B).
Conclusion: In this initial experience after introduction of aNRP, procurement of donor lungs after initiation of aNRP did not negatively affect short-term outcomes of DCD-LTx.

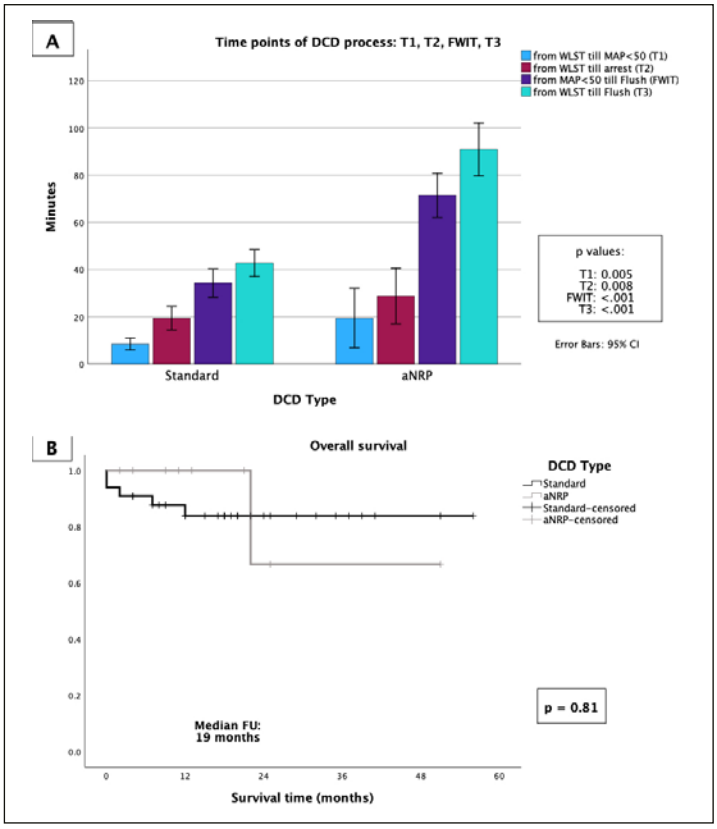

Figure 1. DCD Timeline and Survival of the grafts

Inflammatory Markers as Risk Factors for Prolonged ICU Stay and Hospitalization in Patients With Chronic Thromboembolic Pulmonary Hypertension Undergoing Pulmonary Endarterectomy

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Background: Chronic thromboembolic pulmonary hypertension (CTEPH) is a potentially fatal disease often associated with preceding acute pulmonary embolisms. Pulmonary endarterectomy (PEA) is the gold standard treatment for surgically accessible CTEPH.
Aims: Given the complex nature of PEA, and its mostly elective setting, we aim to identify predictive markers for increased perioperative risk.
Methods: CTEPH patients undergoing PEA between January 2015 and August 2024 were retrospectively analyzed. The cohort was divided into two groups: patients with postoperative lung reperfusion edema (RPE) and without. ICU stay and hospitalization were analyzed. Preoperative blood values (leucocytes, lymphocytes, CRP, triglycerides, cholesterol, HDL-, Non-HDL- and LDL cholesterol) were evaluated. A linear mixed model was employed to identify risk factors associated with prolonged ICU stay and hospitalization for patients with and without RPE. A p-value of <0.05 was considered significant.
Results: 130 patients with CTEPH underwent PEA from 2015–2024. Our cohort consists of 53 (40.7%) female patients. Median age was 62 years (IQR 50-72). 71 (54%) patients had NYHA class III and 39 (30%) class II. Figure 1 shows a significant difference in CRP in the patients with RPE and the ones without (p=0.0072). There was a significant correlation between the preoperative CRP levels and hospitalization time (p=0.017) and preoperative CRP levels and ICU duration (p=0.00038) for the group with postoperative RPE[Opi1] . We did not record any significant correlation between any of the other previously mentioned preoperative blood values and the ICU stay or hospitalization in either group.
Conclusion: Elevated preoperative CRP levels are associated with longer ICU stays and hospitalization in patients with RPE. This finding underscores the critical importance of optimizing preoperative inflammatory status to reduce postoperative RPE and recovery times.

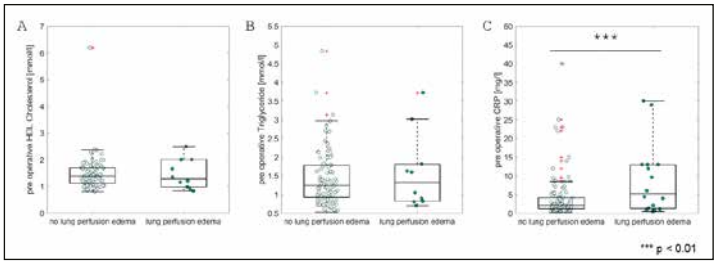

Figure 1. Boxplots comparing the preoperative HDL Cholesterol (A), triglycerides (B) and CRP (C) of patients with and without postoperative lung reperfusion edema

PULS (Pulmonary Artery Sarcoma) – An International Collaboration for the Assessment of Pulmonary Artery Sarcoma Patients' Outcome

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Background: Pulmonary artery sarcomas (PAS) are rare with a poor prognosis and limited curative therapeutic options. This scarcity of evidence poses significant challenges.
Aims: This study aims to enhance the understanding of clinical characteristics and current management of PAS.
Methods: An international working group (PULS) was launched. Patients with PAS treated at participating institutions between 1994-2024 were included. Six centers collected data from patients diagnosed with PAS retrospectively.
Results: Among 49 patients with PAS, the median age was 54.0 years (range: 27.0–82.0), including 24 females (49.0%). Chest pain, dyspnea, and cough were present in 24.5% (n=12), 42.9% (n=21), and 24.5% (n=12), respectively. Initial diagnosis included PAS in 26.5% (n=13) and embolism in 24.5% (n=12). PAS was confirmed by surgery in 40.8% (n=20), imaging in 16.3% (n=8), and biopsy in 12.2% (n=6) and this information is missing in 30.6% (n=15). 33 (67.3%) patients underwent surgery. Tumor endarterectomy was most common, (n=20, 40%), including 1 (2%) patient undergoing additional lobectomy, and two (4.1%) patients additional pneumonectomy. 9 (18.3%) patients underwent pneumonectomy only and 4 (8.2%) debulking surgery only. 10 (20.4%) patients underwent multimodal treatment. One (2%) patient received neoadjuvant systemic therapy. Postoperative adjuvant systemic therapy (Doxorubicin/Ifosfamide) was given to 7 patients (14.3%) and 6 patients (12.2%) underwent radiotherapy. The 1-,2- and 5-year survival was n=20 (40%), n=14 (28.5%), and n=1 (2%) respectively. The subgroup of patients undergoing multimodal treatment had a better overall survival (p=0.05, Figure 1). Relapse of PAS occurred in 32.7% (n=16).
Conclusion: To date this is one of the largest reported multi-center cohort of patients with PAS. Our findings highlight the clinical variability in PAS presentation, challenges in achieving a timely diagnosis, and poor prognosis. Outcomes are most promising if patients undergo surgery embedded in multimodality treatment compared to patients undergoing surgery alone.

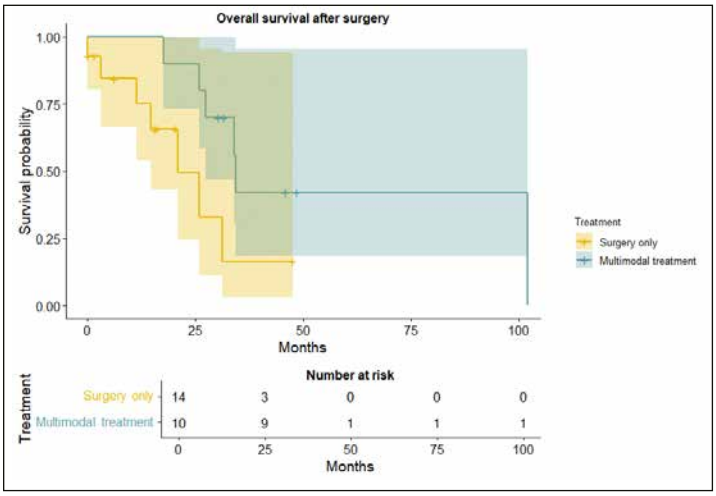

Figure 1. Kaplan-Meier survival curve comparing patients with PAS undergoing surgery only and patients undergoing multimodal treatment (p=0.05)

Impact of Continuous Negative External Pressure on Respiratory Function and Hemodynamics in Post-Lung Resection and Rib Fracture Patients

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Background: Continuous Negative External Pressure (CNEP) is a non-invasive therapy that applies consistent negative pressure to the chest, enhancing lung expansion and providing respiratory support.
Aims: To evaluate, for the first time, the impact of CNEP therapy on patients following anatomical lung resections and on those with rib fractures.
Methods: A retrospective study was conducted to assess the effects of a 60-minute CNEP therapy session in two patient groups: (1) those who underwent anatomical lung resection for lung cancer and presented with oxygen saturation (SpOβ) <95% on room air, and (2) patients with rib fractures hospitalized for pain management without surgical intervention. Ventilation distributions were measured using Electrical Impedance Tomography (EIT), and non-invasive hemodynamic monitoring assessed heart rate (HR), cardiac output (CO), tidal volume (TV), oxygen saturation (SpO2), respiratory rate (RR) and shunt fraction. Pre- and post-intervention data were analyzed using paired t-tests or non-parametric tests.

Results: The study included 15 patients who underwent anatomical lung resections and 14 patients with rib fractures. In lung resection patients, SpOβ increased from 92.7% (±1.3) to 95.3% (±0.6) ($p < 0.001$), and RR decreased from 17.6 to 15.4 breaths/min ($p < 0.001$). Pulmonary ventilation in postero-basal lung zones improved significantly ($p < 0.001$) (Figure 1). CO increased from 4.9 L/min (±0.8) to 5.2 L/min (±0.8) ($p < 0.001$), while HR decreased from 75.3 bpm (±5.8) to 72.9 bpm (±4.8) ($p = 0.042$). Rib fracture patients showed similar trends, with improvements in SpOβ, RR, lung expansion, CO. Pain scores improved significantly after CNEP ($p < 0.001$). Shunt fraction decreased significantly in both groups ($p < 0.001$) (Figure 2).
Conclusion: This pilot study shows that CNEP significantly enhances lung expansion and hemodynamic stability in patients who underwent anatomical resections and after rib fractures. Further studies are necessary to confirm its broader clinical benefits.

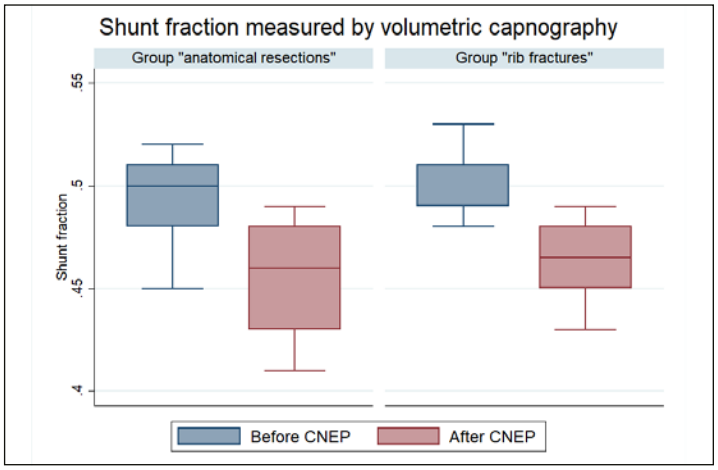

Figure 1

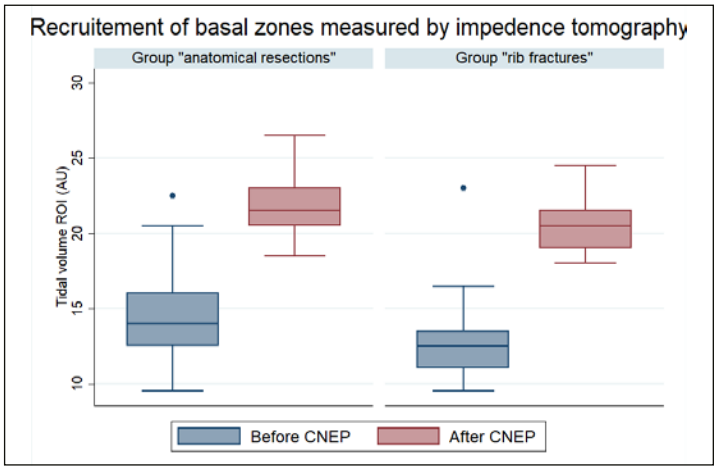

Figure 2

Implant Irritation and Removal Rates in Operatively Treated Multiple Rib Fractures: A 49-Month Follow-up Study

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Lucerne

Background: Little is known about the prevalence, impact and change of the symptoms after implant removal due to irritation in multiple rib fractures.
Aims: This study aims to explore these aspects to improve treatment decision-making.
Methods: Data was collected from two hospitals in the Netherlands and Switzerland. The study included only adults with operatively treated multiple rib fractures, regardless of whether the fractures were flail or non-flail. The primary outcome was the incidence of implant removal due to irritation. Secondary outcomes included implant irritation not leading to removal, other postoperative complications, and remission rates after implant removal. These outcomes were assessed during a follow-up phone call using a standardized questionnaire.
Results: Hundred-twenty patients were identified, with 83 (69.2%) completing the final follow-up after a median of 49 months (IQR 40-59). Twenty-five (30.1%) patients experienced implant irritation, of whom four (4.8%) got their implant removed. Two (2.4%) reported significant improvement, one (1.2%) moderate, and one (1.2%) no improvement of symptoms.
Conclusion: Implant irritation in patients with multiple rib fractures is a common problem, even years after surgery, without guaranteed symptom improvement post-removal. These results provide an additional argument to be more selective in offering rib fixation to patients with multiple rib fractures in the first place.

Precursor T-Cell Exhaustion Characterizes Improved Survival in Non-Immunotherapy Treated Oligometastatic Lung Adenocarcinoma With Brain Metastases

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Background: T cell exhaustion describes a hypofunctional state characterized by progressive loss of T cell effector functions and is considered a pathway of resistance for cellular immunotherapies. However, little is known about the prognostic value of T cell exhaustion in patient who do not receive immunotherapy.
Aims: We aimed to investigate the prognostic significance of T-cell exhaustion in non-immunotherapy treated oligometastatic LUAC with brain metastases.
Methods: Patients with synchronous or metachronous oligometastatic LUAC and brain metastases (BM) who underwent local ablative treatment including surgical resection of the primary tumor were retrospectively identified. No immunotherapy was given as first line treatment. Digital gene expression analysis was performed on extracted RNA using the NanoString nCounter platform. To assess status of T-cell exhaustion, CD83 and CXCL13 were used as markers for precursor exhausted T cells (TPEX).
Results: Digital gene expression analysis was performed on 36 patients with oligometastatic LUAC and BM. Median overall survival (OS) from BM diagnosis was 46 months (IQR 22-67). In the CD83 high group (cutoff 1463), median OS was significantly longer with 103 (95% CI 34 – NR) months in comparison to 36 (95% CI 34 – 63) months in the CD83 low group (HR 4.04 (95% CI: 1.55 – 10.5), p=0.002). Similarly, median OS was longer in the CXCL13 high group with 81 months (95% CI 36 – NR) months in contrast to the CXCL13 low group with 32 months (95% CI 14 – NR), (HR 2.89 (95% CI: 1.21 – 6.92), p=0.013).
Conclusion: The findings of this study suggest that also in non-immunotherapy-treated patients with oligometastatic LUAC, precursor T cell exhaustion may be a prognostic parameter, supporting the evidence from other cancer entities that T cell exhaustion reflects poor cancer control. Approaches to mitigate terminal T cell exhaustion by targeting the CXCL13/CXCR5-axis and downstream molecules may be promising.

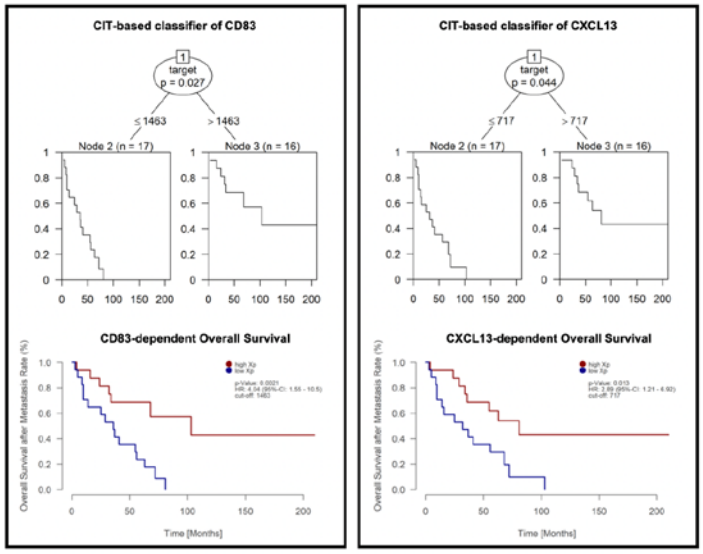

Figure 1

Is Attrition to Surgery Even Less in a Real-World Setting of Neoadjuvant and Perioperative Immune Checkpoint Inhibition for Non-Small Cell Lung Cancer

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Background: Neoadjuvant and perioperative immune checkpoint inhibition (ICI) has been shown to provide excellent outcomes within recently published phase III trials on resectable non-small cell lung cancer (NSCLC). However, high preoperative attrition rates of up to 20% after neoadjuvant ICI remain a central challenge and real-world data that support the treatment protocols are scarce.
Aims: We aimed to report real-world data after neoadjuvant and perioperative ICI.
Methods: By review of the prospectively maintained clinical NSCLC database, we identified patients with resectable UICC stage II-III NSCLC who underwent 3-4 cycles of induction ICI (all agents) within a neoadjuvant or perioperative regimen with intended surgical resection. Patients treated within ongoing or blinded clinical trials were excluded.
Results: The analyzed cohort of 25 patients included 3 clinical stage IIB, 18 stage IIIA and 4 stage IIIB cases. Attrition to surgery occurred in 12% (progressive disease in 2, cardiac failure in 1 case). 22 patients underwent surgical resection including 14 lobectomies, 3 bilobectomies and 5 pneumonectomies. Surgery was performed minimally invasive in 46% (6 RATS and 4 VATS cases). R0 resection was achieved in 100% and pathological complete response (pCR) was found in 27%. Among 10 patients with clinical N2 disease who underwent surgery, nodal downstaging to ypN0 occurred in 4 patients (40%). In patients who underwent surgical resection, median EFS was 37 months and median OS was 50 months. Median OS was significantly

longer in patients who underwent resection when compared to non-resected patients (50.0 [33.6–72.5] vs. NR [1.2–NR] months; p=0.007).

Conclusion: Our single-center experience, confirms the findings from the phase III trials in a real-world setting and demonstrates R0-resection in 100% of the patients, as well as excellent pCR rates and long-term survival. In our limited sample size, the attrition rate of 12% is lower than the reported rates in clinical trials, nevertheless highlighting the importance of precise patient selection.

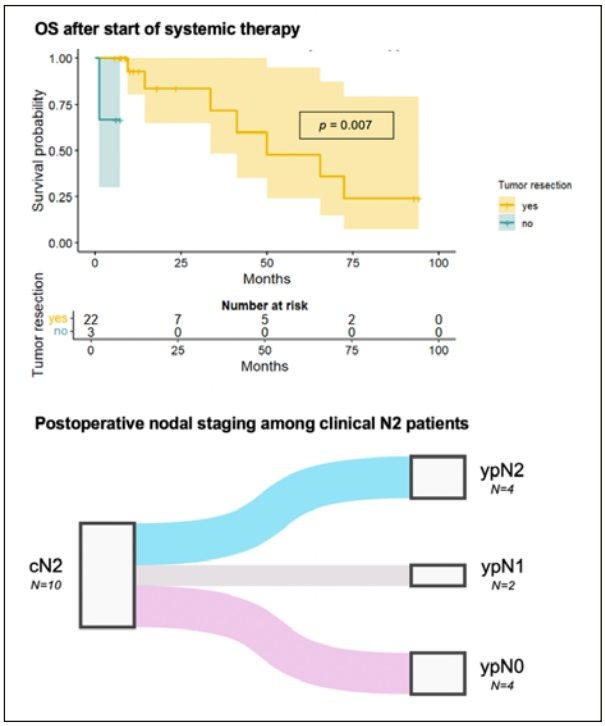

Figure 1

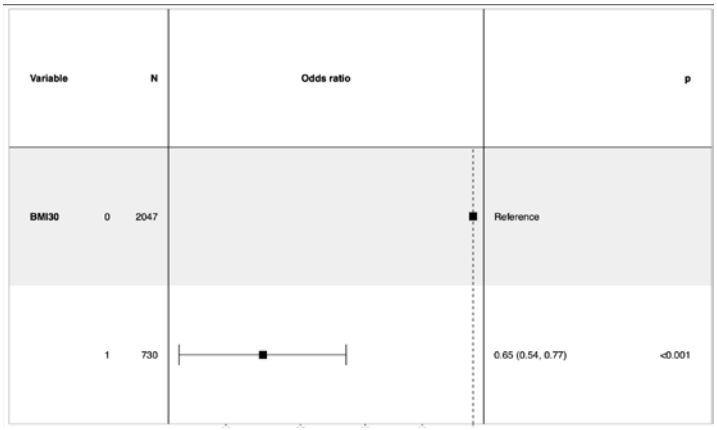

Figure 1. Odds ratio of receiving kidney transplantation in patients with obesity (BMI≥30 kg/m²) on chronic dialysis. Reference group: patients with a BMI<30 kg/m²

Hepato-Pancreatico-Biliary & Transplant

Obesity Hinders Access to Kidney Transplantation in Patients on Chronic Kidney Replacement Therapy – A Swiss National Registry-Based Study Between 2010-2024

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Background: The global rise in obesity has a major impact on patients with end-stage renal disease (ESRD). Kidney transplantation (KT) is the best available treatment for ESRD, offering superior survival and quality of life compared to chronic dialysis. Obesity is not an absolute contraindication to KT, however its impact on access to KT in Switzerland has not been investigated so far.

Aims: The aim of this study was to assess the impact of BMI on mortality and on the chances of receiving KT in patients with ESRD in Switzerland. The overarching goal was to provide real-world data to guide clinical decision-making in patients with concomitant obesity and ESRD, and to explore the eventual need for optimization of the existing care pathways for this patient subgroup.

Methods: We performed a retrospective national registry-based study including all patients on chronic dialysis, who were captured in the mandatory prospective Swiss Renal Registry and Quality Assessment Program and started dialysis between 01/2010 and 12/2020, with last follow-up until 12/2023. After a stepwise exclusion of cases with contraindications to metabolic bariatric surgery (MBS) and/or to KT, we compared demographic data, mortality, and rate of KT between patients with BMI< vs. ≥30 kg/m².

Results: 2777 patients were identified, among whom n=730 had BMI≥30 (median BMI between the subgroups: 24.1 kg/m² vs. 34.9 kg/m²). All-cause mortality was higher in patients with obesity (30.0% vs. 25.9%; p=0.038) and their rate of KT was also significantly lower (38.4% vs. 49.0%; p<0.001; OR 0.65).

Conclusion: Obesity was found to be associated with higher mortality rate and decreased chances for accessing KT in patients on chronic dialysis. Consequently, in potential KT candidates with obesity, current standards of care could be enhanced with the broader implementation of robotically assisted KT and/or with the consideration of referral to MBS in the course of ESRD.

Five Decades of Pancreas Transplantation at the University Hospital of Zurich – A Story of Continuous Improvement and Success

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Background: Pancreas transplantation (PT) is the treatment of choice for patients presenting with type I diabetes and end stage kidney disease. The history of PT at the University Hospital of Zurich (USZ) started in 1973 with the first PT ever performed in Europe.

Aims: To describe the evolution of PT at the USZ from 1973 to 2023, and to analyze differences in patient and graft survival within different eras of surgical technique.

Methods: We retrospectively analyzed all PTs performed at the USZ between 1973 and 2023. Due to the evolution in surgical techniques, we divided all PT into 5 different eras: The initial Experience with PT (era 1, n=4), Experimental Duct Management (era 2, n=13) with open or ligated pancreas duct, External/Transcutaneous Duct Drainage (era 3, n=56), Bladder Drainage (era 4, n=41) and Enteric Drainage (era 5, n=166).

Results: Overall, 280 primary PT were performed at the University Hospital Zürich. Between era 1 and 5 CCI at discharge and 90 days decreased from 100 and 100, to 20.9 and 33.6 (p<0.001), respectively. Overall survival at 1-, 5-, and 10- years improved from 73.5%, 51%, 44.9% in era 3, to 69.7%, 60.6%, 51.5% in era 4, and 95.8%, 95.4%, 82.1% in era 5, respectively (p<0.001). Insulin-free survival after 1-, 5-, and 10- years was 34.5%, 25.5%, 16.4% in era 3, 41.5%, 34.1%, 31.7% in era 4, and reached 85.5%, 78%, 64.5% in era 5 (p<0.001), respectively.

Conclusion: During the last five decades, enhanced surgical techniques and improvements in immunosuppression helped to overcome many obstacles that hampered the early days of PT. Initial results were in stark contrast to the excellent results achieved within the current era. With significantly fewer complications, patient- and graft survival improved remarkably over time, evolving PT into a safe and highly efficient procedure.

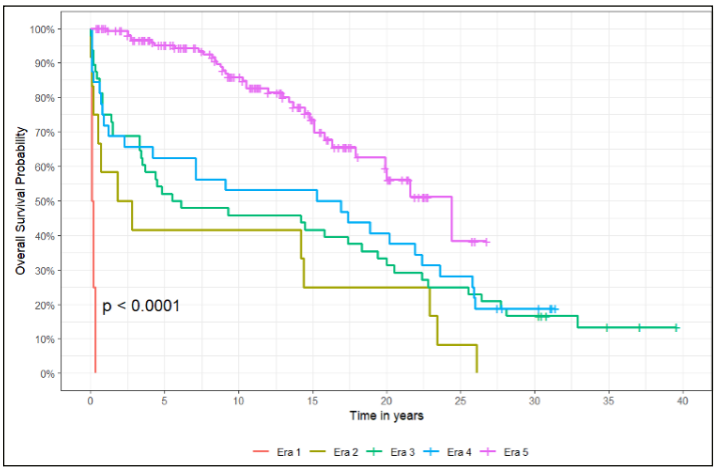

Figure 1. OS

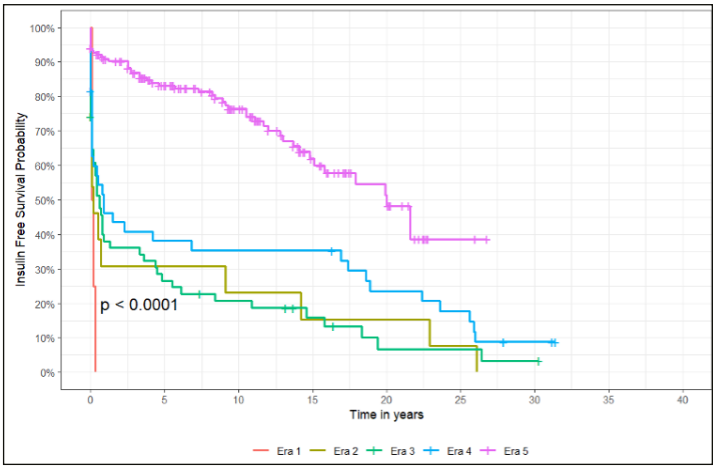

Figure 2. IS

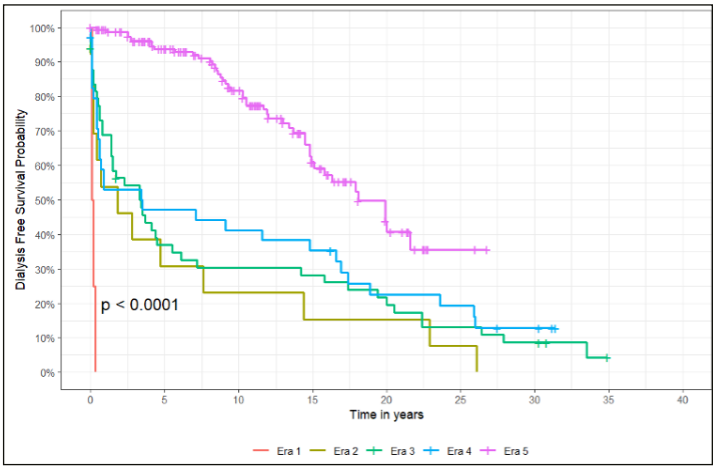

Figure 3. DS

Video: Robotic-Assisted Laparoscopic Kidney Transplantation

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Background: Robotic-assisted laparoscopic kidney transplantation has emerged as an innovative surgical procedure in the field of transplantation and is nowadays routinely performed in our institution. It offers various benefits, mainly in terms of reduced wound complications in obese recipients.
Aims: The goal of our video was to present the key steps of this technique in a clear, instructive, and illustrative way, making it accessible to surgeons at all levels of training in the field of kidney transplantation.
Methods: We produced an educational video that highlights each step of this procedure, from positioning the patient, to vascular preparation of the iliac axis and anastomotic techniques. We use the da Vinci Surgical System (Intuitive Surgical®, Mountain View, CA).
Results: This video clearly and comprehensively demonstrates each step of the robotic-assisted laparoscopic kidney transplantation. It provides a concise overview of patient and da Vinci positioning, trocar placement, surgical preparation, and anatomical landmarks associated with each step.
Conclusion: Robotic-assisted laparoscopic kidney transplantation is safe and feasible. It can facilitate surgical access, vascular preparation and anastomotic sutures in obese patients. This educational video can greatly assist in learning and understanding the various steps of this procedure. This video emphasizes the value of the robotic technique in kidney transplantation.

Machine Perfusion in Deceased Donor Kidney Transplantation: A Multi-National Analysis of Long-Term Outcomes

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Background: Machine perfusion (MP) is increasingly utilized for organ preservation in kidney transplantation, particularly for donation after circulatory death (DCD) donors.
Aims: This study investigates the impact of MP on long-term graft and patient survival compared to static cold storage (SCS) using a large multi-national dataset.
Methods: This retrospective cohort study analyzes patient-level data from three national registries: Swiss Cohort Study, the United Network for Organ Sharing (UNOS), and the Australia and New Zealand Dialysis and Transplant Registry (ANZDATA), encompassing over 500,000 kidney transplant recipients. The primary endpoint is 5-year graft survival. Secondary endpoints include delayed graft function (DGF). Three groups are compared: DCD kidneys preserved with MP, DCD kidneys preserved with SCS, and kidneys from donation after brain death (DBD) donors.
Results: Preliminary analysis of UNOS data demonstrates no significant difference in 5-year graft survival between DCD kidneys preserved with MP (median graft survival of 9.4 years) and SCS (median graft survival of 8.9 years), p=0.5. Importantly, 5-year graft survival in DCD kidneys preserved with SCS was comparable to that observed in DBD kidney transplants. However, MP was associated with a lower incidence of DGF (40%) compared to SCS (45%), p<0.01.
Conclusion: In this large multi-national study, MP reduced the rate of DGF in DCD kidney transplantation but did not confer a long-term benefit in terms of graft survival.

Nephrectomy in Future Renal Transplant Patients With Autosomal Dominant Polycystic Kidney Disease

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Background: Autosomal Dominant Polycystic Kidney Disease (ADPKD) is a major hereditary cause of end-stage renal disease (ESRD). Native kidneys in ADPKD patients often cause complications like chronic pain, infections, or hemorrhagic cysts due to their large size. Nephrectomy is frequently required, but the timing (pre-, peri-, or post-transplantation) and approach (unilateral or bilateral) remain debated, with significant variability among transplant centers complicating strategies.
Aims: This study evaluates the indications, complications, and outcomes of nephrectomy (bilateral vs. unilateral) in ADPKD patients undergoing kidney transplantation, aiming to develop a decision tree to standardize practices.
Methods: A retrospective analysis was conducted on 110 ADPKD patients transplanted between 1999 and 2021 at one center, with 77 undergoing nephrectomy (84% bilateral, 12% unilateral). Indications included space constraints, chronic pain, infections, and hemorrhagic cysts. Complications such as transfusions, hernias, and infections were analyzed. Histopathological findings from 119 resected kidneys were examined. Questionnaires were sent to national centers to compare nephrectomy practices and timing. Data from recent European literature complemented the analysis.
Results: At the study center, bilateral nephrectomy, performed pre-transplant in 84% of cases, was mainly indicated for space constraints (64%), chronic pain (49%), and infections (47%). It resulted in fewer complications, such as infections (7%) and hernias (16%), than unilateral approaches. Questionnaires showed other centers favor unilateral nephrectomy, mainly pre-transplant but occasionally post-transplant, depending on local protocols and patient cases. European literature supports this trend, highlighting flexible timing based on practice. Histological findings showed serous cysts (84%), fibrosis (55%), hemorrhagic cysts (67%), and tumors (2%).
Conclusion: This study highlights the benefits of bilateral nephrectomy in reducing complications and improving outcomes. Addressing gaps in comparative evaluations, it provides actionable insights for transplant centers. A standardized decision-making framework could harmonize practices, reduce variability, and enhance care.

Video: Robotic-Assisted Laparoscopic Nephrectomy and Autologous Kidney Transplantation – A Step by Step Video Guide

F. Bergfelder, F. Rössler, J. Oberholzer
Viszeral Surgery and Transplantation, University Hospital Zurich, USZ, Zurich

Background: Robotic-assisted kidney transplantation (KT) and -live-donor nephrectomy are routinely performed and offer various benefits, mainly regarding wound complications in obese patients. A combination of both surgeries can be performed using the same incisions. We present a case of a 57-year-old female patient, where laparoscopic hysterectomy with lymphadenectomy for ovarian carcinoma resulted in a long-segment injury to the left ureter, leaving about 2 cm of proximal ureter. Initial treatment was with nephrostomy, complicated by recurrent infections and resulting in an overall reduced kidney function. Scintigraphy showed that the left kidney still provided about 50% of total function. Ureter reconstruction techniques using the bladder or intestinal interposition was deemed unfeasible. Consequently, the decision was made to proceed with ipsilateral autologous KT to achieve uretero-cystostomy.
Aims: Aim of this video is to provide a step-by-step instruction for robotic-assisted laparoscopic left nephrectomy and subsequent autologous KT into the ipsilateral fossa iliaca, This technique is a viable alternative to ureteral reconstruction techniques for large substance defects following ureteral lesions, offering the advantages of MIS.
Methods: Surgery was performed at the Department of Surgery and Transplantation at the USZ in 2024. Nephrectomy and transplantation were performed robotic-assisted via transabdominal approach.
Results: This video provides detailed instructions for each step of the surgery, together with written descriptions of the procedure. The first part shows the left-sided nephrectomy, the second part the vascular preparation of the left iliac axis and the subsequent auto-transplantation. The last part shows the modified implantation of the short ureter stump into the bladder.
Conclusion: This high-quality video provides a step-by-step guide to robotic-assisted laparoscopic autologous nephrectomy and KT, highlighting the critical steps. This video is aimed at transplant surgeons who are interested in the latest developments in robotic-assisted surgery in transplantation and would like to implement these techniques into clinical routine.

Integrating Machine Learning and Mathematical Modeling to Predict Hepatocellular Carcinoma Recurrence and Optimize Outcomes After Liver Transplantation

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Background: Cancer recurrence remains the leading cause of death following liver transplantation (LT) for hepatocellular carcinoma (HCC). Although various models have been developed to predict recurrence, the application of machine learning and advanced mathematical modelling in this area is still limited.

Aims: We therefore aimed to develop a machine learning derived model to predict HCC recurrence after transplantation and show its potential to maximize patient survival.

Methods: We developed several machine learning classifiers using clinical data from the Swiss Transplant Cohort Study (STCS) of patients transplanted for HCC (n = 505) to predict recurrence. To estimate the clinical impact of our model, we integrated this classifier with a mechanistic mathematical model to optimize survival outcomes. Integrating the classifier into a Monte Carlo simulation approach, we evaluated personalized treatment strategies, quantifying their potential to enhance long-term survival.

Results: The overall HCC recurrence rate after HCC transplantation in the STCS cohort was 14%, the median time to recurrence was 22 months, the mean follow-up time was 42.7 months. The dataset was used to train different machine learning classifiers and Random Forest showed the best performance in predicting HCC recurrence. The following variables were identified to be associated with recurrence: Alpha-Fetoprotein (AFP) before LT, ALAT before LT, Cold Ischemia time, ALBI score before LT, Bilirubin before LT, Donor Age, MELD score, Albumin before LT and Vascular Invasion. Finally, the Monte Carlo simulations suggest that the predictive information from the Random Forest could optimize existing liver transplantation protocols, therefore improving overall survival outcomes.

Conclusion: Our results demonstrate that combining predictive analytics with mechanistic modeling enables a data-driven, individualized HCC recurrence risk prediction. While this approach underscores the potential of advanced modeling techniques to improve patient prognosis in liver transplant oncology, future work involves validating the model in additional datasets.

Metabolic Duties Govern the Regenerative Competencies of the Growing Liver

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Background: The liver has remarkable but limited regenerative abilities. Metabolic duties may play a crucial role in defining the proliferative behaviour of hepatocytes. During regeneration, metabolic activity and cell proliferation are spatially separated, suggesting that metabolic functions may constrain space for growth.

Aims: We used mouse models of the two-stage hepatectomy ALPPS (surgery known for its rapid regeneration) to investigate whether metabolic demands influence the regenerative potential of the growing remnant.

Methods: Mice were subjected to either sham or ALPPS surgery, resulting in a fast-regenerating future liver remnant (FLR) paired with portally ligated lobes (LLs), which do not grow but retain intact arterial supply. Regenerative activity, metabolic function, and their interplay were evaluated using proliferative parameters and Omics analyses combined with functional surgery approaches. Liver samples from patients undergoing ALPPS surgery were analysed to validate our findings.

Results: Metabolomic profiling of the FLR and adjacent LLs revealed similar metabolite signatures, which however completely diverged during the FLR's rapid growth phase. Combined transcriptomics-metabolomics analyses underscored a confinement of proliferation to the FLR, while LLs were enriched in metabolic functions as confirmed on histology. In functional ALPPS variants with different ligated volumes, FLR growth strictly correlated with the amount of ligated volume, revealing the dependency of regeneration on metabolic function. Notably, FLRs of slow-growing variants exhibited upregulated metabolic processes, suggesting an adaptive response to increased metabolic demand with smaller ligated volumes. Transcriptomics demonstrated similar functional partitioning in human ALPPS regeneration.

Conclusion: In ALPPS, LLs function as metabolic support structures, allowing the FLR to concentrate on regeneration. Our findings demonstrate the need for 'division of labour' and highlight the importance of functional specialization during liver regeneration, where metabolic needs are critical in shaping the organ's regenerative capacity.

Macroscopic Characterization of Hepatocellular Carcinoma

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Background: Following the genotype-to-phenotype paradigm, gross findings of hepatocellular carcinoma (HCC) presumably recapitulate histological and molecular traits of HCC. Macroscopy may thus be an invaluable source of prognostic factors in HCC.

Aims: To provide an in-depth analysis of macroscopic characteristics of hepatocellular carcinoma and their prognostic value.

Methods: International multicentric retrospective analysis of patients undergoing partial hepatectomy (PH) for treatment-naïve HCC, between 2010 and 2020. A comprehensive list of 32 macroscopic items was established for a thorough characterization. Pictures of the specimens, either fresh or formalin-fixed were used to characterize HCC gross findings. Other demographical, clinical, biological and histological variables were also collected and analyzed. Multivariable cox regression analysis was performed to identify prognostic factors of overall survival (OS).

Results: A total of 213 HCC patients were included, with 53 women (24.9%), a median age of 60 years [53-68] and 191 BCLC-A stage (90.1%). PH included 93 (57.4%) and 69 (42.6%) minor and major PH, respectively. Median OS was 59 months [25-121]. On multivariable analysis, ECOG performance status (HR, 2.21; 95% CI, 1.13-4.32; p=0.021), microvascular invasion (HR, 2.37; 95% CI, 1.09-5.19; p=0.03), number of nodules (HR, 1.84; 95% CI, 1.09-3.10; p=0.022) and satellites (HR, 2.81; 95% CI, 1.01-7.77; p=0.047) were identified as independent prognostic factors of OS after PH for HCC.

Conclusion: These results confirmed the prognostic value of macroscopic factors such as satellites and the number of HCC nodules. Future studies exploring prognostic scores or nomograms deriving from macroscopy are warranted.

Colorectal I

Global Benchmarks for Minimal-Invasive Right Hemicolectomy in Adenocarcinoma

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Background: Oncologic right hemicolectomy (rHC) remains the only curative treatment for right-sided colon cancer. Despite its increasing complexity, this procedure is not centralized in many countries, underscoring the need for rigorous assessment and continuous improvement in surgical quality. Benchmarking is a validated quality improvement tool. By defining best achievable outcomes as reference (i.e. benchmarks), it enables centers to evaluate their performance and identify weaknesses or areas for improvement.

Aims: This analysis aimed to establish benchmarks for outcome parameters in minimal-invasive rHC.

Methods: We analyzed data from consecutive patients with adenocarcinoma of the colon who underwent minimal-invasive rHC between July 2017 and June 2022 at 19 expert centers across five continents. Ideal cases were defined as elective surgeries for cT1-T3 tumors without distant metastases, major comorbidities, or significant prior abdominal surgeries. Benchmarks were derived for 19 clinically relevant surgical outcomes, including perioperative and oncological parameters, procedure-specific complications, overall morbidity, and mortality. Benchmarks were set at the 75th percentile for negative outcomes and the 25th percentile for positive outcomes across all centers' medians.
Results: Among 3154 patients, 686 (22%) qualified as ideal. The proportion of ideal cases varied widely across centers (range: 2 – 51%) (Figure 1). Key benchmarks at 3 months were overall morbidity ≤38%, major (Clavien-Dindo ≥3a) complications ≤8%, and 0% mortality. Procedure-specific benchmarks were anastomotic leak ≤3%, and deep surgical site infections ≤6%. Finally, oncologic benchmarks included R0 resection rates 100% and ≥12 lymph nodes harvested ≥96.9% (Table 1). Ideal compared to non-ideal patients and centers performing ≥500 cases compared to <500 cases annually demonstrated superior outcomes.
Conclusion: This study demonstrates that, despite its complexity, minimally invasive rHC can be performed with low morbidity and high oncological accuracy. The established benchmarks provide a reference for centers striving to achieve excellence in this procedure.

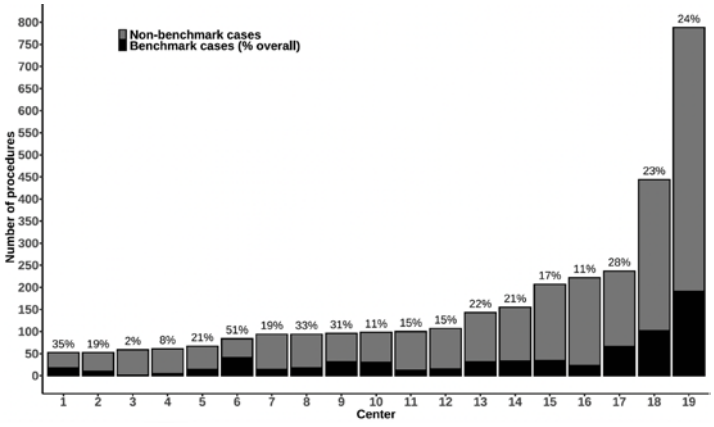

Figure 1. Case Mix per Center

Outcome parameter	Benchmark		
Duration of surgery (min)	≤210		
Conversion to open	≤6%		
ICU stay ≥ 3 days	≤6%		
Length of hospital stay (days)	≤6		
R0 resection	100%		
Lymph nodes harvested (n)	≥23		
≥ 12 lymph nodes harvested	≥97%		
Anastomotic leak	≤3%		
Pancreatic fistula	0%		
Duodenal leak	0%		
Bleeding requiring transfusion	≤5%		
Bleeding requiring surgery	0%		
Ureteric injury	0%		
Deep SSI	≤6%		
Hospital readmission	≤6%		
	Discharge	**3 months**	**6 months**
Any complication	≤29%	≤38%	≤38%
Major complication (CDC ≥ 3a)	≤6%	≤8%	≤8%
CCI*	0	0	0
Mortality	0%	0%	0%

Abbreviations: min (minutes), ICU (intensive care unit), SSI (surgical site infection), CDC (Clavien-Dindo classification), CCI* (comprehensive complication index)

Table 1. Benchmark Values for Minimal-Invasive Right Hemicolectomy

Development and Validation of Predictive Models for Anastomotic Leakage in TaTME Rectal Surgery

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Background: Anastomotic insufficiency remains a devastating complication in colorectal surgery.
Aims: This study sought to develop a statistical model to predict the occurence of anastomotic insufficiency and support preoperative planning, helping to mitigate risks.
Methods: Data from the international prospective TaTME registry were analyzed. Random Forest and logistic regression models were developed to estimate the probability of anastomotic insufficiency, taking into account demographics and clinical variables.
Results: A total of 2,262 patients from the registry were analysed and split in a training and test datased. Significant predictors identified by the models included BMI, age, tumor height, and hospital. The Random Forest model emphasized weight as a significant variable, while the logistic regression model highlighted gender as an important predictor. In both models, tumor height and hospital were independent predictors of anastomotic insufficiency. Logistic regression emerged as the superior model, exhibiting a higher predictive accuracy of 65% when compared to Random Forest.
Conclusion: This study successfully identified several critical preoperative risk factors for anastomotic insufficiency in colorectal surgery, including BMI, age, tumor height, and hospital-specific variability. The logistic regression model demonstrated better predictive power, making it a valuable tool for assisting surgeons in preoperative risk assessment.

Clinical, Sociodemographic, and Treatment Characteristics of Early-Onset Versus Late-Onset Colorectal Cancer: Final Results of a Multicenter Observational Study

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Background: Early-onset colorectal cancer (EOCC), defined as colorectal cancer (CRC) ≤ 50 years, has seen an alarming rising incidence in Western countries.
Aims: This study aims to analyze clinical, socio-economic, and oncological treatment differences between EOCC patients and those with later-onset colorectal cancer (LOCC).
Methods: This multicenter observational cohort study included CRC patients treated from 01/01/2023 to 30/06/2024 across 11 centers in Northwestern Switzerland. Data was collected through questionnaires and patient charts
Results: We included 764 patients, thereof 58.9% male. Mean age was 42.1 for EOCC (n=80) and 70.8 years for LOCC (n=684). EOCC were more frequently non-Swiss (67.5% vs. 32.2%, p<0.001), reported greater financial hardship (p<0.001), had higher glucose consumption (>5 units/week) (48.8% vs. 35.2%, p=0.02), and more often had second-degree relatives with CRC (p=0.05). Childhood radiation exposure was higher in LOCC versus EOCC (94.6% vs. 88.8%, p=0.05). Most common EOCC symptoms were abdominal pain (54.6%) and rectal bleeding (50.6%) versus rectal bleeding (35.4%) and changes in bowel habits (25.3%) in LOCC. EOCC experienced longer time to diagnosis (7.2 vs. 4.2 months, p=0.03). At the 75th percentile, EOCC reached a higher UICC stage (IIIC) compared to LOCC (IIIA). Adjuvant therapy was more common in EOCC with colon cancer (52.4% vs. 35.2%, p=0.04) and rectal cancer (58.3% vs. 33.3%, p=0.02) than in LOCC. Defunctioning ostomies were more frequent in EOCC than LOCC colon cancer patients (13.2% vs. 3.2%, p=0.01), with no difference in rectal cancer patients (p>0.99). Overall, EOCC had shorter hospital stays (8.66 vs. 11.43 days, p=0.05), while ICU stays, retrieved lymph nodes, and operation time were comparable.
Conclusion: EOCC patients experienced diagnostic delays, more advanced disease at presentation, and notable socioeconomic and lifestyle disparities. These findings highlight the need for risk-adjusted screening programs and personalized diagnostic strategies to enable earlier detection and improved outcomes for individuals under 50.

ChatGPT for Therapy Conception of Colorectal Cancer: Can Artificial Intelligence Complement a Traditional Tumor Board?

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Background: Although multidisciplinary tumor boards (MDT) represent the gold standard for decision-making in cancer treatment, they require significant resources and may be suscepti-

ble to human bias. Artificial intelligence (AI), particularly large language models such as ChatGPT, has the potential to enhance or optimize the decision-making processes. The present study examines the potential for integrating AI into clinical practice by comparing MDT decisions with those generated by ChatGPT.
Aims: The aim of this study is to evaluate the concordance between the therapeutic recommendations proposed by a MDT and those generated by a large language model (ChatGPT) for colorectal cancer.
Methods: A retrospective, monocentric comparative study was conducted involving consecutive patients with newly diagnosed colorectal cancer discussed at our MDT. The pre-therapeutic and post-therapeutic MDT recommendations were compared with those of ChatGPT-4 in respect of concordance.
Results: In the pre-therapeutic discussions, complete concordance was observed in 72.5% cases, with partial concordance in 10.2% and discordance in 17.3%. For post-therapeutic discussions, the concordance increased to 82.8%. 11.8% of decisions displayed partial concordance, and 5.4% demonstrated discordance. It is noteworthy that discordance was more frequent in patients > 77 years and with ASA ≥ III.
Conclusion: There is a substantial concordance between the recommendations generated by ChatGPT and those provided by traditional MDT, indicating the potential utility of AI in supporting clinical decision-making for colorectal cancer management.

Does Papillon Contact X-Ray Radiotherapy Allows Organ Preservation in Rectal Cancer: Results From a Swiss Cohort

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Background: Multimodal treatment of rectal cancer involves a combination of radiotherapy (RT), chemotherapy, and surgery. There has been a an increasing interest in organ preservation strategies. Response strongly correlates with RT dose, but dose escalation with external beam remains limited. Papillon is an endocavitary Radiotherapy device,which delivers low energy X-rays, allowing for safe dose escalation and better complete response rate directly at the tumour location.
Aims: This study reports on the use of Papillon in a Swiss cohort.
Methods: Retrospective study on a prospective database of all patients treated between January 2015 and end of 2024. Inclusion criteria: small tumors (< than 3 cm), for larger tumors after a standard CRT and a median interval of 3 weeks. Application of the boost according to the OPERA trial protocol. Assessment at 6 weeks after the end of the Papillon, at 3 months and every 3-month interval for the first 2 years and every 6 months thereafter. Kaplan Meier for local relapse and TME-free survival. Local relapse was defined as any visible tumor on rectoscopy and or MRI and confirmed by histology after achieving complete response. TME-free survival was defined as the organ preservation at 12 months.
Results: Between January 2015 and end 2024, 24 rectal cancer patients were treated with the addition of a boost delivered by Papillon to standard RT, with or without chemotherapy, in an upfront organ preservation strategy. After a median follow-up (FU) of 43 months, the organ preservation rate was 96% (23/24), and the local relapse rate was 8% (2/24). None of our patients developed grade 3 or more toxicities.
Conclusion: Our results demonstrate that the addition of Papillon contact RT provides a high rate of local remission with sustained long-term organ preservation, offering a promising alternative to traditional surgical approaches in patients with rectal cancer.

Prevalence of Genetic Alterations in Patients With Early-Onset Colorectal Cancer

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Background: The number of patients diagnosed with colorectal cancer under the age of 50 is increasing. The aetiology of early-onset CRC remains incompletely elucidated, with uncertainty surrounding potential contributory factors such as the prevalence of genetic alterations.
Aims: The objective of this study was to compare the prevalence of genetic alterations that are associated with CRC in early-onset colorectal cancer (EOCC) with late-onset colorectal cancer (LOCC).
Methods: The molecular profiles of patients diagnosed with locally advanced or metastatic CRC between 2015 and 2023 in two large pathology departments were analyzed using targeted next-generation sequencing.
Results: A total of 769 patients were included in this retrospective study (70 patients in the EOCC group and 699 in the LOCC group). The male:female ratio of patients was 59.7:40.3, with 27.4% (n=144) of patients diagnosed with UICC Stage III and 51.33% (n=270) with Stage IV disease. In the EOCC group, 67.7% (n=46) of patients had a KRAS mutation compared to 68.1% (n=469) in the LOCC group (p=1.0). The percentage of patients with a BRAF mutation in the EOCC group was 84.1% (n=58) compared to 86.5% (n=602) in the LOCC group (p=0.58). NRAS mutations were detected in 97.1% (n=66) of EOCC patients and 96.7% (n=666) of LOCC patients (p=1.0). TP53 mutations were found in 53.1% (n=26) of EOCC patients and 55.5% (n=257) of LOCC patients (p=0.76), while SMAD4 mutations were found in 6.12% (n=3) of EOCC patients and 10.6% (n=49) of LOCC patients (p=0.46). There was no difference in the presence of microsatellite instability between the two groups.
Conclusion: No significant differences were observed for the commonly known mutations in this medium-sized cohort of advanced CRC. Future molecular studies of EOCC might rather focus on epigenetic factors than particular mutational patterns.

Lymph Node Ratio Added to N-Stage Improves Risk Stratification in Colorectal Cancer

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Background: Lymph node metastases (LNM) have an important prognostic value in colorectal cancer (CRC) and staging intends to determine adjuvant treatment. Lymph node ratio, defined as the proportion of positive lymph nodes compared to the total amount of resected lymph nodes, seems to have an important prognostic impact while taking the quality of lymphadenectomy and number of resected lymph nodes into account compared to the conventional N-stage. Previous studies could demonstrate better prognostic predication of LNR compared to conventional N-stage.
Aims: We aimed to evaluate the prognostic impact of LNR on the outcome of patients with CRC.
Methods: This is a unicentre retrospective cohort study. We included all patients undergoing surgical resection for colorectal cancer between 2014 and 2022 in a specialised centre in Switzerland. We used predefined LNRs from previous publications in CRC. Survival rates according to N-stage and LNRs were analysed using uni- and multivariate Cox regression.
Results: 493 patients were included. The median number of resected lymph nodes was 28. 5-year overall survival (OS) was 94% in N0-stage (n=301/493). Patients with LNMs (n=192/493) had decreasing 5-year overall survival (72% with pN1 and 52% in pN2). LNR showed decreasing 5-year OS with increasing LNR (50% in LNR2, 36% in LNR3 and 30% in LNR4, $p < 0.001$). Additionally, disease free survival (DFS) showed the same dynamic with 50% 5-year DFS in LNR2-3 and 33% in LNR 4 ($p = 0.002$). While most of the N1-stage patients showed LNR1, 4/122 (3%) had LNR2-3 and therefore a poorer prognosis.
Conclusion: The predefined LNRs should be standardly used for risk stratification in CRC as they add to the prognostic value of the conventional N-stage. LNR allows to predict 5 year OS and DFS more precisely than conventional N-stage.

Preoperative Vascular Mapping for Complete Mesocolic Excision During Right Colectomy: A Single Center Feasibility Study

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Background: Colorectal cancer (CRC) affects 4.5% of the general population, with 15% involving the right colon. Surgery, when feasible, varies from conventional right colectomy to Complete Mesocolic Excision (CME). Although better oncological outcomes were reported in the literature after CME, there is an acknowledged higher risk of operative vascular lesions. Various approaches have been proposed to facilitate CME, such as the "open book" model and 3D modelling of the mesenteric vessels, however CME remains technically challenging.
Aims: Our study aims to analyze whether preoperative CT imaging with vascular mapping (PVM) of the superior mesenteric vessels could offer guidance on the vascular anatomy during CME.
Methods: This prospective, monocentric study aims to include 30 patients undergoing CME for right CRC. Preoperatively, a biphasic CT scan with 3-D vascular reconstruction of the superior mesenteric vessels is performed. Vascular distances are calculated based on CT, then compared to intraoperative documentation of the mesenteric vessels (Figure 1). Primary outcomes are the surgeons' evaluation of the benefit of vascular mapping and the statistical correlation of the vascular distances between CT guidance and operative finding.
Results: To this day, 22 patients have been included. Surgeons found the preoperative vascular mapping very useful (3.58/5 on a Likert scale). Mean operation time was 263 minutes, with a mean of 36 lymph nodes harvested and no vascular lesions. Postoperative ileus occurred in 27% (6/22), Clavien-Dindo complications III-V in 13,6% (3/22) with one anastomotic leak (4,5%) and one death after discharge at home of unknown cause. Statistical analysis of the vascular distances will be performed upon completion of the study.
Conclusion: Our preliminary data suggest that PVM may be a valuable tool for reducing the risks associated with CME and aiding vascular ligation in this complex surgical technique. Further studies are required to asses PVM utility in CME and confirm these outcomes.

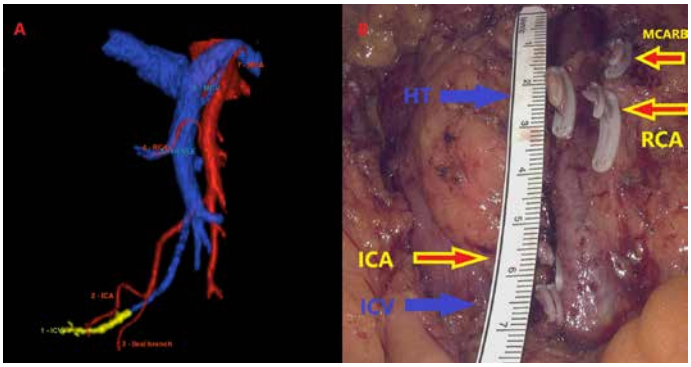

Figure 1. A. PVM with visualization of the superior mesenteric vein (blue), artery (red) and their branches. Ileocecal artery is highlighted with yellow. B. Intraoperative documentation with identification of the superior mesenteric vessels' branches

Fluorescence Indocyanine Green (ICG) for Sentinel-Lymph-Node Mapping in Colorectal Cancer: A Systematic Review

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Background: Modern surgical guidance in oncologic colerectal resections can be enhanced by visualizing lymphatic flow during surgery, informing the extent of lymphadenectomy and the precise extent of digestive resection. Indeed, lymphadenectomy is mandatory in a curative procedure.
Aims: The objective of the present work is to review the practice and impact of indocyanine green fluorescence imaging for real-time identification of lymphatic flow and especially sentinel nodes in patients undergoing elective surgery for colorectal cancer.
Methods: A systematic review was conducted to identify relevant studies on sentinel node mapping using indocyanine green (ICG) in colorectal cancer surgery. A comprehensive search was performed in electronic databases including PubMed, Embase, and Cochrane Library from inception to December 2024. The search strategy incorporated relevant keywords and MeSH terms, combining variations of "colorectal neoplasms," "sentinel lymph node," "indocyanine green," and related terms. The search was limited to articles published in English language.
Results: A total of 337 relevant studies were identified and screened. Among them, 45 studies were considered for eligibility, and 12 were ultimately included in the systematic review. ICG-FI has not yet demonstrated superiority over the standard blue dye technique. Moreover, a notable heterogeneity existed among the reported studies concerning ICG dosage, injection methods, and the definition of positive LN status, making direct comparisons challenging.
Conclusion: Despite the potential demonstrated in other oncological resections, ICG-FI requires further investigation and standardization, both in protocols and indications to fully harness its capabilities for SLN detection in CRC. This is particularly important for the reliable detection of metastatic lymphnodes. Larger patient populations should be considered in future research to comprehensively assess the efficacy of ICG-FI. This systematic review serves as a valuable resource for researchers and clinicians interested in utilizing ICG-FI for SLN detection in colorectal cancer, yet it also highlights the need for further standardization in this area of study.

Colorectal II

Hirschsprung Associated Enterocolitis (HAEC) in Patients after Transanal Pull Through – A Retrospective Analysis of 24 Years

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Background: Hirschsprung associated enterocolitis (HAEC) is one of the most severe known complications of Hirschsprung's disease, both pre- and postoperatively. Current understanding of the pathogenetic mechanism is dysmotility with microbial dysbiosis, altered intestinal barrier function and impaired mucosal immune response. Typical clinical findings of the intestinal inflammation are fever, abdominal distention, diarrhea and sepsis.
Aims: To explore the efficacy of consequent postoperative bougienage and consequent long-time follow-ups to reduce the frequency of HAEC.
Methods: A retrospective analysis involving 53 patients who underwent transanal pull through (with and without laparoscopic mobilization) between 1999 and 2023 at our institution was conducted. Rigorous follow-up protocols were implemented, incorporating regular bougienage sessions during the initial three months postoperatively. Patient records, including clinical notes and diagnostic tests, were carefully reviewed to assess the incidence of HAEC.
Results: Among our cohort, out of the 53 children, only one confirmed case of postoperative HAEC was documented. Another case was suspected but never confirmed. This remarkably low HAEC rate of 4% in postoperative cases highlights the potential benefits of our implemented bougienage strategy and consequent regular follow ups with early detection of stenosis and constipation as well as its treatment in preventing HAEC following transanal pull through.
Conclusion: Consequent postoperative bougienage, implemented in a meticulous follow up regimen, has proven to be a promising approach to reduce the risk of Hirschsprung Associated Enterocolitis following transanal pull through procedures.

Spinal Anesthesia Decreases Pain and Total Hospitalization Costs but not Ileus after Colon Surgery: A Prospective Study

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Background: Spinal anaesthesia (SA) as an adjunct to general anaesthesia has been shown to improve perioperative pain management after colorectal surgery. A subsequent reduction of opioid analgesics might further shorten postoperative ileus and costs in colorectal surgery.
Aims: We aimed to assess the impact of spinal anaesthesia on pain control, postoperative ileus and costs after colorectal surgery.
Methods: Starting in June 2021, all patients undergoing colorectal surgery at our center were offered SA in addition to general anesthesia in order to improve pain control. Patients with contraindications to SA or patients refusing SA were commonly managed with opioids in addition to basic analgesics. Data of consecutive patients undergoing elective, laparoscopic colorectal resections not receiving an ostomy between October 2021 and April 2024 were entered into a prospective database.
Results: Our analysis includes a total of 170 patients (112 with SA and 58 patients without SA). The majority of patients was female in both groups (54% vs. 60%, p=0.399). Laparoscopic sigmoid resection was most frequently performed in both groups (66% vs. 67%, p=0.938) followed by right hemicolectomy (21% vs. 19%, p=0.850). Spinal anaesthesia was associated with a decreased median numeric rating scale for pain at 3h (0 vs 5, p= 0.009), 6h (2 vs. 3, p=0.004) and 24h (2 vs. 5, p=0.012) following surgery. There was no difference in median time-to-flatus (27h vs. 27h, p=0.355), time-to-stool (67h vs. 71h, p=0.245) and time-to-normal diet (62h vs. 67h, p=0.155) after surgery. SA was associated with a decrease in hospital length of stay (6 days vs. 7 days, p=0.038) and total hospitalization costs (16 485 CHF vs. 18047 CHF, p=0.044).
Conclusion: Spinal anesthesia improves postoperative pain control and is associated with a decrease in hospitalization costs and length-of-stay. There was not impact of SA on return of bowel function.

Improving Compliance and Satisfaction With Quality Coffee Intake to Enhance Bowel Recovery After Colorectal Surgery

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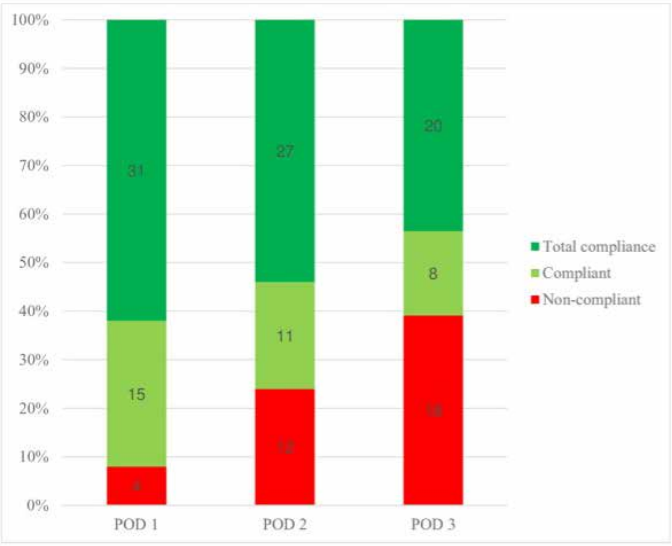
Background: Coffee is a simple, safe, and inexpensive method to prevent post-operative ileus (POI) after digestive surgery. However, uptake of coffee in clinical routine is variable, standardization challenging and compliance unknown.
Aims: This study aimed to determine whether serving freshly brewed, high-quality, and flavorful coffee could improve patient compliance and support the routine implementation of coffee as a post-surgical intervention.
Methods: In this prospective monocentric single arm study, we proposed to every patient undergoing elective colorectal surgery 3 daily doses of freshly made coffee with a capsule system over 3 days. Primary endpoints were compliance (x/total possible doses) and reasons for non-compliance. Secondary outcome was satisfaction of patients using a visual analogue scale (VAS: 0-10).
Results: 50 patients were included for analysis. Median postoperative coffee consumption was 6 (IQR 5-8) during the first three post-operative days (POD) and was not modified after exclusion of patients with POI (n=5). Median compliance was 78% (IQR 56-100) and 35 patients (70%) drank more than 2/3 of possible doses. Compliance decreased post-operatively by POD 2 (Figure 1). The main reason for non-compliance was nausea (n= 28) (Table 1). Patients' satisfaction with the coffee was high (mean VAS 8.2 ±1.6).
Conclusion: We achieved high levels of compliance and satisfaction by offering a standardized yet personalized and freshly brewed coffee, paired with an enjoyable moment. Integrating therapeutic interventions with positive and enjoyable experiences demonstrates a promising strategy to enhance adherence to postoperative measures.

Figure 1. Compliance



The figure displays compliance to the suggested coffee schedule (3x/day). Compliance was calculated as actual intake compared to the maximal possible dose (= total compliance). Patients who consumed two or more doses (>66%) were considered as compliant (green columns). Absolute number of patients displayed within columns. POD, Post-operative day.

Table 1. Reasons for non-compliance for each missed coffee dose (n, %)

Nausea	28 (24)
Ileus with gastric tube	21 (18)
Patient not in the mood	13 (11)
Unknown reason	13 (11)
Two coffees are enough	11 (9)
Coffee not proposed by nurse	8 (7)
Disgused	6 (5)
Pain	5 (4)
Too late for coffee	5 (4)
One coffee is enough	5 (4)
Too much nursing	1 (1)
Fatigue	1 (1)
Problem with machine	1 (1)
Other reason	1 (1)
Total	119

The table shows reasons for non-compliance among all patients (n=50) provided by patients in the diary after each missed dose. They are expressed in absolute number and percentage (total of 119 missed doses)

Side-to-End Colorectal Anastomosis Using the Da Vinci Xi Linear Stapler

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Background: The side-to-end colorectal anastomosis technique is widely used in robotic colorectal resections. The colon is incised, the circular stapler anvil is inserted antimesenterically, and the colon is closed and transected distally with a linear stapler. The anastomosis is completed laparoscopically by transanal introduction of the circular stapler and docking it to the anvil. Standard laparoscopic linear staplers are commonly used for colon closure.
Aims: This study evaluates the feasibility and safety of using the da Vinci Xi Sureform-60 linear stapler extracorporeally for side-to-end anastomoses and assesses its potential to reduce complications and costs by eliminating the need for an additional laparoscopic stapler.
Methods: The da Vinci Xi Sureform-60 linear stapler was routinely used for rectal transection and side-to-end colorectal anastomoses in robotic left colectomies/high anterior resections (for colon cancer or diverticulitis) and low anterior resections (for rectal cancer). A modified technique enabled the extracorporeal use of the stapler for colon closure and transection. This method was applied in 139 robotic colorectal resections performed between April 2018 and August 2024.
Results: The cohort included 74 females (mean age 61.46 years) and 65 males (mean age 60.58 years). No intraoperative complications occurred. Postoperative complications included 2 cases of anastomotic bleeding (1.44%) and 7 anastomotic leaks (5.04%), all associated with the circular staple line. No complications were attributed to the linear staple line.
Conclusion: The extracorporeal use of the da Vinci Xi Sureform-60 linear stapler for side-to-end anastomoses is feasible, safe, and cost-effective. Further studies with larger patient cohorts are needed to validate these findings.

Right Hemicolectomy for Low-Grade Appendiceal Mucinous Neoplasm (LAMN). Is it Necessary?

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Background: Low-grade appendiceal mucinous neoplasms (LAMN) are rare appendiceal tumors characterized by a wide spectrum of clinical presentations and prognoses. Although the prognosis for LAMNs confined to the appendix is generally favourable, there remains a potential risk of progression to pseudomyxoma peritonei (PMP) and metastases. Historically, this risk has often led to extensive surgical resections for localized LAMNs, including ileocecectomy or right hemicolectomy. The rarity of these neoplasms has contributed to the absence of standardized surgical management guidelines, often leaving decisions to the surgeon's discretion.
Aims: The aim of this study was to assess the necessity of performing a right hemicolectomy in the management of localized LAMNs.
Methods: A comprehensive literature search was conducted across PubMed, Cochrane Library, Web of Science and Google Scholar databases to identify articles reporting cases of localized LAMNs treated with right hemicolectomy and with histopathological assessment of lymph node status. Studies involving cases without right hemicolectomy, with PMP or tumors other than LAMN, or lacking lymph node involvement data were excluded.
Results: A total of 21 articles published between 2009 and 2024 were included, reporting 99 cases of right hemicolectomy (44% open, 28% laparoscopic, 28% not reported). None of the cases had lymph node involvement upon histopathological examination. Only one patient underwent cytoreductive surgery (CRS) and hyperthermic intraperitoneal chemotherapy (HIPEC) after the right hemicolectomy.
Conclusion: This is the largest systematic review of localized LAMNs treated with right hemicolectomy and with histopathological assessment of lymph node status. Based on our results, right hemicolectomy may not be necessary in the treatment of these tumors.

A Paradigm Shift Towards Centralized Colorectal Cancer Surgery – A Nationwide Audit Using Administrative Data on 34'106 Patients Across Ten Years

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Background: Oncologic colorectal surgery has evolved significantly, leading to increasing surgical complexity necessitating subspecialty training. Concepts such as total mesocolic excision, D2/D3 lymphadenectomy or the widespread acceptance of robotics are known factors driving centralization.
Aims: The aim of the present study is to analyze the distribution of colorectal cancer surgery by level of complexity and size / case numbers of hospitals involved. We sought to test whether a shift towards specialized cancer care with improved access to minimal-invasive techniques has occurred following political initiatives to centralize cancer care.
Methods: The national BFS (Swiss federal statistic office) database was queried including the years 2012-2022. Parameters of interest included case numbers per center, complexity of resections, patient age, cancer site, type of access and available outcome parameters including in-hospital mortality, morbidity, surgical site infections or reoperations.
Results: A total of 34'106 colorectal cancer resections (44.2% female) were performed during the study period. The majority of resections were performed in large, non-academic centers. Only three centers performed a median of more than 100 resections per year during the study period. The percentage of patients operated in smaller hospitals declined from 38% to less than 20%, with the greatest increase in oncologic resections noted in large cantonal hospitals (50% to 71%). 6.7% of resections were performed in patients <50 years of age (early-onset colorectal cancer) with a 30% increase in absolute terms over the analyzed period. A late but notable trend towards robotic access occurred on a national level.
Conclusion: Despite the previous acceptance of general surgery care for colorectal cancer patients, a paradigm shift towards centralized treatment has occurred in the past 10 years in Switzerland. This shift is accompanied by higher rates of robotic access and growing numbers of early-onset colorectal cancer, underscoring the increased complexity and contemporary expectance of specialized care in this frequent disease.

The Next Step of Surgical Benchmarking: Comparison of Outcome Data Using the Quality Improvement Cycle as Shown in Low Anterior Resections for Rectal Cancer

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Background: The aim of benchmarking is to compare one's own data with the published benchmark and to identify possible weaknesses in one's own practice. This comparison provides the basis for subsequent procedural changes to improve quality of outcomes, such as those in low anterior resections for rectal cancer.
Aims: The aim of this project is to establish an algorithm to analyse and compare data with benchmark values and to systematically analyse deviations and initiate change within a quality improvement cycle (Fig1). We tested the methodology with the previously published benchmark for low anterior resections [doi:10.1093/bjs/znac300].
Methods: All consecutive patients meeting inclusion criteria and treated surgically for a low and mid rectal adenocarcinoma in our department from January 2018 – December 2023 were

analysed. The subgroups of ideal and non-ideal patients were formed according to the definitions. Each benchmark for ideal and non-ideal patients was displayed in a separate diagram. The moving median was calculated from our results for recurrent periods of 12 months with the calculation was repeated in intervals of 3 and 6 months resulting in 21 and 11 periods, respectively (Fig2).

Results: A total of 98 patients was analysed (16.3% ideal patients). For each of the 27 benchmarks in ideal and non-ideal patients, moving medians were calculated. The example of readmission rate within is shown in Fig3. Deviations from the benchmark (ideal patients: periods 8-11; non-ideal: 3-7 and 16-17) were highlighted for step 4 of the improvement cycle. Root cause analyses were carried out to understand the underlying problem when there were deviations observed.

Conclusion: The methodology presented here enables surgeons to compare their data with published benchmarks in order to implement improvement initiatives where needed. Repeated cycles of comparison will ultimately lead to an optimization of outcome.

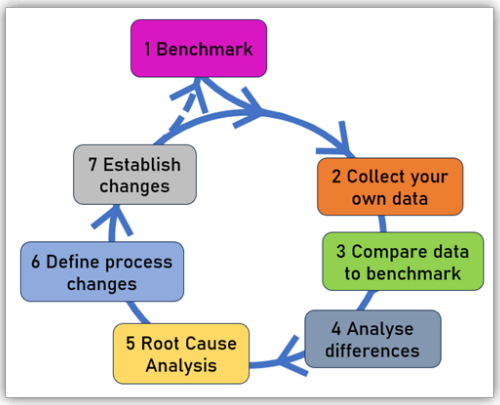

Figure 1

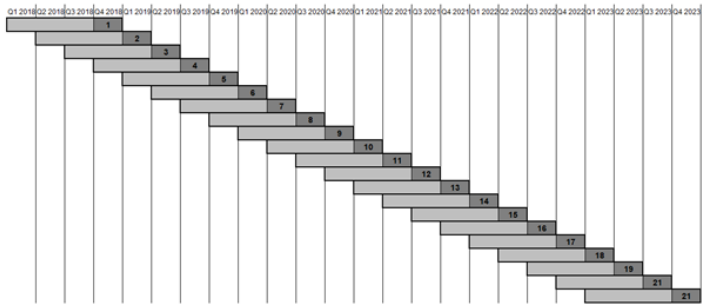

Figure 2

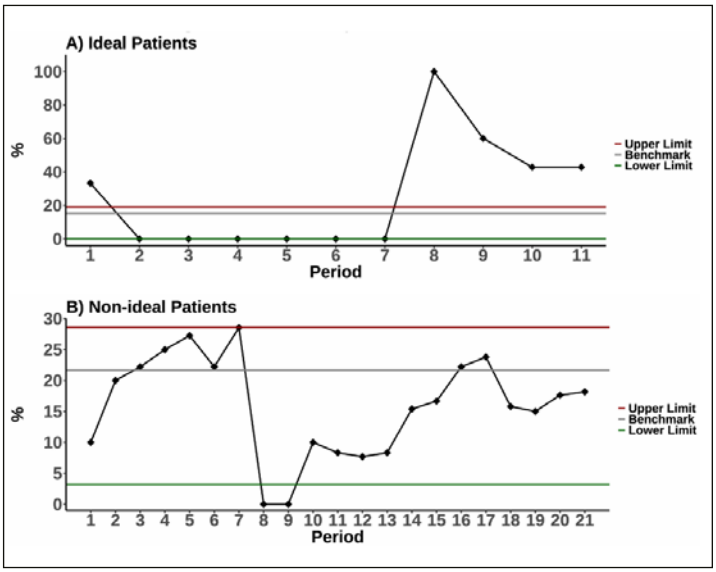

Figure 3

Long-Term Evolution of Skeletal Muscle Quantity and Quality After Curative-Intent Colorectal Surgery: A Retrospective Cohort Study

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Background: Computed tomography-based sarcopenia is a predictor of complications and recovery after major surgery. Little is known about sarcopenia markers in the long term after oncological surgery and their predictive potential regarding long-term survival.

Aims: The aim is to study the evolution of sarcopenia markers after colon cancer surgery.

Methods: This is a retrospective single-center cohort study including patients undergoing curative-intent surgery for colon cancer. Skeletal muscle attenuation (SMA), Skeletal muscle index (SMI), skeletal muscle radiation attenuation (SMRA), intermuscular adipose tissue (IMAT), and index (IMATI) were determined on axial CT slices at the level of the third lumbar space, before surgery and at 6, 12 and 24 months thereafter. Descriptive statistics were employed to describe the evolution of sarcopenia. Statistical correlation of sarcopenia markers and survival was analysed through Cox regression analysis.

Results: The final cohort consisted of 102 patients, with a mean age of 66 years old (SD:13), 65.7% males and 34.3% females. The mean overall survival in the observation period of 24 months was 22 months. Eighty-five patients were alive at 24 months (83.3%), and forty-five (44.1%) had a CT scan at all times. Sarcopenia markers remained stable over time, except SMRA, which diminished: mean DSMRA at 24 months: -1.1 (SD:5.3, p-value: 0.549) and -3.5 (SD: 4.5, p-value 0.179), in males and females, respectively. Age (HR 1.07, 95% CI: 1.00 – 1.14) and ASA score (HR 2.4, 95% CI: 1.00 – 5.7) were independent factors correlated negatively with survival. A positive correlation was found with the DIMAT and DIMATI at 12 months, HR: 0.79 (95% CI: 0.67 – 0.93) and 0.49 (95% CI:0.30 – 0.80).

Conclusion: The markers of muscle quantity (SMA/SMI) remained largely stable in the long-term follow-up after curative-intent colorectal surgery. SMRA, the marker of muscle quality, diminished in our cohort; Neither of the preoperative sarcopenia markers was predictive for survival.

Free Communication II – SGG

Outcome of Infrarenal Sealing With a Conformable Stentgraft System in Abdominal Aortic Aneurysms With Hostile Neck Anatomies

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Background: Infrarenal aortic aneurysms with hostile neck anatomies are often treated by fenestrated/branched endovascular aortic repair or by open repair. Both strategies show a higher complication and mortality rate in literature than standard infrarenal endovascular aortic repair (EVAR).

Aims: We analyzed the outcome of abdominal aortic aneurysms (AAA) with hostile neck anatomies (HN) treated by EVAR with a conformable stent graft system (CSS) at our institution.

Methods: From April 2019 until December 2024 all patients treated by CSS with HN in AAA were analyzed. We defined HN according to the Delphi Consensus (Marone et al, 2020) and assigned five risk factors (RF): neck length, width, angulation, thrombosis/calcification, conic/barrell shape. Technical success rate, short and long term outcome (30 day mortality, reintervention rate, sac behavior) were analyzed.

Results: 100 patients with HN were treated by CSS. Three patients showed a HN with 5 RF, 14 with 4, 20 with 3, 30 with 2, and 33 with one RF, respectively. The technical success rate was 99%. 29 patients showed an endoleak type IA (ELIA) in the angiogram and/or early postoperative CT scan, of these 28 ELIA were resolved after 6 weeks. 30-day mortality was 1%. The median and mean follow-up time was 14 and 20 months. 5 patients had no follow-up CT scan. 4 patients needed a neck related reintervention, two underwent cuff-implantations because of an early (patient with one RF) and a late onset ELIA (4 RF) and two RedoEVAR due to stentgraft migration (4 and 5 RF). In 72% of all patients, we achieved sac shrinkage and in 21% sac stabilization.

Conclusion: Infrarenal sealing in HN seems to be a safe option with a good outcome and acceptable reintervention rate. This treatment strategy should be considered more often and thus, avoiding higher risk surgical procedures.

Monocentric Experience on the Open Surgical Treatment of Aortic and Aorto-Iliac Aneurysms

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Background: Endovascular aortic aneurysm repair has become the standard for treating standard abdominal aortic aneurysms (AAA). For complex AAAs, such as juxta-/suprarenal, open surgical repair—entailing suprarenal clamping and, when necessary, reconstruction of the visceral/renal arteries—has historically been considered the gold standard. Nevertheless, newer fenestrated and branched endovascular techniques, provide a valid alternative. Recent ESVS guidelines recommend choosing between open and endovascular repair based on patient fitness, anatomy and preferences.

Aims: This study evaluates the results of open surgery for AAA of various complexities, focusing on complications and mortality.

Methods: This single-center retrospective study analyzed 185 consecutive patients who underwent open surgery for AAA and aorto-iliac aneurysms between 2017 and 2023. Primary outcomes were 30-days, and overall mortality, while secondary outcomes focused on postop-

erative complications, especially acute kidney injury (AKI).
Results: Among the 185 patients, 85.95% were male, with a mean age of 70 years. The majority (70.27%) had infrarenal aneurysms, while 27.57% were juxtarenal and 2.16% suprarenal. The mean aneurysm diameter was 59.35 mm, and 73.51% were fusiform. Of the procedures, 83.78% were elective, with 96.22% performed via median laparotomy. Clamping was infrarenal in 67.57%, inter-renal in 12.43%, and suprarenal in 20%, with a mean renal ischemia time of 33.5 minutes. The 30-day mortality was 0.54%, while overall mortality, on a mean follow-up of 38 months, was 8.11%. Postoperative complications included pulmonary insufficiency (16.22%), minor cardiac events (6.49%), acute limb (2.7%), colitis (2.16%), and spinal cord (1.08%) ischemia. AKI rate was 14.05%. 3.78% persist at 30-days, without long-term dialysis. Late complications included symptomatic incisional hernias (9.73%) and prosthesis infection (1.62%). Peri-operative reintervention rate (aortic and non-aortic related) was 8.11%.
Conclusion: Open surgery remains an effective and viable option for treating AAA, especially in complex cases unsuitable for endovascular repair. Managing cardio-pulmonary and renal function preoperatively is crucial for improving outcomes.

Exploring the Need for Standardization and Practice Recommendations in Physician-Modified Endografts for the Treatment of Abdominal Aortic Aneurysms: A Cross-Sectional Survey
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Background: Physician-modified endografts (PMEGs) are increasingly used to treat complex abdominal aortic aneurysms (cAAA), especially when custom-made grafts are unfeasible. Despite their growing use, PMEGs lack standardization and are influenced by practitioner experience and institutional resources.
Aims: To evaluate PMEG practices and identify areas for standardization to guide future expert-driven recommendations.
Methods: A global cross-sectional survey was conducted using the EDDDIE platform, with 31 questions across six sections covering practitioner demographics, indications, device selection, planning, technical preparation, and free-text comments. Invitations were sent to 4,286 vascular specialists, supplemented by targeted outreach through professional platforms and social media. Responses were collected anonymously and analyzed using descriptive statistics and subgroup analyses.
Results: Of the 1,542 respondendents who accessed the survey link, 227 from 30 countries completed it. Among participants, 40% reported limited PMEG experience, while 25% had performed over 30 procedures. PMEGs were most commonly selected for symptomatic cAAAs, ruptured juxtarenal AAAs, and perforating aortic ulcers (Fig.1). Confidence in addressing challenging anatomies (Fig.2), such as small target vessel diameters or severe stenosis, was significantly higher among practitioners with greater experience. Thoracic grafts were the most frequently used devices (52%), followed by bifurcated abdominal endografts (30%). Approximately 67% of respondents did not use 3D-printed templates, though 22% employed them routinely, often with in-house printing capabilities. Planning preferences for minimal proximal sealing zones varied widely, with 33% opting for at least 20 mm. Amongst technical modifications, preloading vessel fenestrations and using reducing ties showed significant variability based on practitioner experience.
Conclusion: The study underscores the differences in PMEG practices and the need for standardization to enhance patient safety and outcomes. Findings provide a foundation for further efforts to develope practice recommendations based on the areas of strong variability detected.

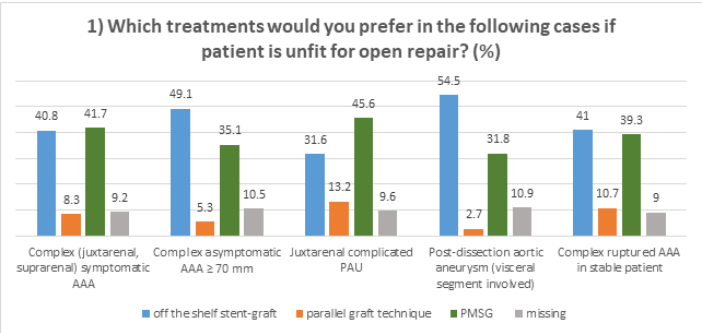

Figure 1. PMEG indication

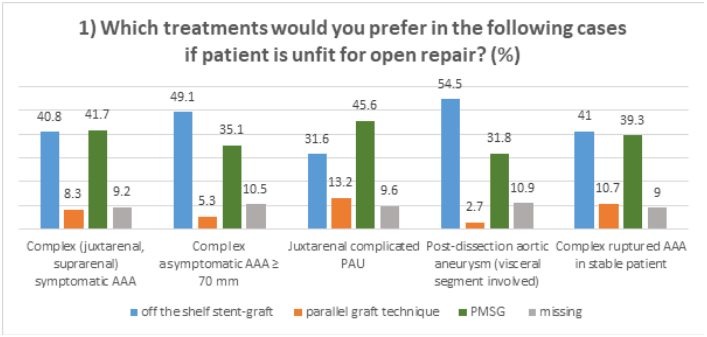

Figure 2. PMEG feasibility in difficult anatomies

Outcomes of Staged Endovascular Repair With FET, TEVAR, And f/bEVAR for Complex Aortic Pathologies: A Single-Centre Experience
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Background: A staged treatment approach combining open arch repair with Frozen Elephant Trunk (FET) technique, Thoracic Endovascular Aortic Repair (TEVAR), and either Fenestrated or Branched Endovascular Aortic Repair (f/bEVAR) has emerged as a less invasive treatment of thoraco-abdominal aortic aneurysms extent I to III. Nevertheless, this approach imposes significant physiological stress, with the risk of postoperative complications after open repair and rupture in the interval between interventions.
Aims: This study analyses the early and late major adverse events (MAEs), including spinal cord ischemia (SCI) and stroke, target vessel instability, reinterventions and mortality rates after this combined treatment.
Methods: This is a single-centre retrospective study conducted in a high-volume tertiary aortic centre between January 2017 and December 2024. Patients treated with a combination of FET, TEVAR and f/bEVAR were included. All included patients had at least six months of follow-up. Outcomes were early and late major adverse events (MAEs), including spinal cord ischemia (SCI) and stroke, target vessel instability, reinterventions and mortality rates.
Results: During this period, 500 patients received FET. 100 had afterwards TEVAR for distal FET extension. Twelve patients (seven males) with a mean age of 68.5 ± 6 years received an additional f/bEVAR. Spinal cord ischemia, stroke and 30-day mortality rates were 17% (2/12), 8% (1/12) and 8% (1/12), respectively. Liquor drainage was performed in 17% (2/12) patients. Two patients died during follow-up, one of which was aortic related. Two patients required re-intervention during follow-up: one due to type Ib endoleak and another due to bridging stent occlusion of the truncus coeliacus and superior mesenteric arteries.
Conclusion: The staged approach combining FET, TEVAR, and FEVAR or BEVAR provides a feasible and durable solution for complex aortic diseases, with low mortality, acceptable complication rates, and low rate of target vessel instability. Further studies are needed to confirm long-term durability and safety.

Patterns of Rupture After Endovascular Aortic Repair
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Background: Rupture of abdominal aortic aneurysm (AAA) after endovascular aortic repair (EVAR) is rare but represents a critical treatment failure. It poses a significant risk to patient outcome.
Aims: The objective of this study was to investigate incidence, causes, treatment options and clinical outcome in patients with ruptured AAA after EVAR (raE) in a single center cohort.
Methods: Out of all patients after EVAR between June 2008 and December 2024, we identified those sustaining raE. Data collection included endoleak (EL) type, treatment modality, technical success rate and 30-day mortality.
Results: 494 patients after EVAR were included in our surveillance program. Six cases of raE (1.2%) occurred. The majority of patients underwent regular follow-up imaging after primary EVAR, with the last surveillance on average one year before rupture (range 0.1-3.3 years). The follow-up was uneventful with aneurysm shrinkage in five patients (83%) (mean shrinkage 10mm, range 0-27mm). No graft migration could be discerned. The mean time interval between initial repair and raE was 3.9 years. In two patients the cause of raE was an EL type I A, in two an EL type I B and in two an EL type III. One patient underwent open repair, five were treated endovascularly. Technical success rate was 100%, 30-day mortality 0%.
Conclusion: Follow-up after EVAR is an important pillar of successful endovascular aneurysm treatment. But even with regular monitoring after EVAR and imaging showing sac shrinkage, there is a residual risk of aneurysm rupture, with EL type I and III leading to raE. The patients can be treated mainly endovascularly with a good outcome.

Branched Endovascular Aortic Repair After Failed Fenestrated Endovascular Aortic Repair: Technical Note

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Background: Durability after fenestrated/branched endovascular aneurysm repair B/FEVAR remains a concern, as both techniques have unique challenges due to their complex nature. Late type I or III endoleak (EL) is a rare complication after FEVAR. We describe the use of BEVAR with inner branches after failed FEVAR.
Case Presentation: Three male patients (#1 82, #2 80 and #3 68 years old) presented with an expansion of the aortic sac after FEVAR with type Ia, type III and Ib, respectively. One custom-made inner branch (#1) and two (#2 and #3) off-the-shelf E-inside branched grafts (Artivion, NW, Kennesaw, GA 30144, USA) were used. Patient #1 presented with type Ia EL after previous 3x FEVAR due to juxtarenal AAA. Patient #2 had thoracic EVAR and 4- FEVAR for thoracoabdominal aortic aneurysm type III. Patient #3 was treated with a thoracic EVAR and with one fenestration physician-modified FEVAR for truncus coeliacus (TC) due to subacute Stanford B aortic dissection. Three months later patient presented to the emergency department with back pain and aneurysm progression. The TC branch and the bridging stent to TC could not be catheterized due to limited intraortal space, however, perfusion was provided via collaterals. Begraft Plus covered stents (Bentley, Hechinger, Germany) were used as bridging stents for all target vessels. Operating and fluoroscopy times were 325, 291, 322, and, 175, 133, and 127 minutes, respectively. Patient 1# died six months after the procedure due to non-aortic related causes; patient #2&3 completed one-year and 6-months follow-ups without endoleak or target vessel instability.
Conclusion: Failed fenestrated repair can be successfully treated with custom-made or off-the-shelf branched devices with inner branches. The above-described approach is technically demanding but allows a novel-treating alternative.

Intentional Creation of Gutter Leak to Reduce RenovVisceral Ischemia During Urgent Paravisceral Aortic Aneurysm Treatment With In Situ Laser Fenestration: Technical Note

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Background: Emergent repair of paravisceral aortic aneurysms (pAA) with in situ laser fenestration (ISLF) technique is associated with renovisceral ischemia due to the need to cover the target arteries prior to ISLF creation. We describe two alternative strategies of temporary gutter leak creation to ensure renovisceral perfusion during ISLF repair of symptomatic pAA.
Case Presentation: A 79-year-old and an 83-year-old patient, deemed unfit for open repair, presented with a symptomatic pAA. A Cook Zenith Alpha tubular endograft (Cook Medical LLC, Bloomington, IN, USA) was used in both cases. All visceral vessels were pre-stented to serve as a guide marker during ISLF. Prior to the deployment of the endograft, a Cook Flexor 8F sheath (Cook Medical LLC, Bloomington, IN, USA) was placed in the superior mesenteric artery (SMA) (patient #1) (Figure 1), and a 6 x 200 mm angioplasty balloon (Figure 2) was placed between the endograft and the aortic wall (patient #2). Angiograms after visceral coverage confirmed perfusion of the renovisceral arteries through gutter endoleaks. Thereafter, ISLF and bridging stenting for SMA and the renal arteries were performed before the removal of the sheath or PTA balloon to stop the gutter leak. Both patients did not experience any intra- and postoperative complications. No clinical or laboratory signs of renovisceral malperfusion were detected.
Conclusion: The above-described techniques for gutter leak creation during emergent pAA repair with ISLF can potentially reduce reno visceral ischemia and increase the ISLF technique's safety.

Figure 1. Graphic presentatin of 8F sheet inside the SMA with retrograde filling

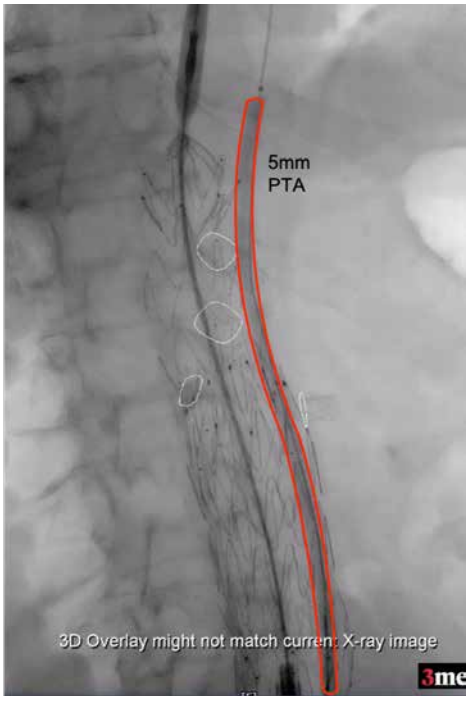

Figure 2. Graphic representation of deployed graft and inflated 6x200mm PTA balloon

GORE® EXCLUDER® Iliac Branch Endoprosthesis: Relevance of Current Instructions for Use

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Background: The GORE® EXCLUDER® Iliac Branch Endoprosthesis (GoIBE) provides endovascular treatment of common iliac artery or aortoiliac aneurysms. It includes an iliac branch component and an internal iliac component (IIC) extending into the internal iliac artery (IIA). The latest instructions for use (IFU) were published in February 2022.
Aims: This study evaluates the utility of the current IFU by comparing outcomes between GoIBD implanted within and outside IFU criteria.
Methods: A retrospective review of patients undergoing GoIBE surgery between 2015 and 2023 at our institution was conducted, focusing on intraoperative success, postoperative outcomes, and reinterventions. The IFU criteria were analyzed, including femoral/iliac access, presence of aortoiliac or common iliac artery aneurysm, adequate sealing zones of the internal and external iliac artery, proximal landing zone diameter of the common iliac artery and use of an aortoiliac endoprosthesis.
Results: Among 75 patients with 94 GoIBE implanted, 20 met all IFU criteria, while 74 were implanted outside IFU. In total 22 reinterventions were performed. 18 in the outside-IFU group and 4 in the within-IFU group (p=0.685). Postoperative complications were observed in 5 cases, each belonging to the outside-IFU group (p=0.581). Additionally 5 intraoperative complications occurred, all in the outside-IFU group (p=0.581). Two intraoperative IIA occlusions were recorded, one additional occlusion occurred during follow-up.
Conclusion: There were no significant differences in intraoperative or postoperative complication rates between devices implanted within or outside IFU criteria, suggesting that deviations from the IFU do not inherently compromise procedural outcomes. Follow-up surgery rates were also comparable. Implanting the GoIBE outside IFU appears to be a safe and effective option, allowing for the preservation of the internal iliac artery in most cases.

Free Communication – SGH

Force Loss and Distribution of Load in Hands With Carpal Tunnel Syndrome

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Background: Carpal tunnel syndrome is the most common entrapment syndrome of a peripheral nerve and is causing pain, sensory deficits and atrophy of the thenar.
Aims: The functional deficit due to paralysis of the median nerve is not yet fully understood. For a better knowledge of the impact due to carpal tunnel syndrome, the force and contact area of the fingers, thumb and palm in addition with the load distribution of patients with carpal tunnel syndrome were subjected to a differentiated analysis.
Methods: For this clinical study, 30 patients with carpal tunnel syndrome were analysed by Manugraphy (Figure 1). The manugrahy sytem consists of 3 cylinders covered with pressure sensor matrices. The cylinders had circumferences of 100, 150, and 200 mm, corresponding to 32, 48, and 64 mm diameters, respectively. The grip strength and the contact area of the affected hand were compared to the healthy opposite hand with regard to the median difference

for three different cylinder sizes. In addition, the areal forces of seven anatomical areas of the hand (thumb, four fingers, thenar and hypothenar) were analysed.
Results: The grip force of the affected hand was significantly reduced with 11-16% compared to the opposite hand for the 100 and 200 mm cylinder, and 4% for the 150 mm cylinder. The contact area between hand and cylinder was reduced by 5% (100 mm), 3% (150 mm) and 2% (200 mm) due to muscle atrophy (Figure 2). Analysis of the areal forces showed the most significant deficit in the middle and ring finger (Figure 3).
Conclusion: Although the thumb and thenar are considered most severely affected by carpal tunnel syndrome, the force deficit was most severe in the middle and ring finger. This is probably caused by sensitive impairment and the fact, that the stabilisation of the thumb is affected by the carpal tunnel syndrome and therefore results in a reduced force transmission.

Figure 1. The Manugraphy system

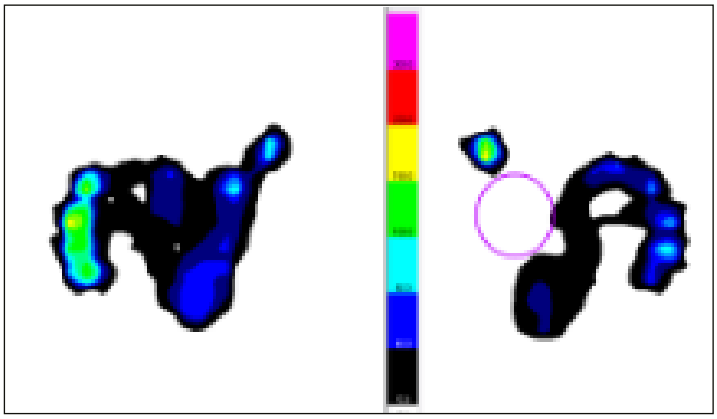

Figure 2. Load distribution of both hands, the right hand shows deficits due to carpal tunnel syndrome and no contact area for the thenar

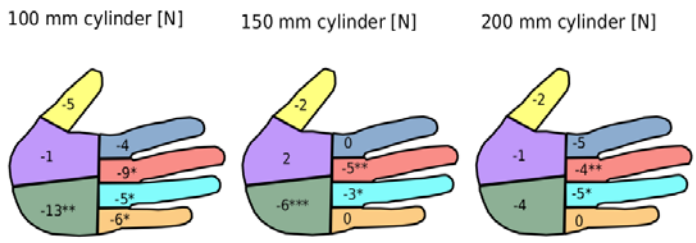

Figure 3. Difference of forces between the affected and unaffected hand generated by thumb, fingers, thenar, and hypothenar recorded with cylinders of 100 mm, 150 mm and 200 mm circumference

Hand area	100 mm cylinder median [N]	100mm cylinder 95% CI [N]	150 mm cylinder median [N]	150mm cylinder 95% CI [N]	200 mm cylinder median [N]	200mm cylinder 95% CI [N]
Thumb	-5	-8 to 2	-2	-6 to 3	-2	-7 to 5
Index finger	-4	-11 to 3	0	-13 to 5	-5	-10 to -1
Middle finger	-9 *	-18 to -4	-5 **	-10 to 0	-4 **	-9 to -2
Ring finger	-5 *	-16 to 3	-3 *	-7 to 0	-5 *	-9 to 0
Little finger	-6 *	-9 to 0	0	-3 to 2	0	-3 to 3
Thenar	-1	-8 to 10	2	-3 to 5	-1	-12 to 4
Hypothenar	-13 **	-36 to -6	-6 ***	-8 to -1	-4	-8 to 4

Force differences in newtons; * p ≤ 0,05; ** p ≤ 0,01; *** p ≤ 0,001

Table 1. Difference of forces between the affected and unaffected hand generated by thumb, fingers, thenar, and hypothenar recorded with cylinders of 100 mm, 150 mm and 200 mm circumference

3D-Planned Intraarticular Corrective Osteotomy of Malunited Bennett's Fracture Using Patient-Specific Guides: Clinical Outcomes and Postoperative Assessment of Reconstruction Accuracy

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Background: Malunions of Bennett fractures can cause deformities and functional impairments. Intra-articular corrective osteotomy, though demanding due to the small fragment size, is the only reconstructive treatment. 3D planning and patient-specific guides can enhance accuracy and aid in such cases.
Aims: This study evaluated the feasibility, post-op joint congruency, and functional outcomes of first metacarpal base corrective osteotomies using three-dimensional (3D) planning and 3D-printed patient-specific instruments (PSI).
Methods: We report outcomes of 14 patients who underwent corrective osteotomies at the base of the first metacarpal for malunited Bennett's fractures. Computer-assisted 3D preoperative planning, using the contralateral hand as a template, facilitated the creation of 3D-printed patient-specific guides for intraoperative navigation. Articular step correction and reduction of first metacarpal subluxation were assessed on follow-up CT scans. In addition, clinical assessments, including range of motion (ROM), pain, and grip and pinch strength, were performed at 6 months or the final follow-up. Postoperative complications were also documented.
Results: 14 patients (mean age 29.1 ± 11.9 years, range 14–56) underwent corrective osteotomy at the base of the first metacarpal, with a mean follow-up of 18.1 ± 16.8 months (range 2–60 months). Follow-up CT scans in 13 patients confirmed successful corrections, good joint congruency, and regular osseous consolidation. The mean articular step-off decreased significantly from 1.9 ± 0.4 mm preoperatively to 0.2 ± 0.1 mm postoperatively. One patient required revision surgery with a carpometacarpal (CMC) I arthrodesis due to screw cut-out. At 6 months or final the follow-up, ROM improved significantly, and strength returned to levels comparable to the contralateral side.
Conclusion: Our results suggest that precise reductions for corrective osteotomies of the first metacarpal base, following malunion of Bennett fractures, can be achieved using 3D planning and PSI. This technique also leads to significant clinical improvements and high patient satisfaction.

Carpal Tunnel Syndrome, Trigger Finger, And ATTR Amyloidosis: When Should a Biopsy Be Performed?

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Background: Carpal tunnel syndrome (CTS) and trigger finger (TF) may be early symptoms of transthyretin amyloidosis (ATTR), which can lead to cardiac involvement (CA) with heart failure, atrial fibrillation and bundle branch block within 5-10 years. Previous studies reported, 2.3% to 34% of ATTR positive biopsies in the context of carpal tunnel release.
Aims: The data collected in our clinic in 2022 was low for ATTR positive samples compared to the literature. We are looking for the causes, re-analysing our patient population based on risk factors and aim to make recommendations on when to do a biopsy.
Methods: Our previous data showed ATTR positivity in biopsies in 3 out of 34 patients (9%) due to increased synovial tissue in carpal tunnel and A1 pulley release. In this paper re-analysis was performed for risk factors (RF) such as bilateral CTS or TF in men > 50 and women > 60 years.
Results: 12 out of 34 patients fulfilled the RF of bilateral CTS/ TF and the defined age limits. 3 out of these 12 patients were ATTR positive (25%). Other risk factors identified in the literature include spinal stenosis, distal biceps tendon rupture, hearing loss, atrial fibrillation, heart failure, cardiomyopathy (as sign of occult CA) and positive family history. In middle-aged and older patients, the ATTR wild-type (also known as senile systemic amyloidosis) is usually common, so that the incidence of the hereditary types was negligible. A specimen size of > 1 cm^2 of synovia is recommended.
Conclusion: Analysis by RF showed an ATTR positivity of 25% like those in the literature. Amyloid

deposition does not cause synovial proliferation, so biopsy should be performed in men > 50 and women > 60 years with bilateral CTS or TF. RF-based patient selection helps to diagnose ATTR amyloidosis early, specific and cost-effectively.

Association Between Distal Radius Fractures and TFCC Injuries: The Frequency of Such Injuries and Their Role in Clinical Practice

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Background: Distal radius fractures belong to the most common fracture type. Injuries to the triangular fibrocartilage complex (TFCC) can occur as an associated injury and are a predictor of a worse outcome. They are a cause of persistent (ulnocarpal) papin, decreased grip strength, and limited range of motion. In particular, the foveal insertion of the TFCC plays a crucial role in the stability of the distal radioulnar joint (DRUJ).
Aims: There is still no unified guideline for the treatment of TFCC injuries. This presentation aims to draw attention to TFCC injuries, provide an overview, and offer possible treatment recommendations.
Methods: The PubMed database was searched using the keywords "distal radius fracture, TFCC." A total of 73 studies were identified in the past 10 years. Of these 73 studies, 19 were included in this review.
Results: The majority of studies based solely on MRI diagnostics showed a prevalence of TFCC injuries ranging from 54% to 97%. Arthroscopy-based studies observed TFCC injuries in 17% to 90% of cases. Additionally, DRUJ instability was found in 26% of cases. Two studies described arthroscopy performed during follow-up. A reoperation was conducted due to ulnocarpal pain. Lesions of the TFCC were found in up to 80% of cases.
Conclusion: Diagnosis and treatment of distal radius fractures and TFCC injuries require careful consideration of the patient's individual needs and the selection of the most suitable treatment options to achieve optimal functional outcomes. Early diagnosis and tailored therapeutic approaches are essential for reducing the risk of chronic pain and functional limitations. Not every TFCC injury requires surgical intervention, but an accurate diagnosis and the initiation of conservative treatment measures benefit the patient and improve postoperative care. Against this background, a protocol like the "WRIST" protocol (published by Goorens) could provide assistance in clinical practice.

Vascularized Composite Allotransplantation in Switzerland: From Bench to Bedside

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Background: Vascularized composite allotransplantation (VCA), such as hand and face transplants, offers reconstructive solutions for patients with severe tissue loss. However, the necessity for long-term systemic immunosuppression to prevent graft rejection poses significant risks, including opportunistic infections and metabolic disturbances, limiting the broader application of VCA. To address these challenges, our research group has investigated local immunosuppression strategies aimed at minimizing systemic drug exposure while effectively preventing graft rejection.
Aims: We aim to present an overview of our research on localized drug delivery systems (DDS) that offer targeted immunosuppression within the graft site, thereby reducing systemic toxicity and enhancing graft survival, and provide an overview of clinical VCA experience worldwide.
Methods: Over the last 15 years we designed biomaterial-based DDS, including tacrolimus-loaded hydrogels and in situ forming implants, intended for local, on-demand immunosuppressive drug release. These systems were tested in preclinical models, such as rat hind-limb and porcine VCA models, to assess their efficacy in delivering high local concentrations of immunosuppressive agents while minimizing systemic exposure. We also provide an up-to-date overview of clinical VCA, focusing especially on hand transplantation.
Results: Our work demonstrated that local delivery of tacrolimus via DDS effectively prolonged graft survival in VCA models. Notably, the localized treatment reduced T-cell infiltration and neutrophil extracellular trap formation within the grafts while systemic drug levels remained low, suggesting a reduction in potential off-target toxicity. These findings support the feasibility of local immunosuppression to mitigate the adverse effects associated with systemic immunosuppression in VCA.
Conclusion: The Bern VCA research group's investigations into local immunosuppression strategies have shown promising results in preclinical models, indicating that targeted drug delivery systems can effectively prevent graft rejection while minimizing systemic toxicity. These advancements may pave the way for safer and more widespread clinical application of VCA and potentially first clinical cases in Switzerland.

Education

The Burden of Unwanted E-mails in Academic Surgery

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Background: Unwanted e-mails (UEM) constitute a futile burden for academic surgeons. However, data investigating the magnitude of this concern and its determinants are lacking.
Aims: To assess the burden of UEM in academic surgery and to identify factors associated with a high burden of UEM.
Methods: This was a prospective cross-sectional study conducted in a division of visceral surgery of a tertiary center, between May 1-31, 2024. Participants included physicians of the division; UEM received in the institutional e-mail box by the participants during the study period were collected and examined. The primary outcome was the absolute number of UEM whereas secondary endpoint was the ratio of UEM/total number of e-mails. High burden of UEM was defined as participant UEM number ≥percentile 75 of overall UEM number.
Results: Participants included 36 physicians: 13 residents, 14 fellows and 9 consultants. A total of 2934 UEM were examined; among them, 1707 (58.2%) solicited scientific contributions, including invitations to submit manuscripts (n=910, 31%). Number of UEM per participant was heterogenous, ranging from 0 to 601, with a median of 16 (0-106). The latter also showed differences between residents 0 (0-1), fellows 34 (5-70), and consultants 147 (101-402) ($p<0.001$). Finally, high burden of UEM was associated with surrogates of experience and research activity, such as age (OR, 1.21; 95% CI, 1.04-1.41; p=.011), board certification in visceral surgery (OR, 11.50; 95% CI, 2.01-65.91; p=.006), number of peer-review publications (OR, 1.12; 95% CI, 1.01-1.24; p=.027) or H-index (OR, 1.36; 95% CI, 1.07-1.73; p=.012).
Conclusion: UEM represent a major burden for academic surgeons. Exposure to UEM varies proportionally to professional experience and research activity.

Future Demand for Visceral Surgeons in Switzerland: An Empirical Study

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Background: Switzerland's aging population and evolving healthcare demands are expected to increase the need for specialized surgeons. Meanwhile, ongoing discussions about reduced working hours for residents and a growing trend toward minimally invasive and outpatient procedures may influence training opportunities and inpatient procedural volumes.
Aims: The aim of this study was to evaluate workforce, training, and procedural volumes in surgery to predict the future demand for visceral surgeons in Switzerland.
Methods: This study analysed national datasets from 2009 to 2023 to assess trends in medical school enrolments, recognised medical diplomas, residency positions, and the availability of general and visceral surgeons. Additionally, surgical procedure volumes were evaluated, with a particular focus on pancreatic surgery as a proxy for complex cases. Linear regression models projected developments up to 2040, incorporating Swiss population growth forecasts.
Results: The number of medical diplomas – both Swiss-issued and foreign-recognized – showed an increase from 2'725 in 2011 to 4'647 in 2023. Projections indicate a further rise, reaching over 6,000 by 2040. The overall pool of general surgeons increased from 1'127 in 2009 to 1'557 in 2023, with the proportion of women rising from 10.6% to 24.9% in the same interval. Visceral surgeons numbered 303 by 2023 (11% female), and forecasts suggest a 50% increase to approximately 462 by 2040. Pancreatic surgery cases grew by 14.5% between 2016 and 2023 and are projected to increase by an additional 25% by 2040. However, the number of surgeries per visceral surgeon is projected to decline steadily over the next years.
Conclusion: The projected expansion of the surgical workforce seems to overcompensate for the growth in Switzerland's population. In combination with a shift towards outpatient care and reduced working hours, procedural exposure could become critical in visceral surgery. Ensuring that training pathways and practice models adapt to these evolving demands will be vital to maintaining high standards of surgical care.

Automatic Identification of Teamwork Behaviors in the Operating Room

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Background: Accurate identification of intraoperative behaviors is crucial for assessing surgical performance, improving patient outcomes, and supporting surgical training. Traditional methods for evaluating intraoperative behaviors rely on experts' on-site observations or assessments of video recordings. Although these methods have been shown to be reliable, they are time-consuming, prone to bias, and limited in scalability. Video recordings of the operating room (OR), combined with methodological advancements in computer vision and machine learning, offer promising opportunities for automated, objective, and scalable behavior analysis.

Aims: This study explores the feasibility of automated approaches for assessing teamwork-related intra-operative behaviors in the OR. In a stepwise approach, we aim to automatically: 1) detect the positions and poses of the OR team members, 2) analyze movements and distribution patterns of the OR team, 3) determine their roles and functions, and 4) recognize structured team communication (e.g. team timeouts, briefings).
Methods: A multi-view OR dataset with over 100 hours of video recordings was created at a Swiss university hospital, featuring annotations of team interactions during real surgical procedures. Using deep learning-based video techniques, a multidisciplinary team of work psychologists, computer scientists, and surgeons detects and analyzes key events of interest.
Results: A framework for automatic video analysis was developed and validated using the created dataset. The experimental results show that our framework provides a valuable and efficient alternative to existing state-of-the-art approaches for both surgical role classification and team communication detection tasks.
Conclusion: We present a novel pipeline that automatically classifies the roles of the OR team members and detects behavioral team interactions. This work highlights the potential of automated approaches to revolutionize surgical practice and education by providing scalable, objective insights into non-technical skills.

Development of DocNote: A Tool that Automatically Generates Structured Medical Reports to Reduce Administrative Workload and Enhance Doctor-Patient Interactions

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Background: Efficient reporting of medical consultations is a persistent challenge in healthcare, with traditional methods such as manual note-taking and dictation tools often leading to inconsistent report quality and interruptions in doctor-patient interaction. To address this, we developed DocNote, an application that generates structured medical reports from audio recordings using cutting-edge speech-to-text and natural language processing (NLP) technologies. DocNote aims to accelerate admin tasks, improve report quality, and enable physicians to focus more on patients during consultations.
Aims: This work presents the design and development of DocNote, emphasizing its innovative features and potential contributions to medical practice.
Methods: Interviews and surveys with physicians identified pain points in reports accuracy and user experience. The tool underwent iterative prototype testing in clinical settings, with feedback driving refinements.
Results: DocNote employs local audio recording, followed by speech-to-text conversion using advanced natural language processing (NLP) algorithms to transcribe conversations into structured text. Then, we use state of the art Generative Pre-trained Transformers models, trained on medical data, to generate the most accurate report, respecting specialized medical jargon.
The application enables standardization through customizable templates, automatically formatting reports into predefined layouts to follow local requirements. Reports are stored locally and securely sent to physicians' professional email, ensuring compliance with privacy regulations. Ethical considerations include patient consent for recordings, confidentiality through local storage and secure transmission, and hosting on Swiss servers. As DocNote is not classified as a medical device, physicians must review and validate reports before signing. Implementation challenges, such as ensuring transcription accuracy in noisy environments and addressing linguistic nuances, were overcome through collaboration among developers, physicians, and security experts.
Conclusion: DocNote offers a novel approach to medical reporting, reducing administrative burdens and enhancing report quality while improving doctor-patient interactions. This study highlights how collaborative, user-centered innovation can address longstanding challenges in healthcare. Future studies will assess the tool's real-world impact on medical practice.

Figure 1. Capture d'écran 2025-01-16 à 17_53_35

The Avian Model as a Versatile and Cost-Effective Tool for Surgical Training Across Specialties

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Background: Five years after its 2019 validation, the avian tissue model for neonatal minimal access surgery (MAS) training was reassessed to evaluate its sustained effectiveness and realism. Unlike the original study, this evaluation included participants from pediatric and other surgical specialties.
Aims: The study aimed to reassess the model's realism and effectiveness for neonatal MAS training and explore its potential for broader applications in surgical training.
Methods: The study occurred during two events: an international MAS Skills Lab in August 2024 and a national MAS Skills Lab in September 2024. Twenty-six participants (16 females, 10 males) took part, including 17 pediatric surgeons and 9 from other specialties. Using 3 mm MAS instruments on fresh chicken cadavers with balloon trocars, participants performed laparoscopic exercises such as adhesiolysis, cholecystectomy, and intestinal anastomosis. Feedback on the model was gathered via a 5-point Likert scale (MiSSES).
Results: Participants had varied experience levels: 23% had performed over 100 MAS cases, 15.4% between 50–100 cases, and 61.5% fewer than 50 cases. The model's perceived realism averaged 4.05 ± 0.10. Scores for specific features included 3.66 ± 0.09 for the abdominal wall, 3.85 ± 0.10 for the abdominal cavity, and 4.86 ± 0.09 for tissue dissection. Participants rated the model highly for improving laparoscopic knowledge (4.3 ± 0.90) and skills development (4.77 ± 0.07). Satisfaction scores highlighted its effectiveness in addressing challenges like trocar placement (3.64 ± 0.12), pneumoperitoneum (3.5 ± 0.10), and confined-space suturing (4.99 ± 0.08). Overall satisfaction with the model was rated at 4.9 ± 0.09.
Conclusion: The avian tissue model remains an effective and realistic tool for neonatal MAS training, reaffirming the findings of the 2019 study. Positive outcomes across multiple disciplines demonstrate its versatility, highlighting its potential as a valuable training tool extending beyond pediatric surgery to other specialties.

Gender Disparities on Editorial Boards of Digestive Surgery and Gastroenterology Journals: A Focus on H-Index and Journal Impact Factor

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Background: Despite a steady increase in the number of women trained in medicine, their representation remains significantly low at the head of department level, particularly in surgery. This disparity extends to academic careers.
Aims: This study aimed to determine if gender plays a role in the composition of editorial boards.
Methods: Surgical (digestive and general surgery) and gastroenterology journals were selected for inclusion from the Clarivate database. Editorial board Data for these journals were extracted from searches on open-source websites. The H-index of editors-in-chief was obtained via Google Scholar and Scopus. Journal Impact Factors were found on Clarivate InCites 2023.
Results: Of 2'542 editorial board members from 124 journals included for analysis, 18% of all editors (456/2542) and 10% (16/155) of editors-in-chief were women. No difference was found in editorial board composition across journals by specialty. The proportion of female editorial board members increased significantly with the journal impact factor ($p<0.05$). The average H-index of male editors-in-chief was 56.69, whereas it was 38.13 for female editors-in-chief ($p<0.05$).
Conclusion: Women are significantly underrepresented on surgical journal editorial boards, particularly in leadership positions such as editor-in-chief. While this disparity improves in high-impact journals, journal specialty has no apparent influence on composition. Differences in H-Indexes do not explain this disparity at editor-in-chief level.

Impact of Ergonomic Microbreaks for Surgeons: A Systematic Review

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Background: Surgeons face a risk of work-related musculoskeletal disorders (WMSDs). Repetitive movements and poor ergonomic conditions cause pain, particularly in the back, neck, arms, and shoulders. WMSDs not only impact surgeons' quality of life but also affect surgical performance, absenteeism, and healthcare costs. Intraoperative microbreaks (MBs) with active stretching exercises have been proposed to reduce WMSDs, fatigue, and to improve performance.
Aims: The aim of this review is to study the effects of ergonomic intraoperative microbreaks and to define the most efficacious intervention (length of MBs, interval duration, specific stretching exercises).
Methods: A systematic review of clinical trials evaluating physical or psychological impacts of microbreaks on surgeons, with a control group, was conducted in MEDLINE, Embase and Google Scholar from September to October 2024. Outcomes of interest included pain, discomfort, fatigue, dexterity, mental focus, and stress.
Results: Ten clinical trials were retained for final analysis (8 crossover trials and 2 randomized controlled trials), for a total of 284 participants. Methodology and assessed outcomes varied considerably between studies. 6 out of the 10 trials showed at least one improved outcome with the implementation of microbreaks. The most frequently assessed outcomes were pain and discomfort (improved in 5/8 studies), mental focus (improved in 3/3 studies), and accuracy (improved in 1/3 studies). Five studies evaluated operative duration, all showing that microbreaks did not prolong the overall time. No specific duration, interval, or set of exercises was identified as the most effective approach for microbreak implementation.
Conclusion: Most of the studies included show that microbreaks appear to have a positive impact on surgeons' well-being and performance. There is a need for standardization of interven-

tions and outcome measures. The long-term effects of microbreaks remain yet to be studied, and more data is also required to identify the most efficacious intervention.

From Observer to Contributor: How Do Our Trainees Perceive Their Tumor Board Participation?

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Background: Tumor boards are an integral part of modern medical practice, fostering multidisciplinary collaboration, however little is known about how trainees perceive their participation, how it benefits their training, or how they evolve into active contributors by the end of their training. Understanding these questions is essential for optimizing the educational value of tumor boards for future specialists.
Aims: This study aims to explore the experiences of trainees with thoracic tumor boards, to better understand their needs and thus help in improving the learning curve.
Methods: Using a constructivist paradigm and qualitative descriptive methodology, we interviewed trainees from thoracic surgery and pulmonology using an interview guide with open-ended questions. Data sufficiency was attained after six interviews. We used thematic analysis on the verbatim transcriptions to extract relevant themes capturing their experiences.
Results: We identified six main themes: (1) "The formal and standardized structure", which gives the trainees reassurance, as they can hold on to something familiar and relatable; (2) "Watching a play", portraying the feeling of being a passive observer; (3) "Being in a tornado", suggesting the gap in understanding, and rapid flow of information; (4) "The experts who already have the answer", highlighting the daunting nature of becoming an active participant; (5) "Struggling with the pace and information quantity", reflecting being overwhelmed with the complexity of tumor boards; and (6) "Losing the thread and feeling it's a waste of time", which implies that quantity without quality is noticeable and undesirable.
Conclusion: Trainees frequently struggle to understand and engage in tumor boards, often feeling like passive spectators in a complex, unfamiliar environment. These challenges impact their motivation and hinder the learning process. To improve trainee involvement, enhance their learning experience, and better prepare them for active participation in multidisciplinary care, educational interventions should be tailored based on real world information and the local context.

Effectivity of Peer-Assisted Learning in Training of Basic Surgical Skills for Medical Students: A Monocentral Study With 81 Medical Students in Switzerland

J. Gisiger[1], D. Hahnloser[1], D. Chatziisaak[2], G. R. Joliat[1], H. Teixeira-Farinha[1], V. Martins[1], L. Lapierre[4], E. Houdebert[3], M. Magnin[3], M. Carminati[3]
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Background: Acquiring basic surgical skills is a critical component of a physician's training, yet many medical students graduate with insufficient to none surgical competencies in suturing.
Aims: This study investigated the effectiveness of peer-assisted learning on suturing skill progression and its influence on students' engagement with surgery.
Methods: Data were collected as part of an ongoing prospective study (2023–2024) conducted in Lausanne, Switzerland. second to fifth year medical students attended three 2-hour suturing courses (e-learning and hands-on). They were required to record videos of their suturing performance and complete self-assessments at the beginning and end of the program. Videos were evaluated by surgeons using the OSATS scale with a minimal score of 1 point and a maximal score of 5 points. Multivariable linear regression was performed to identify independent predictors of progression.
Results: A total of 81 medical students (mean age: 24.5 ± 2.4 years; 59% women) completed the study. Participants demonstrated significant skill improvement across all evaluated domains after the 3 suturing courses. With an average progression of 0.850 points out of five (p-value < 0.0001), the greatest improvement was observed in instrument handling (average progression 1.020 points, t-test 11.4, p-value < 0.0001), while the smallest improvement was noted in tissue handling (average progression 0.519, t-test 6.9, p-value < 0.0001). On multivariable analysis, progression was positively associated with age (coefficient 0.11; 95% CI: [0.009; 0.214], p-value: 0.033) and perceived competence in suturing (coefficient 0.29, 95% CI: [0.049; 0.538], p-value: 0.020). However, prior attendance at a suturing course and self-reported perception of improvement (coefficient -0.465, 95% CI: [-0.923; -0.007], p-value 0.047, and coefficient -0.369, 95% CI: [-0.701; -0.037], p-value 0.030, respectively). were negatively associated with progression.
Conclusion: Peer-assisted learning is an effective approach for teaching basic suturing skills to medical students, Demonstrating measurable improvements in technical performance after participating in a 6-hours suturing course.

Hepato-Pancreatico-Biliary

From Competency to Mastery: Learning Phases in Robotic Liver Surgery in 5 International Expert Centres

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Background: Open liver surgery is increasingly being replaced by minimally invasive surgery, especially using robot-assisted liver resections (RLR). Along the learning phases of a surgical procedure intraoperative, postoperative, and oncologic outcomes improve at different stages.
Aims: The aim of this study is to evaluate the learning phases of RLR in a large retrospective international multicentre setting to determine the number of procedures required to achieve competency, proficiency and mastery.
Methods: Consecutive patients from 5 international expert centres who underwent elective RLR were included. Three thresholds were used to define the learning curve based on the first 150 RLRs in each centre: Operative time for competency, major complications (Clavien-Dindo ≥III) for proficiency, and textbook outcome for mastery. Clinical outcomes before and after the thresholds were compared.
Results: The learning curve analysis was performed on 662 RLRs. From competency to proficiency 23 cases and from proficiency to mastery 63 cases were required. The rate of technically major/major resections increased significantly throughout the three phases (p<0.001), while the rate of major complications (8.4% to 7.1%) and length of hospitalisation (4 to 3 days) remained stable. RLRs were associated with an excellent rate of patients reaching textbook outcome from the beginning (87%).
Conclusion: Competency, proficiency and mastery of RLR were achieved after 23 and 63 cases respectively. Robotic liver surgery was associated with excellent perioperative results while the indications towards major liver resections were expanded gradually.

Specific Items of Perioperative Care for Liver Surgery in Cirrhotic Patients: A Systematic Review

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Background: Enhanced Recovery After Surgery (ERAS) pathways have been shown to be safe in cirrhotic patients undergoing hepatectomy. However, due to cirrhosis-induced complications, specific or additional items might need to be implemented.
Aims: This study systematically reviewed the literature to assess specific items for the perioperative management of cirrhotic patients undergoing hepatectomy.
Methods: A systematic review was performed until September 2024. Evaluated items were prevention and management of perioperative ascites, perioperative anticoagulation, perioperative nutrition, prophylactic abdominal drainage, encephalopathy prevention, postoperative analgesia, and vascular filling. Levels of evidence were given for each specific item based on the Grading of Recommendations, Assessment, Development and Evaluations (GRADE) system.
Results: A total of 2983 articles were screened, and 79 articles were included in the final analysis of the 7 evaluated items. Four items had a moderate or high level of evidence. Summary of the 4 items with moderate/high evidence level was I) preoperative ascites should be controlled before surgery, II) mechanical and pharmacological venous thrombo-embolism prophylaxis is recommended postoperatively if coagulation tests are within normal range, III) systematic drainage among patients with chronic liver disease or cirrhosis is not recommended, and IV) acetate-buffered solutions should be preferred over Hartmann solutions or 0.9% saline.
Conclusion: This systematic review comprehensively evaluated specific perioperative items for cirrhotic patients undergoing liver surgery. Level of current evidence remains weak, and future research are still needed to develop specific recommendations for ERAS in cirrhotic patients undergoing liver surgery.

Textbook Outcome in Elderly Patients Undergoing Liver Surgery

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Background: Textbook outcome (TO) is a novel composite outcome to measure quality and postoperative results. Data on TO in elderly patients undergoing liver surgery remain scant.
Aims: This study aimed to assess the percentage of elderly patients achieving TO compared to young patients.
Methods: A cross-sectional, single-center study was performed. All consecutive patients undergoing liver surgery (2013-2023) were included. All patients followed an ERAS pathway. Patients ≥70 years were defined as elderly. TO achievement was defined as absence of intraoperative grade 2/3 event, grade B/C biliary fistula, grade B/C liver failure, 90-day major complication (>3a Clavien), 90-day readmission and R1 resection margin. Predictive factors of TO achievement were calculated using multivariable binary logistic regression.
Results: A total of 618 patients were included (men 359/618=58%, median age 64, major hepatectomies 271/618=44%). One hundred-and-seventy-nine (29%) patients were ≥70 years. Overall complication rate was 281/618 (45%) and major complications occurred in 117/618 patients (19%). TO was achieved in 354 patients (57%). TO in elderly patients (101/179=56%) was similar as in younger patients (253/439=58%) (p=0.783). On multivariable analysis, operation time (OR 1, p=0.039), preoperative total bilirubin (OR 1, p=0.031), preoperative pro-

thrombin time (OR 1, p=0.036), and compliance to Enhanced Recovery After Surgery (ERAS) items >60% (OR 1.9, p=0.006) were independent predictors of TO achievement, while age (OR 1, p=0.312) and minimally invasive surgery (OR 1.4, p=0.112) were not.
Conclusion: This study found that TO achievement after liver surgery was similar in elderly and young patients. Age was not a TO predictor contrarily to operation time, bilirubin, prothrombin time, and compliance to ERAS.

Comparison of Perioperative Outcomes in Robotic Vs. Open Major Hepatectomy: A Single Center Propensity Score-Matched Pilot Study
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Background: Robot techniques have gained traction in the field of hepatobiliary surgery with previous studies demonstrating feasibility and safety of the robotic approach. However, a majority of major liver resections are still performed by laparotomy in Switzerland.
Aims: This study aims to evaluate the robotic approach for complex liver resections in the Swiss setting.
Methods: In this case-control study, propensity score matching (PSM) analysis was performed to minimize selection bias. Patients undergoing either robotic or open major hepatectomy at a single academic medical center were included. Data on patient demographics, tumor characteristics, and perioperative outcomes were collected and analyzed.
Results: A total of 59 patients were included; 17 robotic and 42 open cases. After PSM, 51 patients (17 robotic and 34 open) were analyzed. Baseline characteristics were comparable between groups, including age (64 vs. 66 years; p > 0.9), BMI (23.7 vs. 25.0; p > 0.9), and ASA score distribution (p = 0.6). Robotic cases demonstrated significantly shorter length of stay (median, 9 vs. 13 days; p = 0.025) and lower comprehensive complication index (median, 0 vs. 26; p = 0.004). No significant differences were observed in postoperative complications (47% vs. 50%; p = 0.8) or length of ICU stay (p = 0.083). Conversion occurred for two patients in the robotic group (11.7%). Median operative time was longer in the robotic group (473 vs. 362 minutes; p = 0.053). Although bile leaks occurred more frequently in robotic cases (12% vs. 0%; p = 0.13), the difference was not statistically significant.
Conclusion: Robotic major hepatectomy was associated with reduced length of stay and lower complication severity compared with the open approach. Both techniques demonstrated similar rates of postoperative complications, confirming the safety and feasibility of robotic hepatectomy in experienced centers. Future research should focus on collaborative efforts between Swiss centers performing complex robotic liver surgery to further improve outcomes and expand the evidence base.

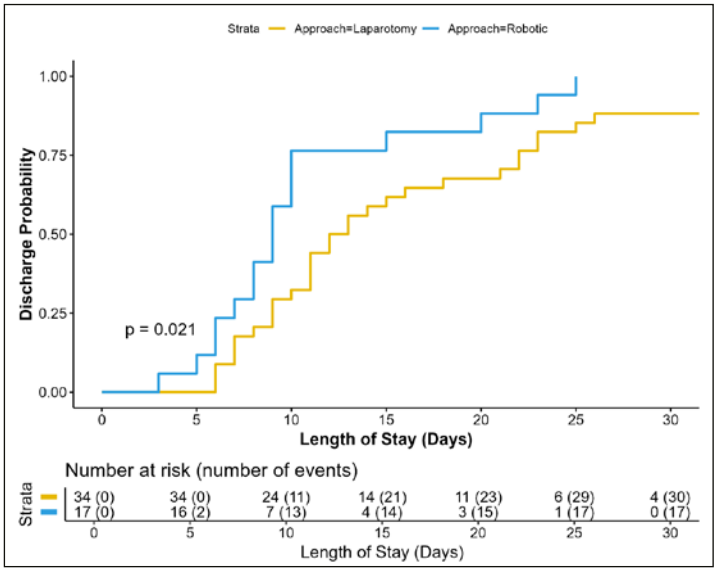

Figure 1. Discharge Probability After Robotic vs. Open Major Hepatectomy Kaplan-Meier plot comparing discharge probabilities for patients undergoing robotic (blue line) versus laparotomy (yellow line) major hepatectomy. The x-axis represents the length of

Safety and Feasibility of Robotic Repeat Hepatectomy Compared to Laparoscopic and Open Techniques: A Retrospective Cohort Study
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Background: Repeat hepatectomies can often be challenging operations due to altered anatomy and adhesions from prior surgeries. Thanks to the enhanced dexterity, better vision and stability, the robotic approach could expand the feasibility of minimally invasive liver surgery in the setting of repeat hepatectomies.
Aims: To explore the surgical safety and oncologic efficacy of repeat robotic liver resection (RLR) compared to repeat laparoscopic (LLR) and open liver resection (OLR).
Methods: All repeat liver resection performed from January 2019 to December 2024 were retrospectively reviewed. Primary endpoints were complications (Comprehensive Comorbidity Index, CCI), conversions and rate of negative surgical margin (R0) or equivalent (R1 vascular).
Results: Forty-two patients underwent repeat hepatectomy (OLR=15, LLR=13, RLR=14). The main indication to surgery was colorectal liver metastases (55%) followed by hepatocellular carcinoma (21.4%). Preoperative patients characteristics were similar: mean age of 68 years, ASA score of 3 and Charlson Comorbidity Index of 9. Only two patients in the LLR group required conversion to laparotomy vs none in the RLR group. Mean operative time was 466, 314 and 277 minutes (p=0.02) with mean blood loss of 320, 275 and 95 mL (p=0.01) in OLR, LLR and RLR, respectively. Post-operative overall complications occurred in 40% of OLR and 7.6% of LLR patients while none occurred in RLR (p=0.02) with mean CCI of 29.2, 8.7 and 0, in the respective order. There was no overall mortality in the 90 days after surgery. R0 was 73%, 100% and 77% (p=0.04) and R1 vascular was 13.3%, 0% and 23% (p=0.08) in the OLR, LLR and RLR groups.
Conclusion: Repeat RLR was not only safe but better in outcome, and ensured adequate oncologic results compared to LLR and OLR.

Challenges in the Implementation of Enhanced Recovery After Surgery (eras) Pathways for Major Hepatectomies: A Retrospective Cohort Study
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Background: Enhanced recovery after surgery (ERAS) programs showed benefit by improving patient's outcomes in liver surgery. However, obtaining high compliance with ERAS may be challenging for patients with major hepatectomy.
Aims: The aim of the study was to investigate the challenges related to the implementation of ERAS in major hepatectomy by assessing the compliance in detail.
Methods: All consecutive major hepatectomies (≥3 Couinaud segments) within an ERAS program from 2013 to 2023 were reviewed. The primary endpoint was the proportion of patients achieving high compliance (≥70%) with ERAS protocol. Secondary endpoints included the institutional learning curve for improving compliance measured with the cumulative sum method (CUSUM), and the clinical outcomes of patients with high vs low compliance. Predictors of high ERAS compliance and of postoperative complications were assessed by a binary logistic regression model.
Results: Two-hundred-eighty-six patients were included, median ERAS compliance was 59% (IQR 54-67) and 49 patients (17.1%) had a high compliance The CUSUM analysis identified an institutional learning curve of 143 cases encompassing the first 5 years of activity. High compliance patients increased 10-fold from during the learning curve to once the learning curve was completed (8.2% vs 91.8%; p<0.001) The improvement was mainly related to better compliance with intra- and postoperative ERAS items. High compliance was associated with less complications (53.1 vs 69.1%; p=0.045) and shorter hospital stay (8 vs 12 days; p=0.002). In multivariable analysis, the strongest independent predictor of high ERAS compliance was the use of MILS. High compliance was protective only against minor complications (Clavien-Dindo<IIIa).
Conclusion: The implementation of an ERAS program with high compliance is challenging in major hepatectomy and needed more than 140 cases in our experience. A MILS policy, when feasible, should be pursued to increase compliance, which is associated to less complications and shorter hospital stay.

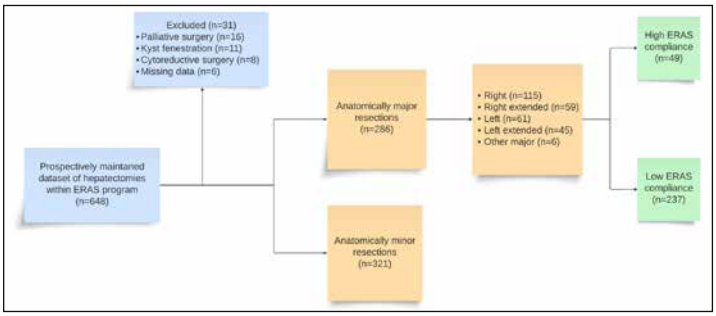

Figure 1. ERAS major resections flowchart

Complexity Adjusted, Learning Curve Assessment by Multiple Endpoints in Laparoscopic and Robotic Liver Resections: A Retrospective Study of 148 Cases
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Background: The methodology for learning curve assessment in laparoscopic (LLR) or robotic (RLR) liver resections is debated and heterogeneously reported. Several studies didn't account for patient's and procedure complexity, thus lacking generalizability.
Aims: The aim of the study was the assessment of the learning curve in LLR and RLR considering both patient's and procedure complexity.

Methods: Consecutive LLR and RLR from 2019 to 2024 by a single surgeon trained sequentially in LLR then in RLR were reviewed. The learning curve was analyzed with the cumulative summation (CUSUM) method after adjusting for patient- and procedure-related confounders (age, sex, BMI, comorbidities, previous hepatectomy, portal hypertension, Iwate score, multiple resection areas, extension to neighbor organs, lymphadenectomy, associated local treatment). The primary endpoints were the learning phases for significant changes in operative time, blood loss, complications, and conversions.
Results: One-hundred-forty-eight patients were included (LLR=94; RLR=54). In LLR vs RLR, mean age was 66.8±12.4 vs 66.4±10.4 (p=0.827), Charlson comorbidity index was 7 (IQR 5-9) in both groups. Median Iwate score was 6 (IQR 3-7) vs 5 (IQR 4-7) (p=0.694), conversions to laparotomy were 10 (10.6%) vs 1 (1.9%) (p=0.051) and complications were 16 (17%) and 14 (26%) (p=0.295) in LLR vs RLR respectively. CUSUM analyses showed that the adjusted operative time dropped after 45 LLRs vs 18 RLRs, blood loss dropped after 45 LLRs vs 25 RLRs. A composite endpoint of operative time and blood loss confirmed these results. No learning curve effect was seen for complications or conversions in either group.
Conclusion: The robotic platform showed to have a significant impact on a faster learning curve in terms of operative time and blood losses. The sequential experience can play a role in faster learning. In liver surgery, patient's and disease's complexity can influence the outcomes alongside technical experience and must be considered for reliable learning curve assessments.

Safety and Efficacy of Minor Robotic Liver Resection in Patients With Cirrhosis and Portal Hypertension: A Retrospective Cohort Study

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Background: The role of robotic liver resection (RLR) is under-explored in patients with cirrhosis complicated by portal hypertension (PH).
Aims: The objective of the study was to explore the safety (complications and post-hepatectomy liver failure, PHLF) and oncologic efficacy (R0 and disease-free interval, DFI) of RLR in patients with cirrhosis and portal hypertension.
Methods: Consecutive RLRs in patients with cirrhosis were retrospectively reviewed. Surgical and oncologic outcomes were compared between patients with and without PH. Recurrence-free survival was defined as the time between RLR and tumor recurrence or last follow-up.
Results: Eighty patients underwent RLR for liver malignancies (males: 71.3%, median age: 70 years, Child-Pugh score A: 95%, history of HCV: 45%, single nodule: 90%). Median size of the tumor was 23 mm (IQR 18-30 mm). Twenty-three patients had PH (28.7%); preoperative characteristics were otherwise similar between patients with and without PH. All the 23 patients with PH underwent non-anatomic resection vs 48 (84.3%) in the group without PH (p=0.63), without any major hepatectomy. Surgical outcomes were also similar except for PHLF which occurred in 21.7% of patients with PH and none without PH (grade A: 8.7%, grade B: 13.0%, no grade C; p=0.0059). Complications occurred in 30.4% of patients with PH vs 15.8% without PH (p=0.24), conversion rate to open surgery was 8% in both groups, median blood loss was 150 vs 100 cc (p=0.07). Post-operative mortality was nihil in the series. R0 rate was obtained in 100% vs 88% (p=0.63) and RFS was equal in patients with and without PH (median of 19 months, p=0.86). In multivariable analysis PH was not associated with recurrence.
Conclusion: In this small cohort of minor and mostly non-anatomic RLRs, the presence of PH was associated with a higher rate of PHLF (grade A and B, without grade C) but not with other surgical or oncologic outcomes.

Pancreas

Rethinking Abdominal Drainage After Distal Pancreatectomy – The PANDRA II Trial

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Background: Prophylactic intraabdominal drainage following distal pancreatectomy (DP) has been a longstanding practice to mitigate postoperative complications, particularly postoperative pancreatic fistulas (POPF). Recent studies challenge the necessity of routine drainage, suggesting potential benefits in omitting drains.
Aims: The aim of this trial was to evaluate postoperative complications after DP with or without prophylactic drain placement.
Methods: The PANDRA II trial was a randomized controlled non-inferiority study conducted at a university hospital between 2017 and 2023, comparing outcomes between patients undergoing open or minimally-invasive DP with and without prophylactic abdominal drainage. Primary endpoint was postoperative morbidity assessed by the Comprehensive Complication Index (CCI).
Results: A total of 246 patients were included in the intention-to-treat analysis (125 with drainage, 121 without drainage). The no-drain group demonstrated non-inferiority to the drain group in terms of CCI (13.90 ± 16.51 vs. 19.43 ± 16.92, p<0.001). Moreover, the no-drain group had lower overall complication rates (50.41% vs. 78.40%, p<0.001). Specific complications such as POPF (14.88% vs. 20.8%, p=0.226) and post-pancreatectomy hemorrhage (4.96% vs. 4.80%, p>0.999) did not differ significantly between groups.
Conclusion: The PANDRA II trial adds to mounting evidence suggesting that routine abdominal drainage may not be necessary following DP. Omitting drains was associated with favorable outcomes in terms of postoperative morbidity, without increasing severe complications requiring intervention. Selective use of drains based on patient risk factors and surgeon expertise is crucial, emphasizing individualized care in pancreatic surgery.

Pancreatic Resectability Evaluation Through Deep Imaging With Computed Tomography in Pancreatic Cancer (PREDICT-PanC)

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Background: Pancreatic ductal adenocarcinoma (PDAC) has the highest mortality rate among solid malignancies worldwide, with surgical resection as the only curative treatment. The assessment of PDAC resectability, which depends on the accurate assessment of vascular infiltration, suffers from low inter-observer reliability.
Aims: This study develops a multi-modal deep learning algorithm to automate the resectability assessment of PDAC using contrast-enhanced Computed Tomography (CT) images, clinical parameters, and radiomic features, aiming to enhance accuracy and reduce subjective interpretation discrepancies.
Methods: We analyzed 173 contrast-enhanced CT scans showing various degrees of vascular infiltration. PDAC masks were generated using both manual labeling and predictions from the Monai-Label framework, validated by expert surgeons (Figure 1). Our methodology employs a multi-modal approach, integrating convolutional neural networks (CNNs) with transformer modules to enhance the extraction of dynamic texture patterns from multi-phase CT images (Figure 2). Attention mechanisms focus on significant features across the imaging and clinical data, including radiomic features extracted for their potential to indicate vascular involvement and tumor characteristics. This integrative approach aims to achieve more precise segmentation and refined predictive analysis.
Results: The algorithm, tested via a nested 5-fold cross-validation, achieved a Dice Similarity Coefficient (DSC) of 83.2%. Specific DSC scores for the Superior Mesenteric Vein (SMV), Superior Mesenteric Artery (SMA), and tumor were 72.1%, 75.7%, and 80.4%, respectively. Additionally, it attained an F1 Score of 85% in predicting NCCN-based resectability criteria.
Conclusion: The multi-modal deep learning framework has demonstrated significant potential in segmenting PDAC on CT scans and predicting surgical resectability. Future work will refine the model by incorporating more clinical parameters to improve predictions of vascular involvement and overall surgical outcomes. The anticipated next steps include further validation and preparation for widespread clinical application.

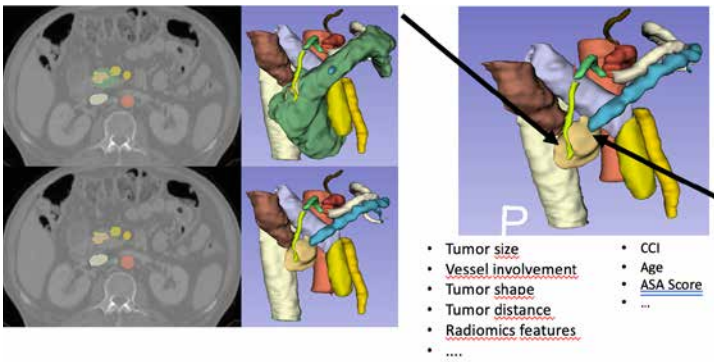

Figure 1. PREDICT-PanC

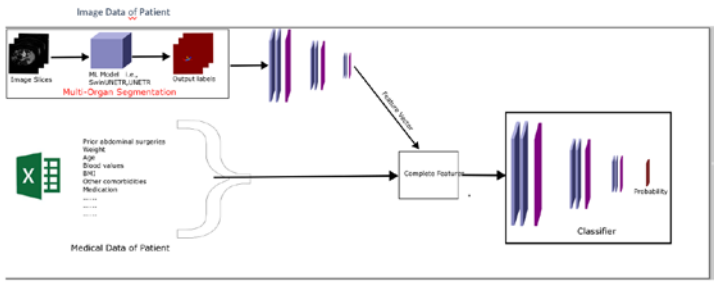

Figure 2. PREDICT-PanC

Corticosteroids in Pancreatic Surgery to Prevent Complications

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Background: Multiple studies have shown a decrease in complications after pancreatic surgery through the perioperative use of corticosteroids. This is in part due to their ability to influence the postoperative systemic response.
Aims: The aim of this systematic review was to investigate the impact of perioperative corticosteroids in major pancreatic resections.
Methods: A literature search was done in CENTRAL, Medline, and Web of Science. All randomised controlled trials (RCTs) with adult patients undergoing pancreatic surgery and receiving perioperative corticosteroid treatment were included. The outcomes investigated included mortality, complications, postoperative pancreatic fistula (POPF), delayed gastric emptying (DGE), postpancreatectomy hemmorrhage (PPH), fluid collection/abscess, and length of hospital stay. Outcomes were analysed as odds ratios (OR) or mean differences (MD) in a random-effects model.
Results: Five RCTs were included. Partial pancreatoduodenectomy as well as distal pancreatectomy were evaluated. There was no difference regarding mortality in 3 RCTs (OR 0,65, 95%-CI: 0.17 to 2,45, p= 0.52). However, complications were lower in the corticosteroids group (OR 0.53, 95%-CI: 0.3 to 0.91, p= 0.02). Specifically, there were fewer fluid collections in the corticosteroids group (OR 0.47, 95%-CI: 0.25 to 0.89, p= 0.2). POPF, DGE, and PPH did not differ between the groups. Furthermore, patients treated with corticosteroids had a shorter length of hospital stay (MD -0.87 days, 95%-CI: -5.23 to -2.51, p= 0.01).
Conclusion: The perioperative use of corticosteroids in pancreatic surgery appears to reduce overall complications, particularly fluid collections, and is associated with a shorter length of hospital stay. These findings suggest that corticosteroids may provide a benefit in reducing postoperative morbidity, warranting further investigation into their role in optimising outcomes after major pancreatic resections.

Novel Benchmarks for Robotic Whipple Surgery – A Global Multicenter Cohort Study

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Background: Robotic Whipple holds the promise to overcome safety concerns associated with laparoscopy, paving the way for widespread implementation of minimal-invasive surgery in this complex procedure. However, randomized data comparing robot vs. open Whipple demonstrate more pancreas-specific complications and R1-resections in the robotic arm. Recent international consensus identified establishing benchmarks as critical to ensure safe adoption of the robot. Benchmarking is a validated quality improvement tool, enabling comparison of surgical performance.
Aims: The aim was to define benchmarks for outcome parameters in robotic Whipple.
Methods: We analyzed consecutive patients undergoing robotic Whipple from January 2020 until December 2023 in 11 centers across 4 continents, with a minimum one-year follow-up. Centers had to perform ≥15 cases/year and have mounted their learning curve. Benchmark criteria included benign or resectable malignant disease without neoadjuvant therapy, arterial resection, major co-morbidities, or significant previous abdominal surgery. Medians across centers represented benchmark cutoffs.
Results: Eleven centers performed 1'037 Whipple procedures, of which 603 (58%) were benchmark cases (Figure 1). One third (n=192) were pancreatic ductal adenocarcinoma (PDAC) patients. Key benchmarks at 6 months included ≤1.2% mortality, ≤24.2% major complications, and ≤ 8.7 points Comprehensive Complication Index® (Table 1). Pancreas-specific cutoffs included ≤13.0% postoperative pancreatic fistula (POPF) B/C and ≤3.4% post-pancreatectomy hemorrhage B/C, with 100% R0-resection and ≥19 harvested lymph nodes in PDAC patients. One-year actuarial overall and recurrence-free survival was 87% and 77%. In the entire cohort POPF B/C occurred in 16% (n=195). Independent POPF predictors included duct diameter ≤4mm (OR 1.79 95%CI [1.27-2.55]), anticoagulation (OR 3.68 95%CI [2.14-6.24]), and indication other than PDAC (OR 3.17, 95%CI [2.13-4.85]) (Table 2).
Conclusion: This study establishes benchmarks for key outcomes in robotic Whipple, demonstrating oncologic adequacy and morbidity comparable to open surgery. Risk factors for POPF in open surgery also hold true in the robotic approach.

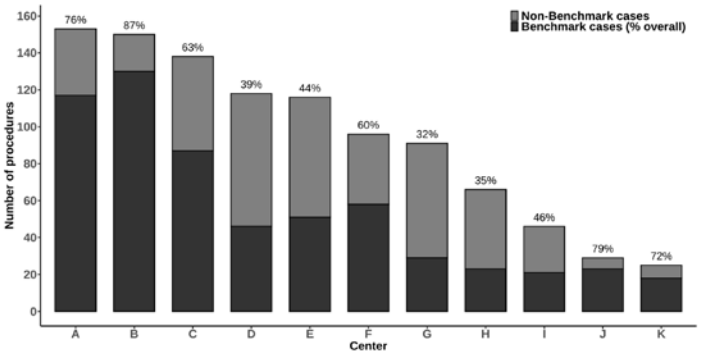

Figure 1. Distribution of Robotic Whipple Benchmark Cases Across Centers. Among 11 benchmark centers, a total of 1'037 cases were analyzed, with 603 (58%) meeting benchmark criteria. The proportion of benchmark cases varied widely across centers, ranging

	Robotic Whipple (11 centers, 603 patients)		Open Whipple[1] (23 centers, 2375 patients)	
	Benchmark (Median)	75th/25th (percentile)	Median	75th/25th (percentile)
Operative metrics				
Duration of surgery (min)	**≤420**	≤515	≤366	≤450
Unplanned conversion to open (%)	**≤3.1**	≤5.4	-	-
Blood transfusion (%)	**≤4.1**	≤5.3	≤13	≤23
ICU length of stay (days)	**≤1**	≤1	-	-
Pancreas-specific complications				
POPF grade B/C (%)	**≤13.0**	≤19.9	≤10	≤19
PPH grade B/C (%)	**≤3.4**	≤11.1	≤4	≤13
DGE grade B/C (%)	**≤4.3**	≤10.6	-	-
Bile leak grade B/C (%)	**≤0.9**	≤4.5	-	-
Surgical complications (6 months)				
Any complication (%)	**≤64.5**	≤77.8	≤65.3	≤73
Clavien-Dindo grade ≥3a (%)	**≤24.2**	≤30.9	≤21.0	≤35
Mortality (%)	**≤1.2**[2]	≤3.0	-	-
CCI®	**≤8.7**	≤20.9	≤20.9	≤20.9
Oncologic outcomes in PDAC (n = 192)				
R0 resection (%)	**100**	≥76.9	≥73	≥61
Lymph nodes harvested (n)	**≥19**	≥13	≥19	≥16
1-yr OS	**≥87**	-	-	-
3-yrs OS	**≥46**	-	-	-
1-yr RFS	**≥77**	-	≥42[3]	≥53[3]
3-yrs RFS	**≥44**	-	0[4]	≥9[3]

[1]Sánchez-Velázquez et al., [2]Mean across centers, [3]Disease-free survival
Min (minutes), ICU (Intensive Care Unit), POPF (Post-Operative Pancreatic Fistula), PPH (Post-Pancreatectomy Hemorrhage), DGE (Delayed Gastric Emptying), CCI® (Comprehensive Complication Index®), OS (Overall Survival), RFS (Recurrence-free survival)

Table 1. Benchmark Cutoffs for Robotic Whipple Compared to Open Whipple

	Univariate analysis[1]		Multivariable logistic regression[1,2]	
	OR (95% CI)	p-value	OR (95% CI)	p-value
PD-ROBOSCORE[3]	1.03 (0.99, 1.08)	0.2		
BMI (kg/m²)	1.03 (0.99, 1.07)	0.2		
ASA ≥3	0.93 (0.65, 1.31)	0.7		
Borderline-resectable	0.25 (0.06, 0.68)	0.019		
Duct diameter <4mm	1.94 (1.37, 2.79)	<0.001	**1.79 (1.27, 2.55)**	0.001
Prior major abdominal surgery	1.50 (0.52, 6.36)	0.5		
Anticoagulation	3.35 (1.90, 5.76)	<0.001	**3.68 (2.14, 6.24)**	<0.001
Venous resection	0.33 (0.11, 0.75)	0.018		
Unplanned conversion	0.89 (0.40, 1.76)	0.8		
Indication other than PDAC	3.71 (2.42, 5.91)	<0.001	**3.17 (2.13, 4.85)**	<0.001

[1]Analysis of entire cohort (N=1'255), [2]based on bidirectional stepwise variable selection, [3]Napoli et al.
OR (Odds Ratio), CI (Confidence Interval), BMI (Body Mass Index), ASA (American Society of Anesthesiologists), RHA (Right Hepatic Artery), PDAC (Pancreatic Ductal Adenocarcinoma)

Table 2. Independent Predictors of Post-Operative Pancreatic Fistula Development

Defining Global Benchmarks for Total Pancreatectomy: A Multicenter Study from 22 International Expert Centers

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Background: Total pancreatectomy (TP) is the preferred treatment for patients with advanced pancreatic cancer or multifocal pancreatic tumors. Furthermore, in patients with concomitant vascular resections, TP may be performed to avoid the risk of pancreatic fistula and thus improve the perioperative risk profile.
Aims: To enable conclusive comparisons with other types of pancreatic resections and among different centers, international benchmark values are urgently needed. The aim of this international multicenter study was to identify the first benchmark values for TP from international expert centers.
Methods: This multicenter study analyzed outcomes from patients undergoing primary TP for malignant or benign lesions from 22 international expert centers. Patients were included from January 2017 up to November 2023 with a minimum follow-up of 1 year in each patient. Fifteen benchmark values were identified and were compared to a cohort of TP with vascular resection and the published multi-national benchmark values for pancreatoduodenectomy (PD). Benchmark patients were without significant comorbidities, age <80 years, cardiac disease, chronic pulmonary disease and renal failure.
Results: 553 (74%) of a total of 749 patients qualified as benchmark cases. The proportion of benchmark patients varied between 50%-100% per center. All benchmark values are disclosed in Figure 1. For example, benchmark cut-offs showed relevant 6 month- postoperative mortality (<6.8%) and major morbidity (≤44.2%). Especially benchmark values for pancreas specific morbidity such as delayed gastric emptying (≤41.2%) and postoperative hemorrhage (≤26.2%) were high. Benchmark cutoffs were further defined for operative time (≤510min), CCI at 6 months (≤27.3), and hospital stay (≤18 days). For ductal adenocarcinoma benchmark cutoffs for number of lymph nodes were ≥22 with an R0 resection rate of > 69.1%. Compared to the published PD, benchmark values for TP for overall- and pancreas specific complications were markedly higher. Furthermore, the cohort of patients with TP and concomitant vascular resections displayed several outcomes outside the TP benchmarks, for example a 90-mortality rate of 8% and major morbidity rate of 54% (Figure 1).
Conclusion: This benchmark analysis sets the first global reference values for TP, indicating significantly higher postoperative morbidity and mortality as compared to PD. The inferior outcomes were especially observed in TP with vascular resections. These reference values serve for quality control of pancreatic surgery in different centers, countries or surgical techniques.

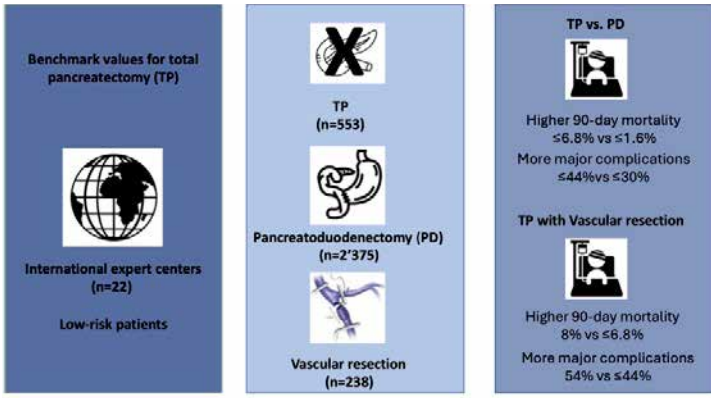

Figure 1

International Validation of the Distal Pancreatectomy Fistula Risk Score – More Than a Throw of the Dice?

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Background: Postoperative pancreatic fistula (POPF) remains the most severe complication following distal pancreatectomy (DP). The preoperative distal fistula risk score (D-FRS) was recently introduced to predict the POPF risk.
Aims: The aim of this study was to externally validate the D-FRS in an international expert center cohort.
Methods: This international, multicenter, retrospective cohort study included open and minimally invasive DP for benign and malignant lesions performed from 01/2014 until 12/2023 in 12 centres from 6 countries, that each performed more than 50 pancreatectomies annually. The D-FRS was calculated from pancreatic thickness and duct size. Predicted and actual POPF were compared using sensitivity, specificity and area under the curve (AUC).
Results: A total of 778 patients underwent DP of whom 284 (39%) underwent robotic, 278 (38%) open and 165 (23%) laparoscopic DP. The rate of POPF was 32%. In the POPF group, the D-FRS was 0.21 (0.13-0.33), while in the no-POPF group it was 0.23 (0.15-0.36). The sensitivity, specificity and AUC of the D-FRS for the overall cohort was 32%, 63% and 48% (95% CI 44-51), respectively. The AUC for open, laparoscopic and robotic DP was 54% (48-60), 47% (39-55) and 45% (39-50), respectively. On multivariate analysis POPF was associated with BMI (odds ratio 1.04 (95% CI 1.01-1.07)), protective factors were neoadjuvant therapy (OR 0.54 (0.22-0.94)) and robotic approach (OR 0.64 (0.42-0.97)).
Conclusion: The preoperative D-FRS showed insufficient discrimination to identify patients who develop POPF after DP irrespective of the surgical approach. Novel preoperative POPF risk scores are needed, taking into account the standard robotic approach and the widespread application of a no-drain policy.

Early Enteral vs. Oral Postoperative Nutrition After Pancreatoduodenectomy: An International Multicentric Randomized Controlled Trial (NUTRIWHI Trial)

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Background: The best nutrition route (oral, enteral, or parenteral) after pancreatoduodenectomy (PD) remains controversial.
Aims: This study aimed to compare early enteral nutrition (EEN) to oral nutrition after PD in malnourished patients in terms of postoperative morbidity.
Methods: This study was a multicentric (3 centers) randomized controlled trial. Patients with nutritional risk screening >2 were randomized 1:1 into the EEN or oral nutrition group. Patients in the EEN group received enteral nutrition from the operation night via a naso-jejunal tube placed intraoperatively and were allowed to have oral food based on the same protocol as the other group. Patients in the oral group were not allowed to have enteral nutrition during hospitalization. In both groups, parenteral nutrition need was standardized. Complications were measured at 90 days postoperatively using the Clavien classification and Comprehensive Complication Index (CCI).
Results: A total of 144 patients were included and randomized. Twenty-five patients dropped out (17%), leaving 119 patients for analysis (60 EEN group and 59 control group). At 90 days, morbidity rates were 45/60 and 54/59 in the EEN and oral nutrition groups (p=0.016), while no difference was found between both groups regarding specific complications (delayed gastric emptying, pancreatic fistula, postoperative hemorrhage, and surgical-site infection). Patients with EEN had a lower mean 90-day CCI compared to patients with oral nutrition (24±19vs. 38±24, p<0.001). In the EEN group, 13 patients involuntarily removed their naso-jejunal tube.
Conclusion: In malnourished patients, EEN after PD permitted to decrease the burden and incidence of postoperative complications compared to oral nutrition.

Risk Factors and Consequences for Conversion in Robotic Distal Pancreatectomy – An International Multicenter Study

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Background: Robotic distal pancreatectomy (RDP) has gained popularity because of its lower conversion rates and potential advantages over laparoscopic distal pancreatectomy (LDP), particularly in challenging patients.
Aims: The aim of this study is to identify and analyze the risk variables associated with RDP conversion to open surgery, with an emphasis on surgical outcomes and patient safety.
Methods: This international multicenter study analyzed retrospective data from 2403 patients who had RDP. Patient demographic information, intraoperative measurements, and postoperative outcomes were all included. Statistical analysis was utilized to determine variables for conversion to open surgery and their association with conversion rates.
Results: The overall conversion rate was 2.6 percent. Older age and greater lesion sizes were significant risk variables for conversion. Converted patients had higher rates of postoperative complications, including major complications (Clavien-Dindo ≥ IIIa) and pancreatic-specific difficulties such as postoperative pancreatic fistulas (POPF) and delayed stomach emptying (DGE).
Conclusion: The conversion rate was compared to literature very low but had a significant impact on the further outcome of the patient. In case of conversion, the total amount of complications as well as the severity and the regarding need for further intervention was higher. Lesion size or the age of the patient seem to be associated with conversion. Addressing the identified risk factors can lead to improved surgical outcomes and reduced complication rates, further establishing RDP as a safe and effective option.

Survival in Locally Advanced Pancreatic Cancer: Surgery Vs Radiation After Neoadjuvant Chemotherapy

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Background: Locally advanced pancreatic cancer (LAPC), defined by local progression and invasion of major vessels, has traditionally been considered unresectable. Advances in neoadjuvant chemotherapy and surgical techniques have improved resection rates, but reliance solely on post-neoadjuvant imaging may misclassify resectability, potentially denying curative surgery to eligible patients.
Aims: This study evaluates survival outcomes of surgical resection versus radiotherapy after neoadjuvant chemotherapy in LAPC.

Methods: This retrospective study reviewed patients diagnosed with histologically confirmed pancreatic ductal adenocarcinoma (PDAC) from 2016 to 2024, meeting the National Comprehensive Cancer Network (NCCN) criteria for LAPC. Patients received either FOLFIRINOX or Gemcitabine-based chemotherapy, followed by surgery or radio(chemo)therapy (RCT). Survival outcomes were assessed using Kaplan-Meier curves and Cox regression analysis.
Results: Among 42 patients treated with neoadjuvant FOLFIRINOX or Gemcitabine/nab-Paclitaxel, 20 underwent surgery and 22 received RCT. Re-staging after neoadjuvant chemotherapy showed no disease progression or metastasis in any patient. Pre-treatment CA 19.9 levels were 223.5 U/ml in the surgery group and 244 U/ml in the RCT group, decreasing to 38.65 U/ml and 85 U/ml post-treatment, respectively. R0 resection was achieved in 19 of 20 surgery patients (95%). Kaplan-Meier analysis demonstrated significantly better overall survival in the surgery group (log-rank p = 0.0009). At 12, 24, and 36 months post-treatment, survival rates were higher in the surgery group (19, 13, and 10 alive) compared to the RCT group (17, 9, and 3 alive). Multivariable Cox regression showed RCT was associated with significantly higher mortality risk compared to surgery (HR = 0.2539, 95% CI: 0.1129–0.5710, p < 0.001).
Conclusion: This study demonstrates that surgical resection after neoadjuvant chemotherapy significantly improves survival compared to RCT. Surgical resection should be attempted in patients without progress after neoadjuvant therapy since surgery achieves superior survival.

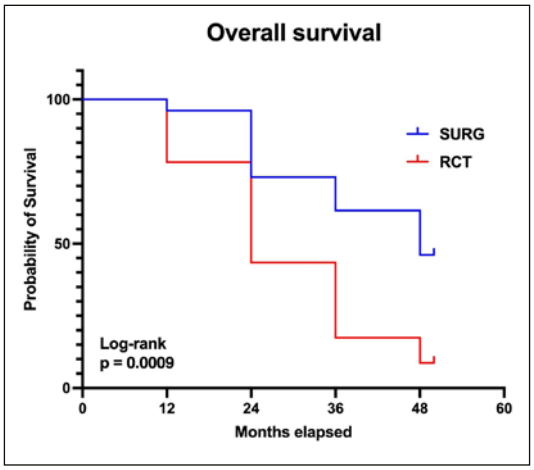

Figure 1. OS LAPC

Hernia

Robotic Versus Conventional Minimally Invasive Inguinal Hernia Repair: The Blinded Randomized Controlled ROGER Trial

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Background: It remains uncertain whether robotic inguinal hernia repair offers advantages over conventional minimally invasive techniques.
Aims: To evaluate postoperative pain following robotic transabdominal preperitoneal repair (rTAPP) compared to conventional totally extraperitoneal repair (TEP).
Methods: Prospective, blinded, 2-group, randomized single-center trial conducted at a tertiary healthcare institution in Switzerland including 182 patients with uni- or bilateral inguinal hernias. Patients were 1:1 randomized to undergo rTAPP or TEP with postoperative pain on a numeric rating scale (NRS 0 – 10) while coughing 24 hours postoperative as the primary outcome. Secondary endpoints included the assessment of multiple pain and quality of life questionnaires, intra- and postoperative complications, procedure time and the surgeon's workload, measured using the NASA task-load-index.
Results: 91 patients (94.4% male, mean age 55.1 +/- 14.5 years, mean BMI 24.6 +/- 2.9 kg/m^2, 21.1% bilateral hernias; p = n/s) were randomized to undergo rTAPP and 91 patients (93.4% male, mean age 56.8 +/- 15.2 years, mean BMI 24.8 +/- 3 kg/m^2, 22% bilateral hernias) to TEP respectively. Postoperative pain 24 hours after surgery while coughing was 4.52 +/- 2.6 after rTAPP and 4.73 +/- 2.55 after TEP (p = 0.56). 30-days postoperative comprehensive complication index was 1.37 in rTAPP and 1.63 in TEP (p = 0.99). Procedure time for unilateral repair was 79 +/- 15.2 minutes in rTAPP and 64 +/- 15.2 minutes in TEP (p < 0.001). Overall surgeon's workload was lower in rTAPP compared to TEP (Pillai's Trace = 0.45, F(6, 174) = 12.34, p < .001).
Conclusion: rTAPP and TEP result in comparable postoperative pain, length of stay and complication rates. Surgeons' workload was lower in rTAPP at the cost of a longer operative time. Recurrence rates and cost analysis will be reported 1 year after.

Ventral Incisional Hernia Repair With Synthetic Versus Biosynthetic Mesh; Retrospective Comparative Analysis From a Tertiary Reference Center

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Background: Although biosynthetic mesh is being increasingly used to treat ventral incisional hernias (vIH), there is a paucity of data derived from non-industry-sponsored studies.
Aims: Aim of the present study was to compare i) postoperative Surgical Site Occurrences (SSO) and ii) viH recurrence in patients operated with non-absorbable synthetic versus slowly absorbable biosynthetic mesh.
Methods: Adult patients who had vIH repair surgery in our tertiary referral hospital between 01.01.2017 and 31.12.2023 were retrospectively assessed. Demographics and surgical outcomes were compared between patients with synthetic (S) versus biosynthetic (BS) vIH mesh repair. SSO were defined as surgical site seroma, infection or hematoma. Standard univariable and multivariable logistic analysis were performed, with significance threshold at p<0.05.
Results: Overall, 95 patients were included in the present study (57.9% males, mean age 63±14years); 56 (58.9%) patients were in the S and n=39 (41.1%) in the BS group. No differences in baseline characteristics or comorbidities were observed. SSO were documented in 48.2% S versus 43.6% BS patients (p=0.657), but seroma rates were increased in S patients (25% versus 5.1% BS, p=0.011). Mesh type was not associated with SSO in multivariable analysis (aOR 0.67, 95%CI 0.23-1.94). Overall 90-day morbidity was comparable, although BS patients had higher readmission rates (17.9% vs 3.6% S, p=0.019). vIH recurrence was observed in 5.4% S vs 7.7% BS patients (p=0.687), with similar mean recurrence intervals (456d S versus 625d BS, p=0.100).
Conclusion: In the present study, vIH repair with a slowly absorbable biosynthetic mesh was associated with similar overall SSO and hernia recurrence rates as a non-absorbable synthetic mesh.

Prophylactic Mesh Reinforcement After Open Aortic Aneurysm Repair: A Retrospective Study

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Background: Patients who undergo open abdominal aortic aneurysm (AAA) repair via a midline laparotomy face a 3-fold increased risk of developing an incisional hernia (IH) postoperatively. Recent guidelines in vascular surgery strongly recommend prophylactic mesh reinforcement (PMR) during abdominal wall closure for AAA to reduce the incidence of incisional hernias (IH).
Aims: This study aims to evaluate the effectiveness of retromuscular PMR in reducing the incidence of IH after AAA repair, as well as to assess secondary postoperative complications.
Methods: This retrospective study includes patients who underwent elective AAA repair with PMR in our institution between 2019 and 2024. Patients' demographics, operative details and postoperative complications were collected from patient's records. Follow-up consisted in clinical examinations at least one year post-surgery, abdominal ultrasounds (Figure 1, 2 and 3) and EQ-5D-5L questionnaires. The primary outcome was the incidence of IH, secondary outcomes included the incidence of fascial dehiscence, seromas and surgical site infections. Descriptive statistics were used to evaluate both the primary and secondary endpoints.
Results: Twenty-one patients were included. The median follow-up period was 32 months. The overall incidence of IH was 19% (4 cases): three hernias occurred in patients who had been re-operated with incision and closure of the mesh; the fourth was identified through ultrasound examination without any clinical correlation. Re-laparotomy seemed to be a relevant risk factor for hernia development, but the sample size and study configuration limited our ability to confirm a significant association. None of patients developed fascial dehiscence, seromas or surgical site infections (Table 1 and 2). Quality of life was reported to be largely preserved, with most experiencing little to no functional impairment and an average general health score of 80%.
Conclusion: This study provides clinical evidence supporting the application of recent guidelines in vascular surgery regarding the use of retromuscular PMR. Registration number: Observational study NCT06762561 (https://www.clinicaltrials.gov)

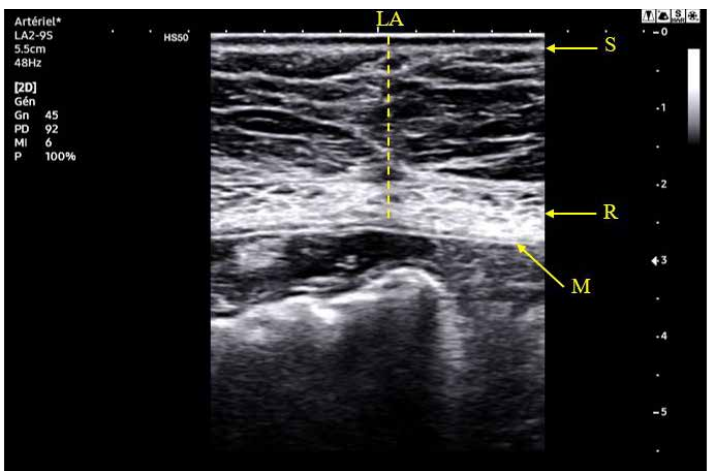

Figure 1. Ultrasound image at 78 months follow-up of a 76 year old patient who did not present any incisional hernia.
S= skin, R= rectus abdomini muscle, LA= linea alba, M= retromuscular mesh

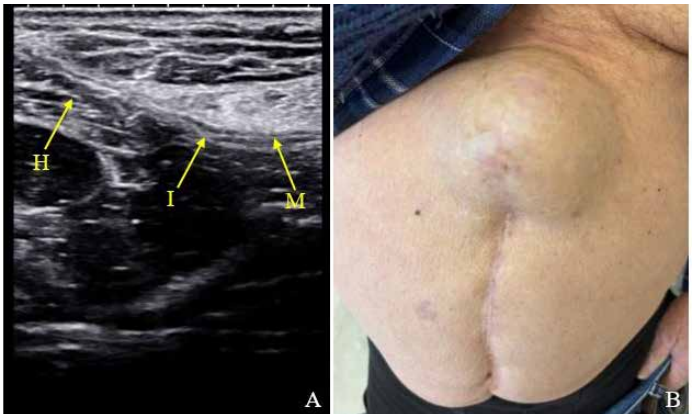

Figure 2. Ultrasound and clinical images of an 83 year old patient who underwent re- laparotomy on day 13 after AAA repair for heme-peritoneum. A: Ultrasound image at 23 months post operatively with incisional hernia. B: Clinical image of a 8 cm incisional hernia.
M= mesh, I= mesh interruption, H= hernia

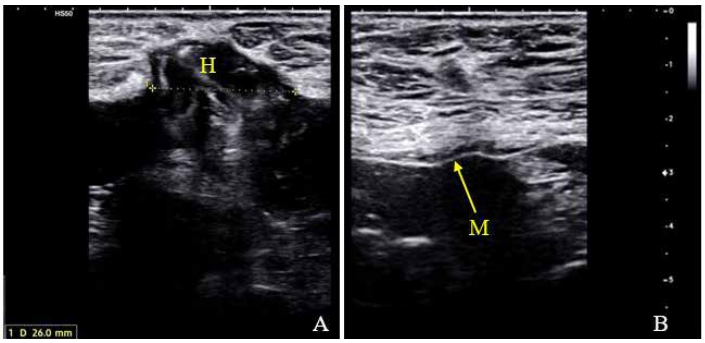

Figure 3. Ultrasound images at 43 months follow-up of a 70 year old patient who underwent re-laparotomy 18 months after AAA repair for an adenocarcinoma of the gastrosophageal junction. A: 26 mm supra-umbilical hernia. B: Ultrasound image showing the retro-muscular mesh in place in the inferior hemi-abdomen.
M= mesh, H= hernia

	Total (N=21)
Sex male/female (%)	17/4 (80/20)
Age, yr (SD)	69 (9.6)
BMI, kg/m^2 (SD)	25.9 (3.8)
Tabaco	
- Active	10 (47)
- Ancient	9 (43)
- Never	2 (10)
- UPA p/y (SD)	40 (24.0)
Alcohol	
- Occasionally	12 (57)
- 1 glass/day	5 (24)
- > 1 glass/day	4 (19)
BPCO	2 (10)
Diabetes	2 (10)
Immunosuppression	0 (0)
ASA score	
- I	0 (0)
- II	5 (24)
- III	13 (62)
- IV	3 (14)
Previous laparotomy	1 (5)

Table 1. Patient's demographic characteristics

N(%)	Group without re-laparotomy (N=18)	Group re-laparotomy (N=3)
Incisional hernia		
- Clinical	0 (0)	3 (100)
- US	1 (5)	3 (100)
Seroma	0 (0)	0 (0)
Infection	0 (0)	0 (0)
Evisceration	0 (0)	0 (0)
Post-operative complications		
- Post operative ileus	3 (17)	2 (66)
- Pulmonary embolism	1 (5)	1 (33)

Table 2. Outcomes

Video: The Lumbar Hernia
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Background: The Lumbar Hernia is a rare entity, there are about 300 cases described in the literature. It seems to be a once in a lifetime opportunity for a surgeon to treat a lumbar hernia. The defect lays in the lumbar muscles below the 12th rib and above the iliac crest. There are two types described, the superior lumbar hernia (Grynfeltt-Lesshafthernia) which is more common and the inferior lumbar hernia (Petit hernia).
Case presentation: A 71 year old lady presented with a pain and swelling in the right lumbal aerea for several months. The MRI which was ordered by her family doctor showed the clear immage of a superior lumbar hernia. We indicated an endocopic reapair for this hernia, which can be done laparoscopically (intraperitoneal IPOM or extreperitoneal TAPP, TEP) or retroperitoneally TEP repair (rTEP). We chose the rTEP, which is very well described in the articel by B.Li et al. "Retroperitoneal totally endoscopic prosthetic repair of a primary lumbar hernia" from 2020. (Videopresentation) No postoperative complications occurred.
Conclusion: Various surgical repair strategies have been recorded for the treatment of the umbar hernia, but there seems to be no currently unified standard. In our patient RTEP could be performed safe and effective. A simple non coated polypropylene mesh can be used.

Outcomes of Outpatient Hernia Surgery at a Tertiary Referral Center: Results of a Standardized Pathway
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Background: Outpatient hernia surgery is increasingly practiced, in a global effort to optimize patient comfort and outcomes, as well as healthcare costs. Standardized patient selection criteria and postoperative pathway are key to limit the risk of unplanned hospital admissions after surgery.
Aims: The aim of the current study was to assess the outcomes of our institutional standardized outpatient hernia surgery program and identify factors potentially contributing to outpatient management failure (OMF).
Methods: All adult patients undergoing outpatient hernia repair in our tertiary referral center between 06.2013, and 12.2019 were retrospectively assessed. Primary endpoint was the rate of OMF, defined as unplanned hospital admissions and/or consultations for poor pain management. Demographic and surgical characteristics were compared to identify factors associated with OMF. The β^2 test or Fisher's exact test were used for categorical and Student's t-test for continuous variables, with a significance threshold sat $p < 0.05$.
Results: Overall, 405 patients were included in the present study. Mean age was 50 years (SD 15), and 85% (n=345) were male. Outpatient management failure (OMF) was observed in 3% (n=12) of all patients. Among demographic parameters, only ASA class was significantly higher in OMF patients (ASA 2-3 in 75% OMF versus 40% non-OMF patients, p=0.039). Bilateral inguinal hernia repair was performed in 41.7%OMS versus 10.4% non-OMF patients, p=0.009), whereas mean operative duration was longer in OMF patients (43.1 min versus 65.8min, p=0.019). Postoperative complications were observed in 5.7% in the whole cohort (50% in OMF versus 4.3% non-OMF patients, p<0.001). Persistent postoperative pain was also more frequent in OMF patients, in 1 week (p=0.033), 1 month (p=0.003) and 3 months (0=0.009) after surgery.
Conclusion: The implementation of a standardized pathway has achieved favorable outcomes in outpatient hernia surgery, with a low overall OMF rate of 3%. Patient- and procedure- related characteristics need careful assessment to optimize patient selection.

Multisite Hernia Treatment: The Robotic Approach Makes It Feasible
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Background: The use of robotic surgery for combined abdominal wall hernias, including multiquadrant hernias, is underexplored in the literature. While the prevalence of simultaneous hernias is not well documented, they represent a frequent clinical challenge.
Aims: This study aimed to evaluate the feasibility of a robotic approach for treating simultaneous umbilical, incisional, and inguinal hernias.
Methods: We retrospectively reviewed a prospectively maintained dataset of abdominal wall hernias to identify patients treated for combined hernias. Patients were divided into two groups based on the robotic docking technique, and the data were analyzed.
Results: From January 2020 to December 2024, 30 patients underwent robotic combined hernia repair. 90% were male, with a mean age of 63.2 (49.8–76.6) years. Single docking was feasible for 30% patients with W1 median hernias with mean diameter of 2.8cm (1.4–4.2) combined with an unilateral inguinal hernia. Double docking was necessary for 70% of patients with wider (W1-3) median hernia defect, mean diameter of 4.0cm (1.2-6.8) or bilateral inguinal hernias. No intraoperative complications were reported. The mean operative time was 148.0 minutes (111.0–185.1) for the single docking and 230.7 minutes (152.1–309.3) for the double docking and the mean hospital stay was 2.1 days (1.5–2.7) for the single docking and 3.4 days (0.5–6.2) for the double docking. The morbidity rate was 11.1% for the single docking and 23.8% for the double docking, only with one reintervention was needed in the double docking. Most of the complications in both groups were surgical site occurrences, managed conservatively. At a mean follow-up of 19.2 months (4.2–34.2), no recurrences were observed.
Conclusion: Robotic multisite hernia repair is a safe and effective minimally invasive option. Single docking offers advantages but is limited to patients with median defects and unilateral inguinal hernias. For median defects combined with bilateral inguinal hernias, double docking is generally required.

Evaluating the Learning Curve of Dexter-Assisted rTAPP: Feasibility, Safety, And Early Outcomes at a High-Volume Hernia Center

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Background: Robotic-assisted surgery has been associated with enhanced precision and the potential to reduce postoperative complications in preperitoneal inguinal hernia repair. The novel Swiss robotic platform Dexter, designed as an open and adaptable system, integrates into conventional laparoscopic setups. It was introduced at our high-volume hernia center, where total extraperitoneal hernia repair (TEP) previously served as the standard of care.
Aims: This study aims to evaluate the clinical outcomes and feasibility of robotic transabdominal preperitoneal hernia repair (rTAPP) using the Dexter platform during the initial learning curve at a Cantonal Hospital in Switzerland.
Methods: From February to December 2024, consecutive patients undergoing Dexter-assisted rTAPP were prospectively enrolled in a database. Postoperative outcomes, including prolonged pain, were assessed during follow-up visits 6–8 weeks after surgery. Importantly, none of the participating surgeons had prior routine experience with robotic surgical platforms before Dexter's implementation.
Results: A total of 66 patients (82% male, median age 61 years, IQR 54–71) underwent rTAPP, with 91% presenting bilateral hernias and 6 cases involving recurrences. The median operative times for bilateral and unilateral hernias were 108 minutes (IQR 93–140) and 90 minutes (IQR 79–109), respectively. Major postoperative complications (Clavien-Dindo grade ≥3) occurred in two patients (3%), both requiring relaparoscopy—one for pain out of proportion on postoperative day 1 and one for foreign body retrieval. Follow-up data were available for 39 patients (70%). Among these, 83% reported no pain, 14% reported mild pain, and 3% reported moderate pain. There were no hernia recurrences observed during the follow-up period.
Conclusion: Dexter-assisted rTAPP can be safely implemented during the learning curve, demonstrating acceptable safety and feasibility. However, the learning curve is associated with prolonged operative times. Further studies with expanded robotic experience and longer follow-up are required to assess potential benefits, particularly in reducing chronic pain.

Comparative Analysis of Robotic Versus Laparoscopic Surgery

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Background: Minimally invasive surgery reduces recovery times and complications compared to open procedures. While laparoscopic surgery (LS) is widely used, robotic-assisted techniques (RS) like the DaVinci system are gaining recognition for enhanced precision and potential improvements in patient outcomes.
Aims: The aim of this project was to evaluate and compare the differences between RS and conventional LS across various surgical procedures.
Methods: Patients undergoing RS for transabdominal preperitoneal hernia repair (TAPP), right hemicolectomy, rectal resection, rectopexy and hiatus hernia repair between January 2019 and December 2022 were included. In addition, patients undergoing LS for the same procedures during this time frame were also included. Patient demographics, operative time, length of hospital stay, complications, costs, and remuneration were analysed retrospectively.
Results: Overall, 88 patients were included. The 46 RS patients were younger than the 42 LS patients (62 vs. 69 years) but both groups had a similar distribution with regards to sex, weight, and Charlson Comorbidity Index. RS had a significantly longer operative time (162 ± 84 minutes) compared to the LS group (127 ± 67 minutes, p=0.036). However, the RS patients had a shorter length of hospital stay (5.5 ± 4.5 days vs. 8.1 ± 7.1 days, p=0.038). There was no difference regarding complication rates (22% vs 19%, p=0.098). Costs were not different between RS and LS (24367 vs. 23963 CHF, p=0.916). However, LS had a higher earning-cost balance (RS -2034 vs. LS 6319 CHF, p=0.002).
Conclusion: RS compared to LS is associated with a longer operative time, but a shorter hospital stay and comparable complication rates. Overall, however, LS seems to be more rewarding than RS.

Video: Laparoscopic Enhanced View Totally Extraperitoneal Rives-Stoppa Repair (eTEP-RS) for Ventral Hernia: No Robot, No Problem!

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Background: The eTEP-RS technique has become a versatile approach for ventral hernia repair, offering a minimally invasive option while avoiding the risks of intraperitoneal mesh placement. Despite the growing popularity of robotic platforms for this procedure, many Swiss hospitals face limited access to such systems.
Aims: This video aims to demonstrate a laparoscopic eTEP-RS repair, emphasizing technical aspects and key anatomical landmarks. The objective is to provide a practical guide for surgeons with limited access to robotic systems who wish to expand their repertoire with a minimally invasive sublay technique.
Methods: The video includes high-quality intraoperative footage of a laparoscopic eTEP-RS repair. Step-by-step instructions are provided, focusing on trocar placement, dissection techniques, and achieving optimal visualization of the retromuscular space. The procedure demonstrates the feasibility of using standard laparoscopic instruments to accomplish a tension-free mesh placement.
Results: The video illustrates the key steps of a laparoscopic eTEP-RS technique:
- Effective patient positioning and trocar placement
- Creation of the retromuscular space with visualization of anatomical landmarks
- Mesh placement and fixation
- Tips, tricks and pitfalls

Conclusion: The laparoscopic eTEP-RS technique provides an excellent alternative to open and robotic sublay repairs, enabling the placement of a large mesh in line with current guidelines. This video highlights the feasibility of performing eTEP-RS laparoscopically, making the technique accessible to surgeons in hospitals with limited robotic resources.

Steps in eTEPS: What Can Possibly Go Wrong?

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Background: Enhanced-view total extraperitoneal plasty (eTEP) is a promising minimally-invasive technique for ventral hernia repair, allowing extensive retromuscular dissection and large mesh placement with low rates of wound complications and fast recovery. The learning curve, however, is flat and technical expertise is crucial for good outcomes.
Aims: The aim of this study is to analyze the difficulty and occurence of adverse events of 10 crucial steps in the eTEP procedure for ventral hernia repair. This may provide guidance for a safe introduction of eTEP for surgeons new to this technique.
Methods: All patients undergoing eTEP for primary or incisional ventral hernias between October 2023 and December 2024 at three centres were included in this prospective study. 10 crucial surgical steps were defined and each step was rated for its difficulty (0 – 5 points on a numeric rating scale) and analyzed for incidence of adverse events. Surgeon workload was measured using the NASA-Task-Load-Index.
Results: A total of 118 patients underwent eTEP. Suture of the hernia defect was rated the most difficult step (2.49/5), followed by dissection of the hernia defect (2.45/5) and closure of posterior defects (2.19/5). Common adverse events were pneumoperitoneum during dissection of the hernial sac (50.9%) and minor bleeding during dissection of the retromuscular plane (46.6%). A less common but more severe adverse event was injury to the linea alba in 5 cases during cross-over. Mean operation time was 97 minutes, median length of stay was 2 days. Operative revisions were necessary in 3.4%. Mean mental and physical workload according to NASA-Task-Load-Index was 44 / 100 and 45 / 100 respectively.
Conclusion: eTEP is a technically challenging procedure with a relatively high surgeon workload, mainly due to suturing and hernia dissection. Detailed knowledge about possible adverse events and their frequency during the procedure is a helpful guide for mastering this technique.

Abdominal Wall Reconstruction: The Role of the Plastic Surgeon

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Background: Abdominal wall reconstruction (AWR) is a complex challenge requiring expertise in plastic surgery to restore both structural integrity and function. While general / visceral surgeons primarily address hernia repair, plastic surgeons play a critical role in soft-tissue management, functional restoration, and complex defect reconstruction using advanced flap techniques. Innovations in locoregional and free tissue transfer have expanded reconstructive options, improving outcomes in cases of extensive tissue loss, infection, or prior surgical failure.
Aims: This study highlights the plastic surgeon's role in AWR, reviewing key reconstructive techniques, including pedicled and free flaps, perforator-based approaches, functional muscle transfers and abdominal wall allotransplantation.
Methods: An overview of plastic surgical techniques for AWR is presented and a retrospective analysis of AWR cases in our unit was conducted, focusing on surgical techniques, indications, and outcomes of flap-based reconstructions.
Results: Plastic surgical techniques are essential for complex AWR. Pedicled and free flaps provide robust soft-tissue coverage, enhance vascularized support, and reduce recurrence rates. The rectus abdominis, external oblique, tensor fasciae latae, and anterolateral thigh flaps remain workhorses in reconstruction. Free tissue transfer, including the latissimus dorsi and gracilis flaps, offers solutions for extensive defects or prior failed repairs. Functional muscle transfer, particularly the rectus femoris or chimeric anterolateral thigh flaps, is crucial for restoring dynamic abdominal wall support. Flap-based approaches yield high success rates, particularly in contaminated fields where mesh use is limited.
Conclusion: Plastic surgeons provide expertise in flap-based reconstruction for functional and aesthetic restoration in AWR. Advancements in perforator-based and functional muscle flaps continue to refine outcomes, highlighting the need for a multidisciplinary approach. Further research is needed to optimize flap selection and integration with evolving AWR strategies.

Bariatrics

Reversal of Roux-en-Y Gastric Bypass: A Multi-Centric Analysis of Indications, Techniques and Surgical Outcomes

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Background: Roux-en-Y gastric bypass may present long-term complications that require revisional surgery or even reversal to normal anatomy (Figure1). Data on the indications, surgical technique and outcomes of RYGB-reversal remain scarce.
Aims: To analyze indications, techniques and surgical outcomes after reversal of Roux-en-Y gastric bypass.
Methods: We identified 48 cases of RYGB-reversals with complete 90-day follow-up within a multi-centric international retrospective database of elective secondary bariatric surgery. The operations were performed between 2010–2024 in high volume referral centers in Europe and USA. Data were collected on body weight, associated diseases and on surgical outcomes up to 1-year postoperatively.
Results: Patients were mainly female (81.3%) with a median age of 50 years (IQR 39-56). RYGB-reversal was performed 7 years (median) after primary RYGB in patients with a BMI 23.9 kg/m^2 (IQR 20-27). Half of the patients underwent at least 1 bariatric revision before the reversal. Main indications for reversal were dumping syndrome (33.3%), excessive weight loss (29.2%), marginal ulcer (14.6%), malabsorption (12.5%) and abdominal pain (10.4%). Rate of conversion to open surgery was 8.3% and the postoperative complications during the first year reached 50%, including 31.3% Clavien-Dindo grade I-II, 16.7% grade III-IV complications and one death. At 1-year, the mean BMI of the cohort increased by 18% to 28.25kg/m^2; only 1 patient reached pre-RYGB BMI.
Conclusion: Although RYGB is a theoretically reversible procedure, normal anatomy is re-established only in selected cases which are refractory to medical therapy and often also to revisional bariatric surgery. RYGB-reversals entail high morbidity, while the extent of recurrent weight gain at 1-year post-reversal seems to allow patients to remain below the threshold of severe obesity.

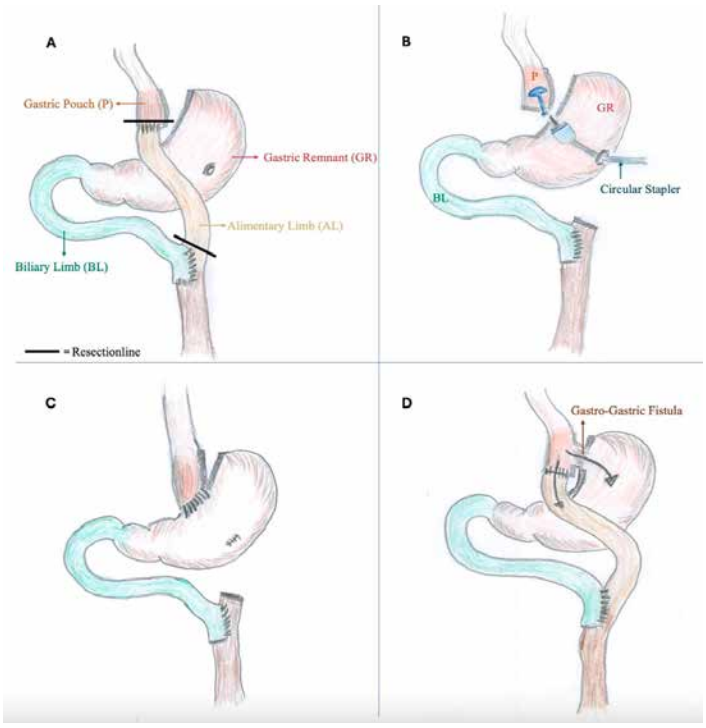

Figure 1. The captures A-B-C depict key steps of the surgical technique of laparoscopic reversal of Roux-en-Y gastric bypass (RYGB), while capture D shows an alternative approach

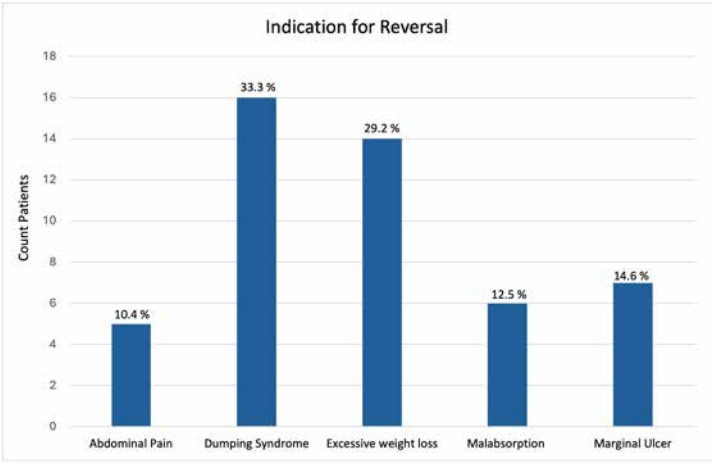

Figure 2. Indication for Reversal

Preoperative Eating Patterns and Their Effect on Post-Operative Outcomes in Bariatric Surgery: A Cohort Study of 1550 Patients

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Background: Although surgical procedures like Roux-en-Y gastric bypass (RYGB) and sleeve gastrectomy (SG) are highly effective, postoperative outcomes can differ significantly between individuals. These differences are shaped by a range of factors, including preoperative behaviors and psychological traits. Eating disorders (EDs), particularly binge eating, have been linked to less favorable weight loss outcomes following surgery. Certain guidelines even consider severe EDs as contraindications for bariatric surgery.
Aims: The aim of this study was to investigate the influence of different EDs on the postoperative outcome of patients undergoing bariatric surgery.
Methods: In a retrospective analysis of prospectively collected data, patients who underwent RYGB or SG between January 2010 and December 2018 were examined. Patients were categorized by preoperative eating patterns, including binge eating, snacking, and high consumption of sweets or fatty foods. Demographics, early morbidity, and five-year follow-up data on weight loss, comorbidities, and complications were collected. Outcomes were assessed using the SF-Bari Score, a composite endpoint integrating weight loss, comorbidity improvement, and surgical complications.
Results: Among 1,550 patients, eating patterns varied widely, with most exhibiting multiple EDs. ED patients were younger with higher baseline BMI. Total body weight loss (TBWL%) was initially higher in ED patients but differences diminished over time. SF-Bari Scores were also higher in ED patients at 5 years. RYGB consistently showed lower BMI, higher TBWL%, and higher SF-Bari Scores than SG. RYGB yielded better outcomes for Binge and Sweet ED patients, while significant differences for Nightly ED appeared after 2 years. Female patients achieved greater weight loss and SF-Bari Scores overall.
Conclusion: Pre-operative EDs appear to have minimal or no significant impact on postoperative outcomes after bariatric surgery. These findings suggest the need to reconsider current guidelines, particularly the classification of severe EDs as contraindications for bariatric surgery.

The de novo GERD Puzzle after Sleeve Gastrectomy: A Meta-Analysis and Meta-Regression of Possible Predisposing Factors

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Background: Sleeve gastrectomy (SG) is one of the most performed bariatric procedures, yet its association with gastroesophageal reflux disease (GERD) remains debated. A substantial proportion of patients develop de novo GERD (DN-GERD) following SG, likely due to anatomical and physiological changes, highlighting the need to identify potential preoperative predictors that could inform risk stratification and guide surgical technique.
Aims: This meta-analysis aims to identify preoperative predictors of DN-GERD after SG.
Methods: Relevant studies were retrieved from PubMed, Embase, and the Cochrane Library that reported DN-GERD incidence among SG patients without symptomatic preoperative GERD. Only studies that explicitly excluded patients with preoperative GERD and employed a standardized follow-up protocol (using a uniform DN-GERD diagnostic method) were included. A meta-analysis of proportions was performed using a random-effects model with logit transformation to account for heterogeneity.
Results: Out of 2'977 studies, 29 satisfied inclusion (13'351 patients). The overall incidence of DN-GERD was 26.8% (95%CI 20.5%–34.2%) as shown in Figure 1. Further analyses were conducted grouping studies by diagnostic approach: 24 used symptom-based (S) assessment, yielding a 23.2% incidence (95%CI 17.3–30.3%); 11 employed endoscopies (E), reporting 17.9% (95%CI 11.7–26.3%); and 6 utilized 24-hour pH-monitoring (P), with 48% (95%CI

32.6-63.8%). Substantial heterogeneity prompted meta-regression and subgroup analyses. Male sex was linked to higher GERD rates in S group (p=0.0171). In E group, a <4cm dissection from the pylorus showed higher DN-GERD rates (p=0.0008), while no significant difference was observed based on Bougie size (≤36Fr vs. ≥38Fr; p=0.1617) as shown in Figure 2 and 3 respectively.

Conclusion: This meta-analysis underscores the considerable variability in DN-GERD incidence when assessed by symptoms, endoscopy, or pH monitoring. Male sex might predispose to symptomatic GERD. A <4cm dissection might lead to a higher reflux. Additional standardized studies are urgently warranted to further optimize these SG outcomes.

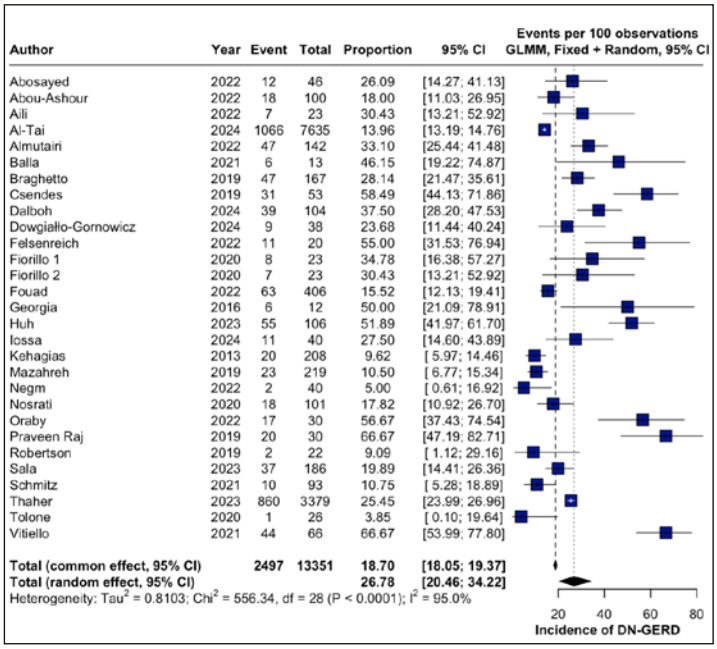

Figure 1. Overall DN-GERD Incidence

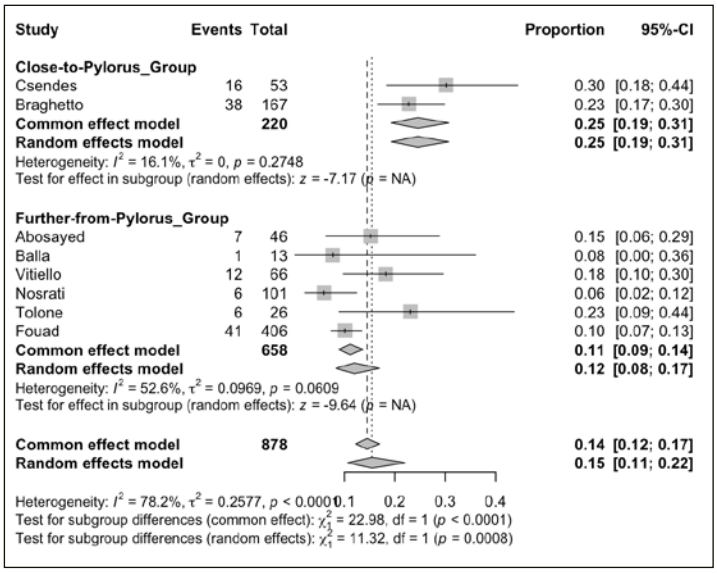

Figure 2. Subgroup Analysis According to Dissection Distance From the Pylorus (<4cm vs ≥4cm) within E group

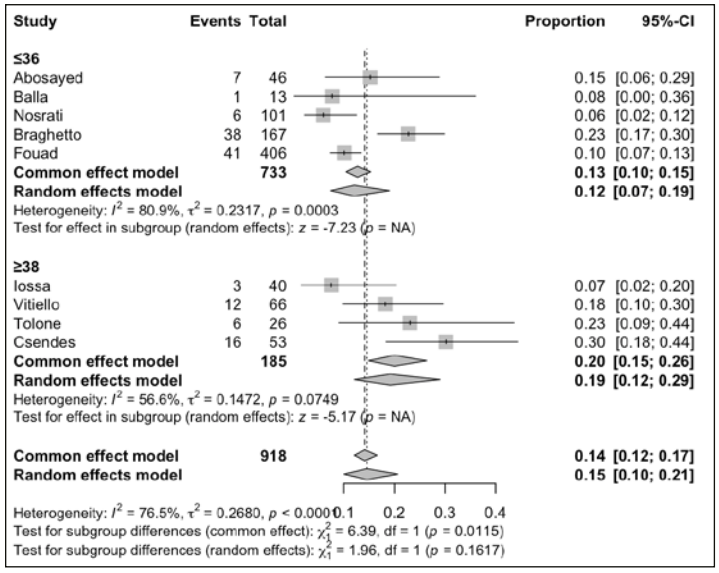

Figure 3. Subgroup Analysis According to Bougie Size (≤36Fr vs ≥38Fr) within E group

Impact of Preoperative GLP-1 Agonist Receptor Treatment on Metabolic and Bariatric Surgery Outcome

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Background: Glucagon-like peptide-1 (GLP-1) receptor agonists have transformed obesity treatment, offering a rapid and safe approach to significant weight loss. However, metabolic and bariatric surgery (MBS) remains an effective option, achieving total weight loss (TWL) of 25%–35% of presurgical body weight. The role of GLP-1 use prior to MBS in patients requiring surgery due to insufficient weight loss or weight regain after GLP-1 treatment remains largely unexplored.

Aims: This study aims to assess the potential effects of preoperative GLP-1 receptor agonist treatment on postoperative outcomes following MBS.

Methods: This retrospective, single-center study analyzed patients who underwent MBS between January 2022 and December 2023. Postoperative outcomes and 12-month %TWL were compared between patients with prior GLP-1 receptor agonist treatment and those without.

Results: Among the 236 patients included, 70% (n=165) were female. The median age was 39 years (IQR 31–51), and the median BMI was 42 kg/m² (IQR 39–45). The median follow-up duration was 14 months, with 75% of patients having at least 12 months of follow-up. MBS procedures included Sleeve Gastrectomy (n=176, 74%) and Roux-en-Y Gastric Bypass (n=60, 25%). Half of the patients (n=118) received preoperative GLP-1 receptor agonist treatment (liraglutide or semaglutide). 69% (n=82) had treatment failure (>5% %TWL or >10% weight regain). Patient characteristics (except for dyslipidemia), operation time, length of stay, overall and major postoperative morbidity, and readmission rates were similar between the groups. However, %TWL at 12 months was significantly higher in patients without prior GLP-1 receptor agonist treatment (30% vs. 26%, p=0.043) especially when compared to patient with GLP-1 treatment failure (p=0.007).

Conclusion: Preoperative GLP-1 treatment may be associated with lower %TWL after bariatric surgery, potentially due to intrinsic factors or the effects of GLP-1 exposure. Further research is needed to clarify these mechanisms.

GLP-1 Agonists and Bariatric Surgery: Does Preoperative Treatment Make a Difference?

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Background: Obesity is a chronic disease associated with systemic dysfunction and increased risk of serious health conditions, requiring multifaceted treatment approaches. Although bariatric surgery remains the most effective option, pharmacotherapy—particularly glucagon-like peptide-1 receptor agonists (GLP-1 RAs)—has recently gained recognition as a promising alternative or complement to surgical intervention.

Aims: This study compares the outcomes of bariatric surgery in patients treated with and without preoperative GLP-1 receptor agonists, exploring their impact on weight loss, comorbidity resolution, and reasons for transitioning to surgery.

Methods: We conducted a retrospective analysis of patients undergoing laparoscopic Roux-en-Y gastric bypass (RYGB) or sleeve gastrectomy (SG) between 2015-2020, excluding those with revisional surgeries, postoperative GLP-1 therapy, or pregnancies during follow-up. Patient outcomes, including weight loss, comorbidity resolution, and surgical complications, were assessed.

Results: Among 192 eligible patients, 43 received GLP-1 therapy before bariatric surgery, while 149 did not. Baseline characteristics, including age, BMI, and surgery timing, were similar, though diabetes prevalence was higher in the GLP-1 group. No significant differences in weight loss, resolution of arterial hypertension, dyslipidemia and OSAS, or complication rates were observed during the three-year follow-up. Diabetes remission rates were significantly higher

at three months in patients without prior GLP-1 treatment, but no differences were observed beyond this point. Both groups achieved "Fair response" SF-Bari Scores at all time points, with similar complication rates and severity. Patients in the GLP-1 group transitioned to surgery for definitive treatment, due to side effects or unavailability of medication.
Conclusion: Preoperative GLP-1 therapy does not appear to affect long-term weight loss outcomes, resolution of comorbidities or complications rates following bariatric surgery.

Surgical Versus Endoscopic Outlet Reduction for Weight Regain and Dumping Syndrome After Roux-En-Y Gastric Bypass: A Single-Center Retrospective Mid-Term Follow-up Study

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Background: Over the last decades, obesity and its co-morbidities have reached pandemic dimensions. Nearly 60 percent of European adults are overweight. This disease leads to decreased quality of life, high mortality and immense socio-medical and socio-economic burden. Bariatric surgery, i.e. Roux-en-Y gastric bypass (RYGB), is still the most effective therapy with excellent long-term results. Nonetheless, weight regain and dumping syndrome occur in a relevant number of patients, often due to a dilatation of the gastrojejunal anastomosis. Transoral outlet reduction (TORe) as well as implantation of a MiniMIZER Ring (IMR) are less invasive treatment options than bypass revision which has been the standard treatment in the past.
Aims: The aim of the study was to compare the effectiveness of IMR with TORe in patients concerning weight regain or insufficient weight loss and dumping syndrome after RYGB.
Methods: A single-center retrospective data analysis of 105 patients who underwent IMR, TORe or both from January 2018 to March 2024 was performed. 56 patients underwent TORe only, ten IMR only and 39 both interventions (Table 1). Primary endpoint was weight stabilization or weight loss for subjects with weight regain and remission of symptoms for those with dumping syndrome. Secondary endpoints were length of hospital stay, perioperative complications and revisional procedures.
Results: Patients after IMR more often accomplished weight loss or maintenance than those treated endoscopically (Figure 1: Follow-up at 48 months: 75% after IMR versus 22% after TORe). After IMR, more patients had a rapid and persisting dumping improvement compared to after TORe (Figure 2). Due to dysphagia after IMR ten patients needed surgical revision.
Conclusion: IMR is a safe and effective therapy for weight regain and dumping syndrome after RYGB. IMR showed better mid-term results compared to TORe, but some patients suffered from dysphagia. A prospective randomized controlled trial for long-term results is recommended.

Characteristics / Procedures	TORe only n=56	TORe and MiniMIZER n=39	MiniMIZER only n=10
Age, years (SD)	46.4 (10.8)	43.4 (8.8)	46.2 (11.2)
Female gender, n (%)	49 (87.5)	34 (87.2)	10 (100)
ASA score			
• 2, n (%)	41 (73.2)	33 (84.6)	6 (60.0)
• 3, n (%)	15 (26.8)	6 (15.4)	4 (40.0)
Comorbidities			
• Type 2 Diabetes Mellitus, n (%)	6 (10.7)	5 (12.8)	0
• Hypertension, n (%)	18 (32.1)	12 (30.8)	2 (20.0)
• OSAS, n (%)	6 (10.7)	8 (20.5)	1 (10.0)
• Dyslipidemia, n (%)	5 (8.9)	6 (15.4)	0
• GERD, n(%)	15 (26.8)	13 (33.3)	4 (40.0)
• Recurrent arthralgia, n (%)	17 (30.4)	14 (35.9)	5 (50.0)
• Depressive Disorder, n (%)	15 (26.8)	14 (35.9)	3 (30.0)
Biometrics			
• Initial BMI at bariatric surgery, kg/m² (SD)	43.9 (7.0)	45.3 (6.8)	45.2 (6.4)
• Excess weight loss at nadir after bariatric surgery, % (SD)	91.4 (23.2)	92.3 (22.3)	64.8 (32.9)
• BMI at nadir after bariatric surgery, kg/m² (SD)	27.3 (4.8)	27.3 (5.3)	31.2 (5.1)
• BMI at TORe, kg/m² (SD)	32.9 (6.5)	32.2 (7.3)	-
• BMI at MiniMIZER, kg/m² (SD)	-	33.8 (6.9)	36.7 (4.0)
Indication to TORe			
• Dumping syndrome, n (%)	33 (58.9)	23 (59.0)	-
• Insufficient weight loss or weight regain, n (%)	47 (83.9)	31 (79.5)	-
Indication to MiniMIZER			
• Dumping syndrome, n (%)	-	23 (59.0)	5 (50.0)
• Insufficient weight loss or weight regain, n (%)	-	33 (84.6)	10 (100)
Timelapse from bariatric surgery to TORe, months (SD)	88.8 (40.8)	66.6 (33.7)	-
Timelapse from bariatric surgery to MiniMIZER, months (SD)	-	87.7 (38.4)	115.3 (71.2)

ASA: American Society of Anesthesiology. BMI: Body Mass Index. GERD: Gastroesophageal Reflux Disease. OSAS: Obstructive Sleeping Apnea Syndrome. TORe: Transoral Outlet Reduction.

Table 1. Patient demographics and clinical characteristics

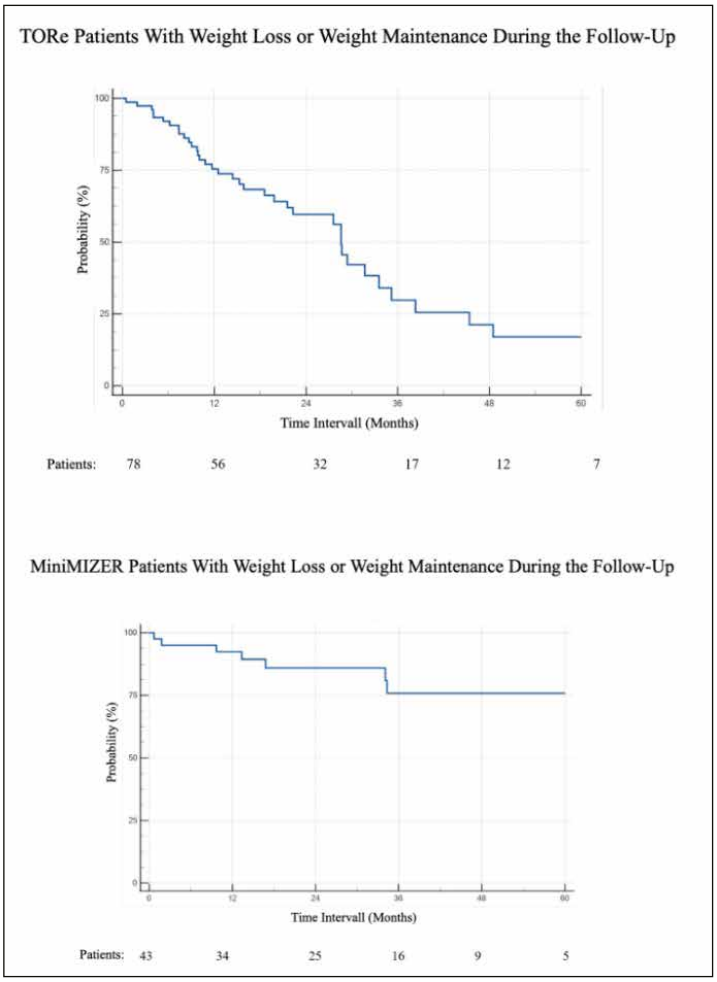

Figure 1. Weight Loss or Weight Maintenance During the Follow-Up

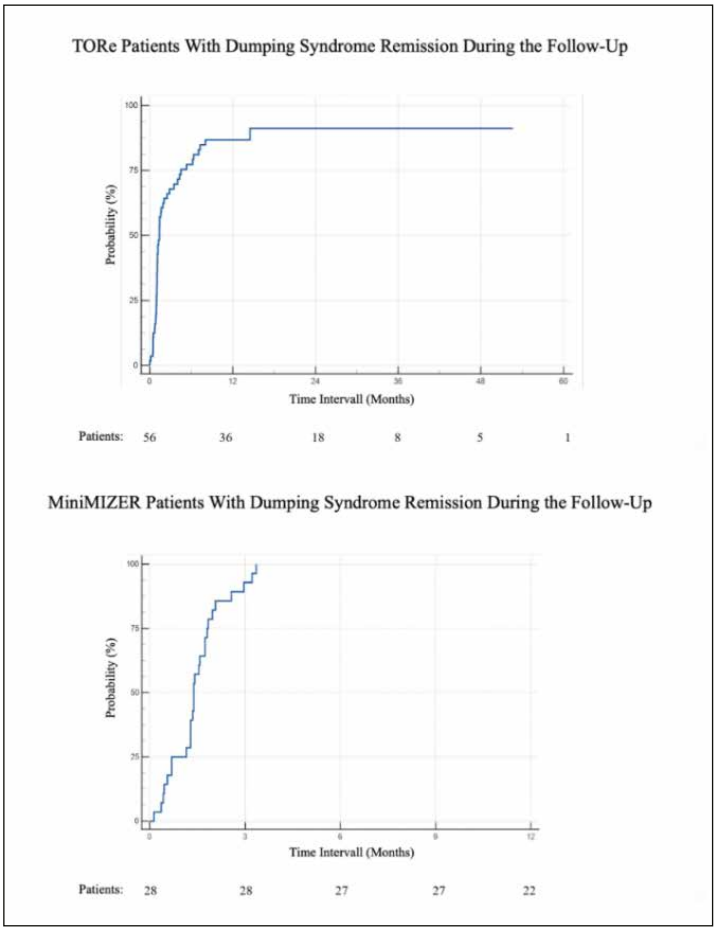

Figure 2. Dumping Syndrome Remission During the Follow-Up

Conversion of Sleeve Gastrectomy to Roux-En-Y Gastric Bypass and One-Anastomosis Gastric Bypass: A Retrospective Study

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Background: Bariatric surgery is a well-established treatment for morbid obesity. However, primary bariatric surgery may not always succeed in weight loss and can cause relevant side effects. Current literature lacks clarity on which bypass method is superior in redo operations for weight loss and gastroesophageal reflux.
Aims: This study aims to compare the effectiveness of converting SG to either RYGB or OAGB in terms of weight loss and reflux control.
Methods: A multicenter retrospective study was conducted on 72 adult patients who underwent conversion from SG to RYGB or OAGB between February 2014 and June 2023. The primary endpoint was the reasons for reoperation following SG — specifically, reflux or weight gain —and to evaluate which reoperation technique, either RYGB or OAG, results in the best outcomes for reflux relief and weight loss. Secondary endpoints included changes in weight, BMI, surgery duration, overall complication rate, and postoperative endoscopic findings.
Results: Patients' characteristics showed no difference. RYGB was performed on 34.7% of patients for reflux and 47.2% for excess weight, while 18.1% underwent OAGB for excess weight. There were no intraoperative complications, and six postoperative complications occurred. Reflux symptoms significantly remitted in 95.8% of cases. The Kaplan-Meier analysis revealed no significant difference in weight loss between RYGB and OAGB procedures (RYGB HR 0.747, 95% CI 0.207-2.693, p=0.656). A Cox regression analysis showed no correlation with excess weight loss either (HR 1.863, 95% CI 0.479-7.253, p=0.369), even after adjusting for confounding variables.
Conclusion: Our study showed that conversion of SG to RYGB was effective for gastroesophageal reflux symptoms remission. For weight loss, both RYGB and OAGB seem to be equally effective during the follow-up.

Ten-Year Outcomes of Roux-En-Y Gastric Bypass Following Failed Sleeve Gastrectomy: A Propensity-Matched Analysis With Primary Bypass Patients

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Background: Although sleeve gastrectomy (SG) is a commonly performed bariatric procedure, conversion to revisional Roux-en-Y gastric bypass (rRYGB) is a widely used method to treat patients who experience inadequate weight loss or recurrent weight gain. However, the long-term outcomes of rRYGB remain poorly studied.
Aims: This study aimed to evaluate the 10-year weight efficacy and outcomes of patients who underwent revisional RYGB after SG (Cohort 1; C1) and compare these results with those of patients who underwent primary RYGB (Cohort 2; C2).
Methods: This retrospective cohort study analyzed a 10-year follow-up of bariatric patients. Patients who experienced insufficient weight loss (<20% total weight loss [TWL]) or recurrent weight gain) underwent revisional RYGB (rRYGB) after SG (n=28). These patients were propensity score-matched (1:1 nearest neighbor matching, caliper = 0.2) with primary RYGB patients (n=105) based on age, BMI, and sex. The primary endpoint was TWL%.
Results: After matching, 27 patients were included in each cohort. The median follow-up time was 10.9 years for Cohort 1 (C1) and 10 years for Cohort 2 (C2). The mean TWL% was 27.8 ± 10.7 for C1 and 31.7 ± 17.7 for C2, while the median TWL% values were similar at 28.8 for C1 and 29.4 for C2. Statistical analysis revealed no significant difference between the cohorts (Wilcoxon rank sum test, p = 0.6672; Cliff's Delta = -0.073, 95% CI: -0.370 to 0.237), indicating a negligible effect size.
Conclusion: This 10-year follow-up demonstrated that rRYGB after failed SG achieves comparable long-term weight loss outcomes to primary RYGB.

Body Contouring Surgery in the Postbariatric Patient: Challenges and Opportunities

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Background: The increasing prevalence of bariatric surgery has led to a growing number of patients seeking body contouring surgery (BCS) to address post-weight loss deformities. While BCS significantly improves health-related quality of life, there remains controversy regarding its functional versus aesthetic indications, affecting insurance coverage decisions.
Aims: This study examines the indications, outcomes, and insurance coverage of common BCS procedures in post-bariatric patients.
Methods: We conducted a retrospective review of post-bariatric patients undergoing BCS in our unit, analyzing surgical techniques, patient outcomes, and insurance coverage rates.
Results: Abdominoplasty and circumferential body lifts are the most frequently performed procedures, followed by thigh lifts, brachioplasty, and breast surgery. Patient satisfaction is high, with favorable results and mainly minor complications requiring minimal surgical intervention. Combining BCS procedures is safe if excessive operative time and blood loss are avoided. Greater weight loss correlates with better outcomes, while higher preoperative BMI increases the risk of surgical site infections. Insurance coverage for post-bariatric BCS remains low (~40%), with abdominal procedures more likely to be covered than other surgeries. The absence of standardized criteria creates uncertainty for both patients and insurers.
Conclusion: BCS effectively and safely corrects contour deformities after massive weight loss, with high patient satisfaction and low complication rates. However, inconsistent and subjective insurance coverage highlights the need for standardized guidelines to improve access and reduce frustration in this expanding patient population.

Upper GI

The BARIREF Study: BARIatric Surgery Complications in Patients with Prior REFlux Surgery in a Large National Cohort

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Background: Obesity and gastroesophageal reflux disease (GERD) often coexist, posing clinical challenges. Fundoplication is the standard treatment for GERD refractory to medical therapy. Managing obesity after fundoplication is complex and while RYGB is preferred for addressing both obesity and GERD, its use post-fundoplication requires further evaluation.
Aims: To assess the outcomes of Roux-en-Y gastric bypass (RYGB) and sleeve gastrectomy (SG) in patients with prior fundoplication.
Methods: Retrospective analysis of a national French database of patients undergoing RYGB and SG between 2013 and 2023. Patients were grouped according to prior fundoplication (PriorF) or no fundoplication (NoF). Baseline demographics and 90-day postoperative outcomes were assessed. Univariate and multivariate analyses identified risk factors; 1:5 matching was applied based on sex, age, body mass index, comorbidities, surgery year, and procedure type.
Results: Among 372'464 patients, 337 (0.1%) had prior fundoplication. PriorF patients had higher rates of severe postoperative complications (Dindo ≥ IIIa: 8.9% vs. 3.7%, $p < 0.001$), longer hospital stays (4.5 ± 4.9 vs. 3.7 ± 2.9 days, $p < 0.001$), and higher readmission rates (17.8% vs. 9.9%, $p < 0.001$). Multivariate analysis for RYGB showed no significant association between prior fundoplication and complications (OR 1.66, 95% CI 0.98–2.62, p = 0.059). Prior fundoplication was independently associated with increased complications after SG (OR 2.83, 95% CI 1.59–4.66, $p < 0.001$).
Conclusion: Prior fundoplication increased postoperative complications after SG but not after RYGB. RYGB appears to be the safer bariatric procedure in patients with prior fundoplication. Management should be performed in high-volume centers with bariatric expertise.

Unveiling Gender Disparities in Postoperative Outcomes After Oncological Gastrectomy – A Global Multicenter Analysis

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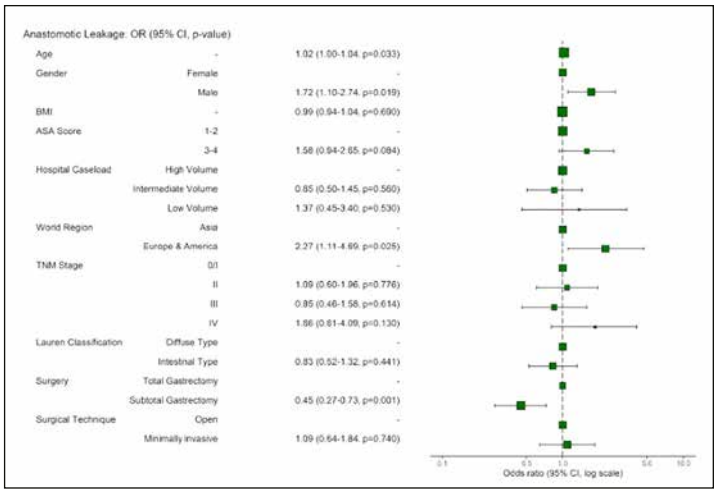
Background: In the past, studies have indicated a better prognosis in women with gastric cancer. Nevertheless, gender differences in gastric cancer treatment and survival, especially regarding postoperative outcomes, remain poorly investigated.
Aims: The aim of this retrospective cohort study is to evaluate gender-related differences in patient characteristics and postoperative outcomes following oncological gastrectomy.
Methods: We analyzed 9351 oncological gastrectomies performed between January 1, 2017, and December 31, 2021, across 43 centers on five continents. The primary endpoints were gender-related differences in postoperative complications and morbidity, assessed using multivariable logistic regression. Propensity score matching was employed to balance baseline characteristics.
Results: The cohort consisted of 3516 female and 5835 male patients. Male patients were older (66 (IQR 57-74) vs 64 (IQR 54-73)), had higher BMI, ASA scores and more advanced tumor stages, while females had more diffuse tumors and R+ resections (Table 1). Male patients had significantly more overall (27.3% vs. 22.4%) and major (15% vs. 10.8%) complications. Similarly, escalation of care, reoperations, readmissions and 90day mortality (2 vs 1.3%, Table 2) were decreased in women. In crude multivariate analysis, male gender was a risk factor for specific complications such as anastomotic leakage (3.4% vs. 2.0%) and pulmonary complications (6.0% vs. 4.1%). After matching 1685 patients of both genders, male gender remained a predictive factor for overall and major complications, anastomotic leakage, and pulmonary morbidity. In contrast, male gender was not associated with mortality, infectious complications and R+ status (Figure 1).
Conclusion: This large, multicenter cohort study highlights significant gender-related disparities in postoperative outcomes after oncological gastrectomy. Male gender is an independent risk factor for major complications, anastomotic leakage, and pulmonary complications. These findings underscore the need for gender-specific risk stratification and tailored perioperative management strategies in gastric cancer surgery.



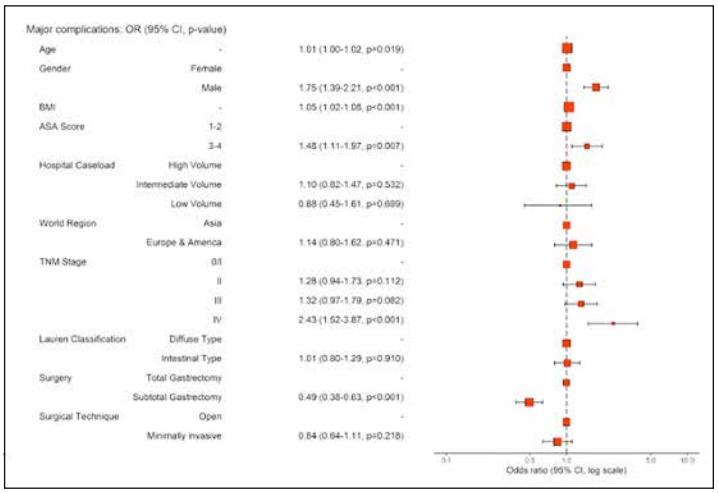


Figure 1. Multivariable Analysis After Propensity Score Matching

	Female (N=3516)	Male (N=5835)	P-value	Total (N=9351)
Age (Years)				
Median [Q1, Q3]	64.0 [54.0, 73.0]	66.0 [57.0, 74.0]	<0.001	65.0 [56.0, 74.0]
BMI				
Median [Q1, Q3]	23.1 [20.5, 26.0]	24.5 [22.4, 27.0]	<0.001	24.0 [21.6, 26.8]
ASA Score				
1-2	2694 (76.6%)	4182 (71.7%)	<0.001	6876 (73.5%)
3-4	556 (15.8%)	1185 (20.3%)		1741 (18.6%)
Type of Surgery				
Total Gastrectomy	1044 (29.7%)	2011 (34.5%)	<0.001	3055 (32.7%)
Subtotal Gastrectomy	1887 (53.7%)	3080 (52.8%)		4967 (53.1%)
Pylorus-preserving Gastrectomy	436 (12.4%)	384 (6.6%)		820 (8.8%)
Proximal Gastrectomy	149 (4.2%)	360 (6.2%)		509 (5.4%)
Lymph Nodes resected				
Median [Q1, Q3]	36.0 [26.0, 48.0]	35.0 [25.0, 46.0]	<0.001	35.0 [26.0, 47.0]
Resection Margin				
R0	3346 (95.2%)	5608 (96.1%)	0.011	8954 (95.8%)
R1	128 (3.6%)	152 (2.6%)		280 (3.0%)
R2	23 (0.7%)	52 (0.9%)		75 (0.8%)
Surgical access				
Open	1334 (37.9%)	2344 (40.2%)	0.079	3678 (39.3%)
Laparoscopic	1830 (52.0%)	2970 (50.9%)		4800 (51.3%)
Robotic	275 (7.8%)	384 (6.6%)		659 (7.0%)

Table 1. Patient Baseline Characteristics

	Female (N = 3516)	Male (N = 5835)	P-value	Total (n= 9351)
Overall complication rate				
None	2729 (77.6 %)	4244 (72.7 %)	<0.001	6973 (74.6%)
Minor (CD I-II)	408 (11.6%)	716 (12.3%)		1124 (12.0 %)
Major (CDIIIA-V)	380 (10.8%)	875 (15.0%)		1255 (13.4%)
Specific complications				
Anastomotic Leakage	72 (2.0%)	196 (3.4%)	<0.001	268 (2.9%)
Minor (CD I-IIIA)	36 (1.0%)	99 (1.7%)		135 (1.4%)
Major (CDIIIB-V)	36 (1.0%)	97 (1.7%)		133 (1.4%)
Pulmonary complications	143 (4.1%)	350 (6.0%)	<0.001	493 (5.3%)
Hemorrhage	64 (1.8%)	114 (2.0%)	0.678	178 (1.9%)
Infectious Complications	229 (6.5%)	451 (7.7%)	0.027	680 (7.3%)
Ileus	78 (2.2%)	154 (2.6%)	0.224	232 (2.5%)
Escalation of care	94 (2.7%)	271 (4.6%)	<0.001	365 (3.9%)
Reoperation	124 (3.5%)	283 (4.9%)	0.002	407 (4.4%)
Hospital stay (Days, Median [IQR])	10.0 [8.00, 12.0]	10.0 [9.00, 14.0]	<0.001	10.0 [9.00, 13.0]
Readmission related to Gastrectomy	121 (3.4%)	220 (3.8%)	0.041	341 (3.6%)
Mortality				
90-Day	46 (1.3%)	118 (2.0%)	0.011	164 (1.8%)
Table legend CD: Clavien-Dindo				

Table 2. Differences in Postoperative Complications

Outcomes of Minimally Invasive Median Arcuate Ligament Release: Symptom Improvement and Quality of Life Assessment

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Background: Median arcuate ligament syndrome (MALS) is a rare and complex condition with both vascular and neurologic components. Surgical repair is the treatment of choice; however, the proximity of the surgical field to the aorta and celiac trunk presents significant challenges.
Aims: This study aims to evaluate symptom improvement and postoperative quality of life (QoL) in patients undergoing minimally-invasive median arcuate ligament release (MALR) at our institution.
Methods: A retrospective analysis was conducted on patients undergoing minimally invasive MALR between 2017 and 2021. Patient characteristics, postoperative morbidity, symptoms before and after surgery, and postoperative quality of life using the 2-Item Short-Form Health Survey were assessed.
Results: Thirty patients underwent laparoscopic MALR, with 80% (n=24) being female. The median age was 32 years (range: 18–63), and the median BMI was 20.3 kg/m² (range: 14.4–32.4). The predominant symptom at presentation was abdominal pain (29 of 30 patients). The median time from symptom onset to diagnosis was 12 months (range: 3–59 months). Laparoscopic MALR was performed without conversion, and no major postoperative morbidity was observed. Median follow-up was 24 months (range 6- 48 months). Symptom resolution or significant improvement was reported in 80% of patients (n=24). Postprandial symptoms showed a trend of reduction but were not statistically significant: nausea (50% to 33%), vomiting (17% to 7%), and diarrhea (30% to 13%). Bloating symptoms remained unchanged. Postoperative quality of life, assessed with the 2-Item Short-Form Health Survey, revealed generally positive outcomes across all domains (health change: 80(+/-18), pain:78(+/-20), emotional:82.7 (+/-24) and physical limitations:78(+/-32), and social functioning: 77(+/-24)).
Conclusion: Minimally invasive MALR is a safe procedure that results in symptom improvement in most patients. However, some gastrointestinal symptoms might persist at follow-up underscoring the importance of managing patient expectations and thoroughly excluding other gastrointestinal conditions.

Video: Superior Polar Gastrectomy

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Background: Superior polar gastrectomy is a technically demanding procedure typically reserved for tumors and lesions located near the esophagogastric junction. These cases pose significant challenges due to the anatomical complexity and the need to balance oncologic safety with functional preservation. Here, we report the case of a 38-year-old patient successfully treated with superior polar gastrectomy and jejunal interposition for a subcardial gastrointestinal stromal tumor (GIST).
Aims: To present, through a detailed video, the feasibility and efficacy of laparoscopic superior polar gastrectomy with jejunal interposition using Roux-en-Y reconstruction for the management of a challenging GIST near the esophagogastric junction, while preserving functionality and minimizing morbidity.
Methods: A 38-year-old female was diagnosed with a subcardial GIST measuring 7 cm near the esophagogastric junction. Following neoadjuvant therapy with Imatinib, the tumor size was

reduced to 4 cm, achieving stable disease on radiological evaluation. During the laparoscopic procedure, the tumor's precise localization was confirmed intraoperatively using esophagogastroduodenoscopy, revealing that the lesion involved more than one-third of the esophagogastric junction circumference. A superior polar gastrectomy was then performed, resecting the esophagogastric junction. Reconstruction involved jejunal transposition with Roux-en-Y technique, including a circular end-to-side esophagojejunostomy, a side-to-side stapled jejunogastrostomy, and a manual side-to-side jejunojejunal anastomosis.

Results: The procedure was completed laparoscopically without intraoperative complications. The patient was discharged on postoperative day 8, tolerating oral intake well and reporting no reflux symptoms. Pathological analysis confirmed a complete (R0) resection with clear margins, achieving both oncologic and functional success.

Conclusion: This case highlights the successful application of laparoscopic superior polar gastrectomy with jejunal interposition, a rare but well-documented procedure for tumors near the esophagogastric junction. While technically demanding, this approach demonstrates the potential to achieve good oncologic and functional outcomes. Its successful execution underscores its value as a valuable option for carefully selected cases.

Esophageal Perforation: Aggressive Nonoperative Treatment as a Viable Option

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Background: Esophageal perforation (EP) is a rare but life-threatening emergency with high mortality, often due to mediastinal exposure to gastrointestinal contents, leading to severe inflammation and multiorgan failure. Historically, surgical intervention was the mainstay for EP management, particularly in patients with sepsis, non-contained perforations, or underlying esophageal disease. However, advancements in endoscopic and radiological drainage have increasingly enabled nonoperative (NONOP) approaches.

Aims: This study aimed to evaluate management of EP at our institution in regards to surgical and nonoperative management.

Methods: We retrospectively analyzed patients treated for EP at our institution from 2003 to 2022. Exclusion criteria included esophageal lesions detected and repaired, chronic fistulas, or anastomotic insufficiencies. NONOP management comprised multidisciplinary approach with antibiotic and antifungal therapy, nutritional support, and endoscopic or radiological drainage of pleural and mediastinal collections. Surgical intervention (SURG) included oesophageal resection, surgical suture and drainage.

Results: Among 172 patients, 146 (84.9%) underwent NONOP management (n=19 conservative therapy only), and 26 (15.1%) required surgery (n=7 esophageal resections, n=13 esophageal sutures). A trend toward increased use of NONOP was observed over time. Baseline characteristics were similar between groups. NONOP patients more frequently presented iatrogenic perforations and contained leaks (p=0.014) and had lower rate of septic shock (p=0.026), respiratory distress (p=0.018), or delays >24 hours (p=0.049). NONOP achieved a 94.5% healing rate and 5.5% mortality, comparable to SURG outcomes (92.3% healing, p=0.178; 11.5% mortality, p=0.375). NONOP had shorter length of ICU (p<0.001) and hospital stay (p=0.001). Successful NONOP treatment was associated with benign etiology, perforations in the proximal or distal esophagus, early diagnosis, and absence of empyema or sepsis. Importantly, NONOP was also effective in unstable patients with septic shock when drainage was feasible.

Conclusion: Aggressive NONOP management is an effective alternative for EP, even in critically ill patients, provided septic foci are adequately drained.

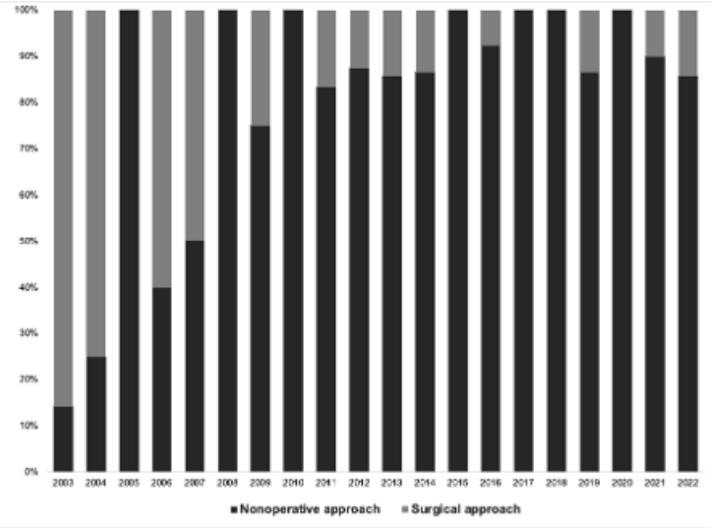

Figure 1. Trends over the years (2003-2022) for the treatment of esophageal perforation with operative or non-operative treatment

Video: Hiatal Hernia Repair With the Dexter Robotic System™

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Cantonal Hospital Winterthur, KSW, Winterthur

Background: Hiatal hernia repair is a challenging procedure requiring precision and meticulous surgical technique to achieve optimal outcomes. Robotic-assisted surgery provides enhanced dexterity and visualization, making it ideal for managing complex hernias. The Dexter Robotic System™ offers a compact, modular platform designed to optimize surgical efficiency and adaptability in minimally invasive procedures.

Aims: This small case series aims to demonstrate feasibility, safety, and short-term outcomes of robotic-assisted hiatal hernia repair using the Dexter System.

Methods: Seven patients underwent robotic-assisted hiatal hernia repair with or without mesh repair and fundoplication in one year (11/2023 – 11/2024) in a tertiary referral center, performed by one experienced hernia surgeon using Dexter. Indications included paraesophageal and hiatal hernia with or without gastroesophageal reflux disease. Detailed surgical steps are shown in the accompanying video. Perioperative data and short-term (6 weeks) patient outcomes were retrospectively reviewed.

Results: Median age was 69 years (range 58-78). Median procedure time was 138 minutes (range 129-255 minutes) and decreased as experience grew. Meanwhile, the robotic console time increased during the period, with a median of 74 minutes (range 45-100 minutes). There were no intra-operative complications. The mean hospital stay was 3,4 days (range 2-4). There were no relevant post-operative complications (Clavien-Dindo Grade ≥ 2). Four patients experienced minor dysphagia in the first weeks after the operation.

Conclusion: The initial learning curve appears relatively short for experienced minimally invasive hernia surgeons. The use of a lightweight, open and sterile robotic system makes the transition from laparoscopic to robotic operation easy. This video highlights the successful use of Dexter for hiatal hernia repair. The system's design facilitates precise dissection and suturing, offering a reliable approach for managing anatomically complex cases. Further experience and training of different surgeons are needed to investigate advantages for patient outcome and implementing the robotic system further.

All About Timing: Optimizing Surgery Intervals After Neoadjuvant Therapy in Esophageal Cancer

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Background: The current standard of care for curative treatment of esophageal cancer consists of neoadjuvant therapy followed by resection. However, the interval between neoadjuvant therapy and esophagectomy has been widely debated. For both protocols – CROSS and FLOT – resection within 6 to 8 weeks is suggested. These recommendations aim to balance tumor control with perioperative recovery. However, prolonged intervals may offer patients critical recovery time to improve nutritional and physical status before surgery.

Aims: This study investigates whether extending the interval beyond 8 weeks affects oncologic outcomes, focusing on tumor response and survival.

Methods: We conducted a retrospective analysis of 184 patients with esophageal adeno or squamous cell cancer treated with neoadjuvant radiochemotherapy (adapted CROSS protocol) or chemotherapy (FLOT) between 2014 and 2022. Patients were categorized into three groups based on the interval from completion of neoadjuvant therapy to surgery: early (≤8 weeks), intermediate (8–12 weeks), and late (>12 weeks). Outcomes included pathologic response (TNM/UICC staging) and overall survival (OS). Statistical analysis assessed differences between groups.

Results: Baseline characteristics, including demographic factors and tumor-related variables were comparable across the early (n=41), intermediate (n=80), and late (n=63) groups. Most common tumor type was adenocarcinoma (n=149), followed by squamous cell cancer (n=30). Pathologic tumor response (downstaging based on TNM/UICC criteria) was similar among the groups, with no significant differences in rates of complete or partial response. Survival analysis also revealed no statistically significant differences in overall survival (OS) between the groups with a median OS of 39 months (24.7-53.3) in the early, 62 months (29.3-94.7) in the intermediate and 45 months (22.7-67.3) in the late group (p=0.253).

Conclusion: This study supports the safety of delaying esophagectomy beyond the traditionally recommended 4–8 weeks, particularly to an intermediate interval of 8–12 weeks. Allowing additional time may enhance patient recovery and preoperative fitness without adversely affecting oncologic outcomes.

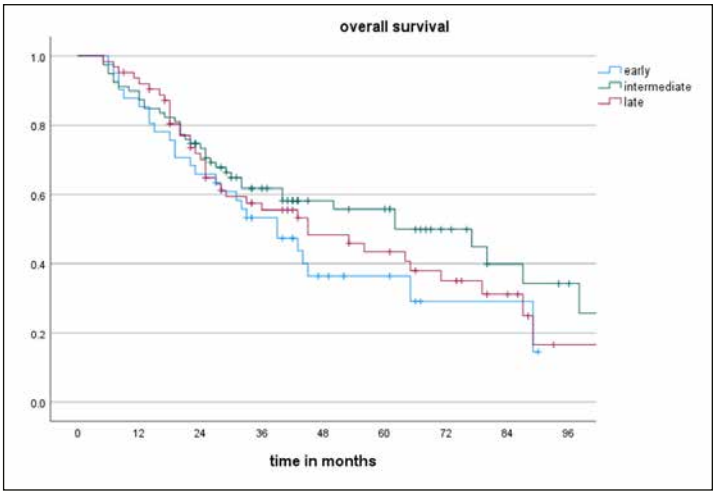

Figure 1. Overall survival in patients with esophageal cancer according to the interval between end of neoadjuvant therapy and esophagectomy

Costs of Robotic and Laparoscopic Bariatric Surgery: A Systematic Review and Meta-Analysis

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Background: Bariatric surgery is the most effective approach for addressing severe obesity, and laparoscopic approach is the standard of care nowadays. Despite the widespread of robotic systems, its application in bariatric surgery remains controversial.
Aims: The aim of our systematic review and meta-analysis was to compare the costs of robotic-assisted and laparoscopic bariatric surgery.
Methods: Following the guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), we conducted a literature search across PubMed, Cochrane Library, Web of Science, and Google Scholar databases. We included all studies that compared patients undergoing robotic-assisted versus laparoscopic bariatric surgery and reported hospital costs. The primary endpoint of our analysis was hospital costs for patients undergoing either robotic-assisted or laparoscopic surgery.
Results: The literature search identified 14 retrospective studies with 1,414,357 patients (112,363 robotic; 1,301,994 laparoscopic). Total hospital costs significantly favored laparoscopic surgery (SMD 0.721, 95%CI: 0.555–0.887, p<0.001), with an absolute cost difference of USD 3,819. Fig1. Laparoscopy had shorter operative times, while robotic surgery offered slight advantages in hospital stay and complication rates. Fig2 and Fig3.
Conclusion: Despite its limitations, our systematic literature review and meta-analysis provides the most current and robust evidence indicating that the robotic-assisted approach is significantly more expensive than the laparoscopic approach in bariatric surgery. This finding remained consistent across the overall analysis as well as in nearly all subgroup and sensitivity analyses. Conversely, we did not observe a substantial clinical advantage of the robotic-assisted approach over laparoscopy, although there were marginally lower complication rates and a slightly shorter length of hospital stay. To enhance the quality of evidence, randomized studies are necessary to assess the cost-effectiveness of the robotic approach in both primary and reoperative bariatric surgery.

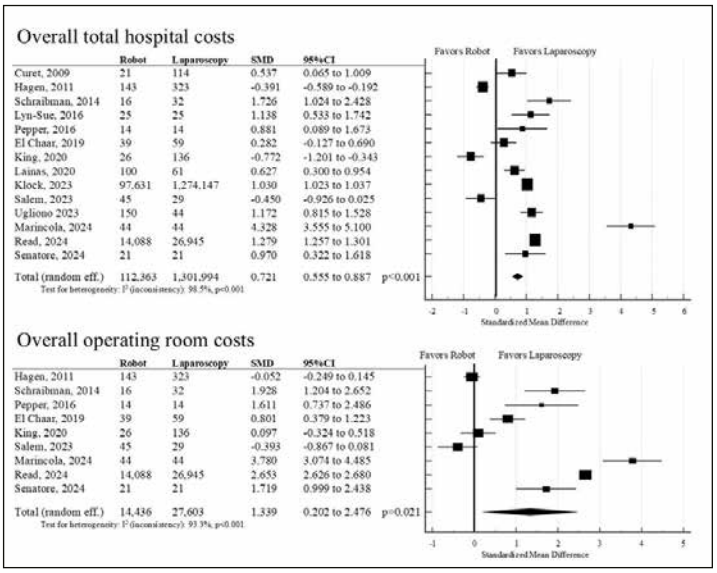

Figure 1

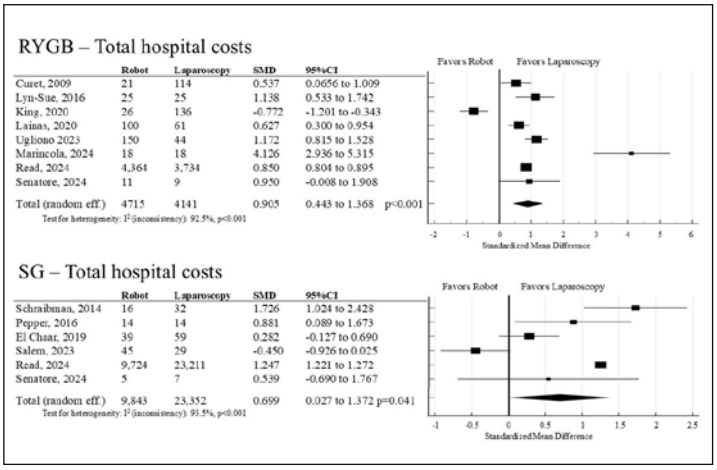

Figure 2

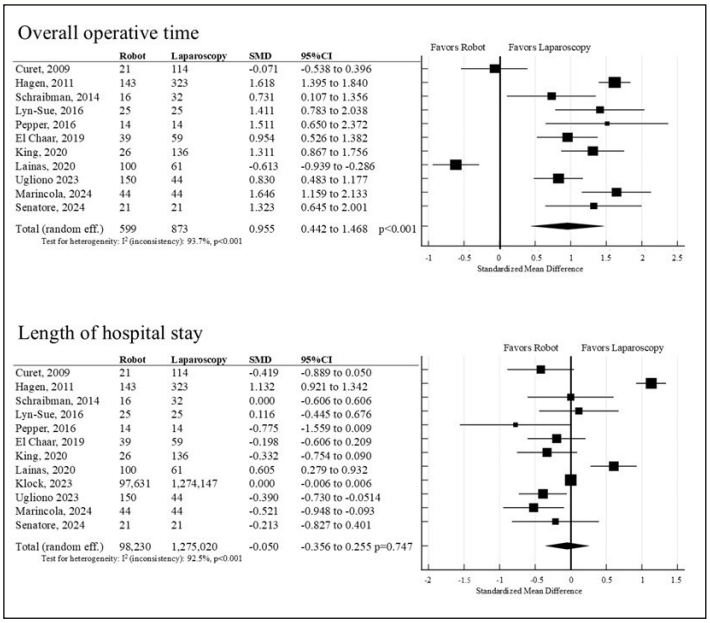

Figure 3

Coloproctology

Sacral Neuromodulation Improves Functional Outcome and Quality of Life in Patients with Pouch Dysfunction After Pan Proctocolectomy for Ulcerative Colitis

M. Di Giuseppe[1], F. Drissi[2], C. Korkmaz[2], A. Bourreille[3], X. Tréton[4], F. Ris[5], G. Meurette[5]
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Background: Postoperative frequency of bowel movements and impaired fecal continence (FI) has a negative impact on quality of life following ileal pouch-anal anastomosis. Sacral neuromodulation (SNM) is a validated treatment of FI but its effectiveness in IPAA patients has been poorly reported.
Aims: The aim of this study was to evaluate the effectiveness of sacral neuromodulation (SNM) in improving the functional outcomes and quality of life of patients with pouch dysfunction following ileal pouch-anal anastomosis (IPAA) for ulcerative colitis. In particular, the study sought to compare the outcomes of SNM treatment in patients with IPAA suffering from fecal incontinence (FI) with those of patients routinely treated with SNM for FI.
Methods: A 3 weeks test-phase was performed before definitive implantation of the pulse generator. Patient's data were prospectively gathered in a dedicated registry. IPAA patients were then compared to a matched-paired control group of patients routinely treated by SNM for FI.
Results: Between 2007 and 2020, 14 IPAA patients were tested and 12 (85%) were implanted. This group was compared to a matched group of 20 patients implanted for FI. After a mean follow-up of 4.8 [0.5-16] years, there was a significant decrease of weekly leaks (29 vs 2 ;p=0.01), Wexner score (15 vs 10.8 ;p=0.01) and an improvement of quality of life (FIQOL 1.853 vs 2.42 ;p=0.01). IPAA patients evolved equally as compared to the control group in terms of Wexner score and quality of life at 6 months, 1 year and 2 years.


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Conclusion: SNM provides a significant decrease of leaks and improves Wexner scores and quality of life in IPAA patients. The effectiveness seems comparable to these of patients routinely treated by SNM for FI. SNM indications could be extended to IPAA patients presenting bad functional outcome.

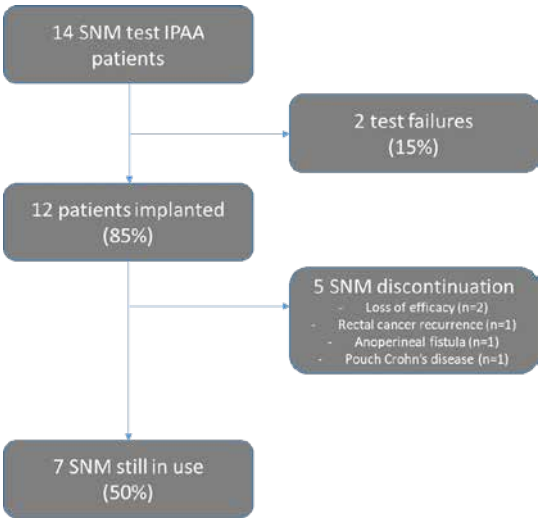

Figure 1. Study flowchart

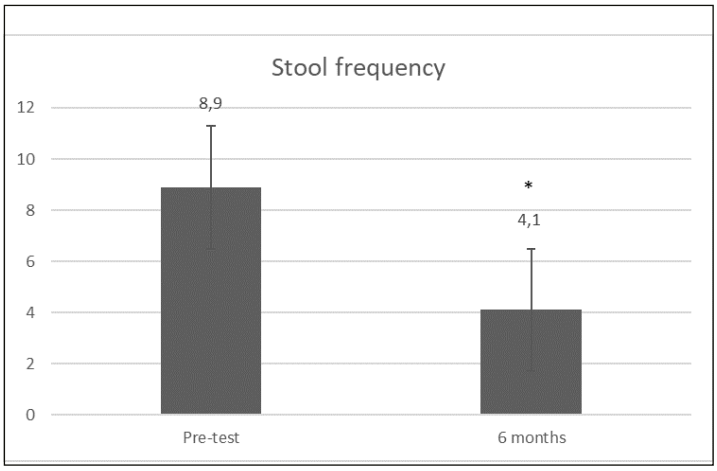

Figure 2. Stool frequency per day

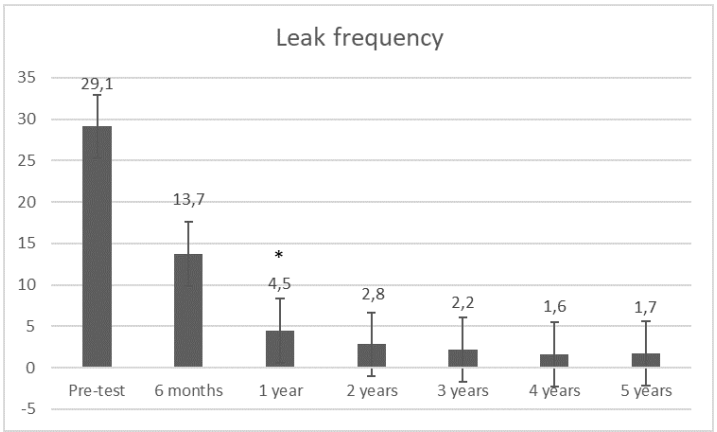

Figure 3. Leak frequency per week

Allogeneic Expanded Adipose-Derived Mesenchymal Stem Cell Therapy for Perianal Fistulas in Crohn's Disease: Conclusions From a Six Year Single Center Experience

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Background: The treatment of perianal fistula, particularly in patients with Cohn's disease (CD), remains challenging. Analogous to the Admire trial published in 2016, a new therapy was established using mesenchymal stem cell injections (MSC).
Aims: Eight years after approval, this treatment has now been withdrawn from the market due to no longer significantly demonstrable advantage in terms of closure rate compared to the treatment with placebo. We report our series of patients treated at one of two national centers to determine real world efficacy.
Methods: In total, we have treated 35 patients with CD and complex perianal fistula between February 2019 and July 2024 with a local injection of 120 million allogeneic MSC at a tertiary hospital.
Results: Of the 35 patients who were treated, 22 patients (63%) were male. The median age was 37 (18 to 82) years. On average, the patients suffered from fistulas for 5 years and from Crohn's disease for 12 years. The mean follow-up time was 46 months (5 to 70 months). Overall, fistula closure was found in 20 patients (57%). In 4 (27%) of the 15 patients in whom MSC treatment failed, closure was achieved by subsequent reoperation. A total of 8 (22%) patients developed perianal abscess which had to be treated surgically. Six of the patients treated are smokers. Of these, 5 patients did not experience any fistula healing.
Conclusion: After almost six years of complex fistula treatment with MSC, we were able to confirm the initial results of the Admire trial with a fistula closure rate of 57%. Despite the small number of 35 patients, this is one of the largest available series on MSC treatment for CD fistulas. The closure rate of 57% compares to classic surgical fistula treatments, thereby questioning the high cost of MSC treatment and supporting its cessation.

Follow-up After Resection of High Grade Anal Intraepithelial Neoplasia (HSIL): How Long Is Enough?

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[1]St.Gallen; [2]Health Ostschweiz, Cantonal Hospital of St.Gallen, St.Gallen

Background: Incidence of Anal Carcinoma (AC) and its precursor lesion, HSIL, is rising. After incidental or planned resection of HSIL, surgeons are facing the question of whether a follow-up is necessary and how long. Given the fact that HSIL is induced by the Human Papilloma Virus (HPV), similarities to gynaecological dysplasia that can request life-long follow-up may exist.
Aims: To find out when recurrence occurs after resection of HSIL.
Methods: All patients who received surgical excision for HSIL in our institution from 1.1.2013 to 31.12.2018 were retrospectively extracted from our prospective database. Only those with R0 resection margins were included. Time to recurrence was collected, as well as patient characteristics.
Results: 24 patients (14 female, 7 male with HIV) received R0-resection of HSIL. 12 primary surgeries (50%) included skin transposition. 8 patients (33%) needed more than one surgery, either to achieve R0-resection (4 patients, 1-3 surgeries) or due to complications (4 patients, 2-5 surgeries) . 12 of the patients (50%) had a recurrence (1 Carcinoma, 6 HSIL, 5 LSIL) which occurred after a median 63 months (3-131). The recurrence rate of HSIL/Carcinoma alone (without LSIL) was 29% and always occurred more than 60 months after initial resection (median 72, range 62-131).
Conclusion: After resection of HSIL, even when performed quite radically needing plastic surgery, recurrence is common and occurs usually more than five years after the initial resection. Therefore, longtime follow-up is mandatory, possibly life-long. We recommend following the patients in specialized clinics, if possible with high resolution anoscopy.

Guardians of the Scalpel in Proctology: Exhaustive Review

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Centre Médico Chirurgical Volta, La Chaux-de-Fonds

Background: We might considered Ancient Egypt as the cradle of surgery, and Egyptian coloproctological surgery may have a crucial role of influence in the practice of surgery in neighbouring cultures, including Greeks and Romans.
Aims: Egyptian influence spread beyond Europe, thereby affecting Western civilization significantly. We keep ancient documents on western countries describing as the Smith's Papyrus and Eber's Papyrus, demonstarting allegations regarding proctological surgery from the ancient Egypt have a main role until today.
Methods: Study Design consisted in an exhaustive review of original sources, modern literature papers regarding proctological surgery (7) and proctologists in the ancient Egypt. We had compiled documentation during 15 years (2009-2024), that we found in Saqqara, Cairo, Vienna and London.
Results: We found in 34 literature sources, 24 archaeological / proctologic sources, 117 medical libraries and 8 personnel explorations on-site: We found "two main surgeons in proctology" called the treat anal entities. 94% of pictographs demonstrated that two great proctologists existed in ancient Egypt, however, this is open to interpretation because there were named "shepherds of the anus" and not surgeons (Figure No. 1). Therapeutic options were mentioned in the literary sources, while the specimens suggested demonstrating such treatments were credited to those physicians and not to sorcerers. The outstanding surgeons identified were : Ir En Athky and Khouy Hwi. Both distant one to each other about 150 years. We verified their knowledge and the conventional level of Egyptian colorectal surgery possibly performed under uncommon circumstances.
Conclusion: The ancient Egyptians certainly treated proctological diseases of various kinds, and with varying degrees of success. Concerning surgical procedures and therapeutic drainages, there is no clear evidence for the existence of such procedures as demonstrated for example in Greece. It would, however, be surprising if malignant entities were not treated, even though they have not left traces in the surviving sources.

Figure 1. Guardians of the Scalpel in Proctology: Ir-en-Akhty & Sinw Khuy

Figure 2. Ir-en-Akhty & Sinw Khuy

Pruritus Ani (diagnosis to Treatment): Updated-Umbrella Review

E. X. Delgadillo-Pfenninger[1], A. Steiger[1], G. Salgado[2]
[1]Unité Spécialisée de Chirurgie Colorectale et Proctologie, Centre Médico Chirurgical Volta, La Chaux-de-Fonds; [2]Departamento de Cirugia, Hospital Ruber Internacional, Madrid

Background: Pruritus ani a complex syndrome, generally idiopathic, often accompanied by a psychogenic component, very difficult for colo-proctologist to identify primary and secondary etiology's and very hard to diagnose.
Aims: Transmit to young surgeons, strength specialist's knowledge to identify primary+secondary causes of pruritus ani and guide choosing the best hygienic-dietary meassures and treatments. Clues and Algorythm for diagnosis. Figure No 1.
Methods: Updated-umbrella review towards diagnosis & treatment, non-meta-analytical, thus a comprehensive review of the international literature. Accessed through software research programs, dividing the study in 3 phases: 1st Analysis, 2nd Cataloging, 3rd Responses, spanning time 20 years (2003 to 2023).
Results: By Google Scholar we yielded 8,160 results : pruritus ani (scratching, itching, diagnosis & treatment). Bing 41,500 results and Yahoo 364,000 results. We limited analysis of medical literature in English at PubMed 136 : Pruritus ani, 121 : itching, 275 : scratching, 70 : diagnosis-treatment. Odds Ratio (OR 0:1.1) Figure No.2
Conclusion: Pruritus ani frequently refractory to initial treatment, in case of a therapeutic failure, the patient should be send to the dermatologist (second opinion). Definitively frustrating for both, patient and surgeon, not being able to find an objective cause for anal pruritus is a reason to avoid any unnecessary surgical procedures. The presence of concomitant lesions conduct to proceed to excision-biopsy.

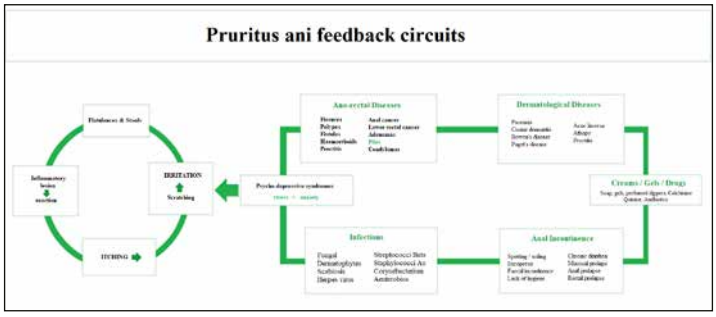

Figure 1. Pruritus Ani Algorythm

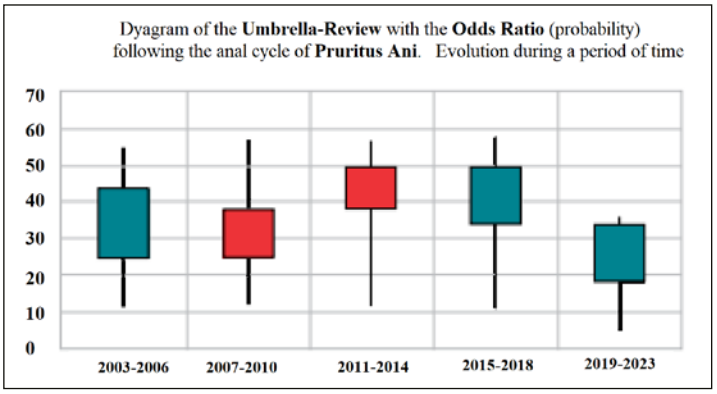

Figure 2. ODDS RATIO Pruritus Ani

Preventing Wound Complications With Prophylactic Negative-Pressure Therapy After Abdomino-Perineal Resection: A Systematic Review

A. Litchinko[1,2], B. Noiret[3], F. Ris[4], M. Adamina[1,2], Q. Denost[5]
[1]Division of Digestive Surgery, Cantonal Hospital Fribourg, HFR, Fribourg; [2]Faculty of Science, University of Fribourg, UNIFR, Fribourg; [3]Department of Colorectal Surgery, Bordeaux Colorectal Institute, Bodeaux; [4]Division of Digestive Surgery, Geneva University Hospitals, HUG, Geneva; [5]Department of Colorectal Surgery, Bordeaux Colorectal Institute, Bordeaux

Background: Perineal wound complications following abdominoperineal resection (APR) for anal or low rectal cancer remain a significant clinical challenge, frequently leading to high rates of surgical site infections (SSIs), wound dehiscence, and prolonged healing. These complications not only increase patient morbidity but also contribute to extended hospital stays and greater healthcare costs. Negative pressure wound therapy (NPWT) has emerged as a potential intervention to improve wound outcomes in this setting, yet its clinical effectiveness remains uncertain.
Aims: This systematic review aims to evaluate the effectiveness of NPWT in managing perineal wounds after APR. Specifically, it focuses on the impact of NPWT on reducing SSIs, decreasing wound dehiscence, and enhancing overall healing.
Methods: A comprehensive literature search was performed in MEDLINE, Embase, and the Cochrane Library following PRISMA guidelines. Eligible studies included randomized controlled trials, cohort studies, and case series investigating NPWT for perineal wounds post-APR. Data on SSI rates, wound dehiscence, healing time, and related complications were extracted. Due to heterogeneity in study designs and reported outcomes, a narrative synthesis was undertaken.
Results: Nine studies met the inclusion criteria, representing a range of study designs and sample sizes. NPWT use was generally associated with lower SSI rates, with some studies reporting up to a 30% reduction compared to conventional dressings. Evidence also suggested potential benefits in reducing wound dehiscence and improving healing times. However, variability in patient populations, study quality, and NPWT application protocols, as well as device-related complications (e.g., vacuum malfunctions), limit the overall strength and generalizability of the current evidence.
Conclusion: NPWT shows promise in improving the management of perineal wounds following APR, particularly among high-risk patient groups. Nonetheless, existing evidence is constrained by methodological heterogeneity, small sample sizes, and technical challenges. Larger, well-designed randomized controlled trials are needed to confirm the efficacy of NPWT and to establish standardized guidelines for its integration into clinical practice.

Impact of Sport Practice on Pelvi-Perineal Symptoms in Active Women

M. Schneider[1], J. Meyer[2], E. Liot[2], M. Sleiman[2], F. Ris[2], G. Meurette[2]
[1]Medical School, University of Geneva, Geneva; [2]Digestive Surgery, University of Geneva, Geneva

Background: Limiting the sport practice is routinely recommended for patients with perineal symptoms, but little is known on the prevalence of perineal complaints and the real negative impact of sport practice in the active population.
Aims: To assess the prevalence of pelvi-perineal symptoms (fecal incontinence, urinary incontinence, sexual dyscomfort and prolapse) in an active female population and to evaluate the impact of sports practice on these symptoms.
Methods: A cross-sectional study was performed by administering a online-questionnaire addressing 25 questions on physical activity and pelvi-perineal symptoms in various gym centers and universities across Geneva during a 4 month period.
Results: Two-hundred and eighty questionnaires were collected from 264 women and 16 men, leaving 264 questionnaires for analysis. Most of responders (70.8%) were younger than 50 years. The mean BMI was 23.1+/-3.9, 22.7% met the criteria for obesity. One hundred thirty-eight responders (52.3%) experienced pregnancy. In terms of physical activity, one hundred and sixty-nine responders practiced some kind of regular sports. Of note, 187 of them reported exercising at least twice weekly (77.3%). In terms of pelvi-perineal symptoms, 89 (34%) responders suffered from dyspareunia, 107 (40.5%) from anal incontinence (gas: 34.9%, feces: 5.7%), and 120 (45.5%) from urinary incontinence. Fifty-one responders (24.1%) reported suffering from pelvic prolapse. As expected, childbirth were predictive of perineal symptoms (both urinary and fecal incontinence). On the contrary, physical activity did not predict a worsening of anal incontinence (p=0.578), urinary incontinence (p=0.787) or prolapse (p=0.353).

Frequency of sport practice did not modulate these results nor the type of sport.
Conclusion: Based on our findings, prevalence of perineal symptoms is high among an active population of female; the sport practice seems not to be of negative impact on the perineal comfort

Robotic vs Laparoscopic Rectopexy: A Single-Center Observational Study
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Background: Minimally invasive techniques, including laparoscopic and robotic-assisted rectopexy, have become the standard of care for rectal prolapse repair. However, there is ongoing debate regarding the comparative effectiveness of these approaches, particularly in terms of recurrence, and functional outcomes.
Aims: The study aimed to compare the perioperative, short-term, and long-term outcomes of robotic-assisted versus conventional laparoscopic rectopexy in a single high-volume tertiary care center
Methods: This retrospective cohort study included 157 patients who underwent laparoscopic (n=130) or robotic (n=27) rectopexy for rectal prolapse between 2013 and 2023. Exclusion criteria included recurrent cases, open procedures, or multiple concomitant interventions. Baseline characteristics, perioperative outcomes, and long-term results were analyzed using descriptive statistics and bivariate tests. Recurrence rates were evaluated using Kaplan-Meier survival analysis.
Results: Baseline characteristics, including age, gender, and ASA scores, were similar between groups. Robotic rectopexy was more frequently associated with mesh implantation (96.3% vs. 72.3%, p=0.006). Operative time was significantly longer for robotic cases (150 ± 55 minutes vs. 120 ± 51 minutes, p=0.011). Intraoperative complications and conversion rates were comparable. Postoperative recovery profiles, including length of hospital stay and laboratory markers, did not differ significantly. Recurrence rates were lower in the robotic group (3.7% vs. 21%, p=0.049), and reoperations were exclusively reported in the laparoscopic group (13%, p=0.048).
Conclusion: Robotic-assisted rectopexy demonstrated comparable safety to laparoscopy, with advantages in recurrence and reoperation rates. While operative time remains longer, robotic surgery is a promising modality, particularly in complex cases. Prospective multicenter studies are warranted to further investigate long-term functional and patient-reported outcomes.

Studies and Cases in Pediatric Sugery

Pediatric Hepatic Alveolar Echinococcosis: Clinical Insights and the Need for a Centralized Database
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Background: Hepatic alveolar echinococcosis (HAE) is a rare, chronic, potentially life-threatening parasitic disease caused by Echinococcus multilocularis. Its clinical progression closely resembles that of a slow-growing malignant liver tumor. Symptoms typically emerge 10-15 years after infection, mostly leading to diagnoses in adulthood. However, pediatric HAE cases are being increasingly reported, presenting unique challenges in diagnosis and management due to limited awareness and available data. In Switzerland, the rising incidence of HAE highlights the need to improve understanding and refine management strategies in pediatric patients.
Aims: This study aims to review the clinical characteristics and treatment outcomes of pediatric HAE through the analysis of four cases.
Methods: We retrospectively analyzed pediatric patients diagnosed with HAE between 12/2016 and 4/2023, treated in collaboration with the national Pediatric Liver Center. Data on clinical presentation, diagnostic approaches, treatment modalities, and outcomes were reviewed.
Results: Four pediatric patients (two male, two female), age at initial presentation 10 to 17 years, follow-up duration after diagnosis 18 to 95 months. Two underwent surgical R0-resection and antiparasitic therapy for two years postoperatively with no signs of relapse at the end of follow-up; the other two are receiving antiparasitic therapy alone, with regular follow-up imaging confirming lesion stability. Of the two patients managed conservatively, one declined surgical intervention despite it being offered, while the other is rescheduled for operability assessment at the two-year follow-up, as the current surgical approach carries a high morbidity risk.
Conclusion: Pediatric HAE can be effectively managed with patient-tailored approaches based on disease severity and patient-specific factors, including a combination of surgery and time-limited antiparasitic therapy, or antiparasitic therapy alone. The creation of an international centralized pediatric HAE database will facilitate refining management strategies and improving outcomes for this rare but serious condition.

Autologous Blood Patch Pleurodesis as Treatment Option for Children With Persistent Air Leaks (PAL) – An Indicative Case Series
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Background: Autologous Blood Patch Pleurodesis (ABP) represents an established treatment method of PAL in the adult population. However, despite its low complication rate, the role of ABP among the pediatric population remains unclear regarding evidence of success.
Case Presentation: Over the course of 5 months, we treated two children with persistent air leak (PAL) due to complicated pleuropneumonia.
Case 1: Four-year-old boy, diagnosed with complicated pleuropneumonia and septated pleural empyema in the right chest. VATS was performed, a chest drain was placed, and intravenous antibiotic treatment was initiated. On POD 15, radiological diagnosis of a serous pneumothorax with mediastinal shift led to thoracic tube reinstallment. Due to recurrent unsuccessful attempts to reduce suction, tachypnea and persistent collapse of the right lung, ABP was performed. ABP was repeated once on POD 5. The postoperative course was uncomplicated, with gradual suction reduction and well-tolerated removal of the chest drain. The patient could be discharged on POD on oral antibiotic treatment.
Case 2: Two-year-old girl with complicated pleural-pneumonia, underwent VATS, chest drain placement and intravenous antibiotic treatment. Despite improving symptoms, a septated pneumothorax was diagnosed on POD 5. Due to persistent air leak, ABP was performed on POD 12 and 15. The postoperative course was then uncomplicated, and the patient could be discharged on POD 10 on antibiotic treatment.
Conclusion: In our presented case series, the effectiveness of ABP in children with PAL as complication for pleural pneumonia could be seen. Therefore, we consider ABP a safe and promising treatment option of persistent air leaks in children.

Indocyanine Green-Enhanced Fluorescence in Pediatric Laparoscopic Palomo Varicocelectomy: A Lymphatic-Sparing Approach – Our Experience
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Background: Laparoscopic Palomo varicocelectomy is a widely adopted surgical approach for treating pediatric varicocele. This study evaluates the use of indocyanine green (ICG)-enhanced fluorescence imaging to preserve lymphatic vessels during surgery.
Aims: To describe our experience with ICG-guided laparoscopic varicocelectomy, focusing on its safety, feasibility, and outcomes.
Methods: We retrospectively reviewed the records of six patients who underwent laparoscopic left varicocelectomy at our unit between February 2022 and February 2024. The patients' mean age was 16 years (range 14–17). All cases involved high-grade varicocele with left testicular hypotrophy or clinical symptoms. The procedure was performed laparoscopically with a 2 mL intratesticular injection of ICG. Fluorescence imaging allowed for clear identification and preservation of lymphatic vessels, followed by clipping of the spermatic bundle according to the Palomo technique.
Results: The mean operative time was 55 minutes (range 43–65). No intraoperative complications, conversions to open surgery, or adverse reactions to ICG were reported. At a 6-month follow-up, no recurrences of varicocele or postoperative hydroceles were observed. The small sample size and retrospective design represent limitations, emphasizing the need for further validation in larger cohorts.
Conclusion: ICG fluorescence imaging is a safe and effective tool for lymphatic-sparing laparoscopic Palomo varicocelectomy in pediatric and adolescent patients. This technique consistently allowed identification of lymphatic vessels with no reported complications. Future studies are recommended to validate these findings in broader populations.

The Role of Schede Casting Position in Pediatric Radial Fractures: Evidence From a Retrospective Analysis and Survey
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Background: Radial fractures are among the most common fractures in children and adolescents. While surgical intervention is effective in correcting significant deformities, it is inherently invasive and associated with higher risks, including infection or anesthesia-related complications. Non-surgical approaches, such as immobilization in the Schede casting position, offer a potentially less invasive alternative, though evidence supporting its use remains limited.
Aims: This study aimed to evaluate the effectiveness of the Schede casting position in improving deformity correction in pediatric radial fractures and to assess its acceptance and clinical experience among pediatric trauma surgeons.
Methods: A survey was conducted among pediatric trauma surgeons to assess their experience with the Schede casting position. Additionally, a retrospective analysis compared radiographic outcomes between immobilization in the Schede casting position and standard casting positions in pediatric radial fractures. The primary outcome was the improvement in radiographic alignment, particularly in the sagittal plane.
Results: The retrospective analysis demonstrated an improvement in fracture alignment with the Schede casting position compared to standard positioning, particularly in the sagittal plane on lateral radiographs. Survey responses revealed that many pediatric trauma surgeons reported positive clinical experiences with this technique, emphasizing its efficacy in reducing deformities and avoiding surgery in selected cases.
Conclusion: The Schede casting position represents a promising, non-surgical approach for

managing pediatric radial fractures, achieving significant deformity correction and potentially reducing the need for surgical intervention. These findings highlight the need for further prospective studies to validate these results and establish clear clinical guidelines.

Responding to the Challenges of Global Children Surgery: An Implementation Program in Burkina Faso

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Background: The challenges are immense when it comes to enhancing the development of children surgery in low- and middle-income countries, in line with current recommendations for holistic and sustainable approaches. Our program, entitled Pediatric Surgery Development Plan in Burkina Faso, was specifically designed to respond to these challenges by tackling the pediatric surgical ecosystem, based on partnership, research and interventions at all levels of the healthcare system.
Aims: We herein present our unique experience by reporting on the first four years of the program, focusing on the main actions and monitored indicators.
Methods: This program has been designed using the Global Initiative for Children's Surgery main pillars and preserving a fundamental health system strengthening approach.
Results: The country's capacity for pediatric surgery has meaningfully been increased: i) A new infrastructure has relieved congestion in pediatric surgical care at the national level, ii) hundreds of professionals have benefited from skills enhancement, iii) the quality of care in the partner hospital has been optimized, iv) collaboration with traditional practitioners and families have been strengthened, v) research has enabled us to move forward in an evidence-based way, and vi) pediatric surgery in Burkina Faso has enjoyed a new impulse thanks to advocacy work. Quantitative results are summarized in Table 1.
Conclusion: This program has not only helped to create a major impulse for the expansion of pediatric surgery in Burkina Faso, but also enriched the community of interest with a concrete implementation program to confirm the main challenge to overcome: integrating this most essential discipline into the wider framework of global health.

Indicators	Pre intervention (2018)	Post intervention (2024)	Target goal	% achieved
N° of pediatric surgery referral hospitals in Burkina Faso	1	2	3	80%
N° of beds dedicated to pediatric surgery in these referral hospitals	81	97	117	83%
N° of surgeons enrolled in the advanced diploma in pediatric surgery	25	46	66[1]	69%
N° of anesthetists & nurse anesthetists trained in pediatric anesthesia in Burkina Faso	6	136	135	100%
N° of ward nurses specifically trained in pediatric surgery in Burkina Faso	0	350	500	70%
N° of midwives specifically trained in pediatric surgery in Burkina Faso	0	310	500	62%
N° of traditional healers trained in Burkina Faso's Grand Ouest region	0	700	1230[2]	56%
Number of people sensitized regarding domestic accidents in the Orodara health district	0	100'000	100'000[2]	100%

[1]The Council of Ministers approved in 2024 the recruitment of 20 new pediatric surgeons as part of the advanced studies diploma for the year 2025. Once this goal achieved, there will be approximately one pediatric surgeon per 150'000 children.

[2]These are pilot regions, and the plan aims to integrate them into existing community and public health programs over the long term.

Table 1. SCS

Management of Pediatric Pancreatic Trauma: Case Series and Review of Current Surgical Management

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Background: Traumatic injuries to the pancreas present a challenge in blunt abdominal trauma in children. The management include both surgical and non-surgical treatment options with an increasing preference towards non-operative management (NOM). Our aim is to illustrate the current concepts of surgical treatment for pancreatic injury in children.
Case Presentation: We present a case series of three pediatric patients with traumatic pancreatic injuries.
Patient 1 (10-year-old male) presented with a proximal subtotal pancreatic rupture (grade IV, AAST) and acute hemorrhage, necessitating emergency laparotomy. Hemostasis was achieved, the proximal pancreatic duct was sutured, and a distal pancreatico-jejunostomy with a Roux-en-Y-anastomosis was performed. Patient 2 (8-year-old female) underwent emergency laparotomy for complete pancreatic rupture (grade IV, AAST) and acute hemorrhage. Hemostasis was achieved and a distal pancreatectomy was performed, with suture of the proximal pancreatic duct. Patient 3 (8-year-old male) sustained a traumatic pancreatic rupture (grade IV-V, AAST) and was transferred to our institution five days post-injury. Initially managed conservatively, the patient now presented with an acute abdomen. Emergency exploratory laparotomy was performed. Intraoperatively, a drain was placed in the Douglas pouch, and a chest tube was inserted to address pleural effusion. Subsequently, a functional duodenal stenosis due to a pancreatic pseudocyst developed, necessitating an upper gastrointestinal endoscopy with endoscopic ultrasound and endoscopic cystogastrostomy. All patients recovered quickly with full return to normal activities.
Conclusion: While NOM has demonstrated efficacy in select cases, early surgical intervention remains crucial in specific scenarios, particularly those with acute hemorrhage or involving pancreatic duct injuries, highlighting the necessity for individualized treatment concepts.

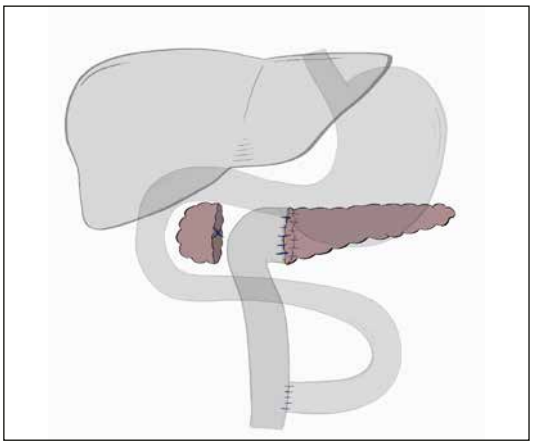

Figure 1. Patient 1 – distal pancreatico-jejunostomy with a Roux-en-Y-anastomosis and suture of proximal pancreatic duct

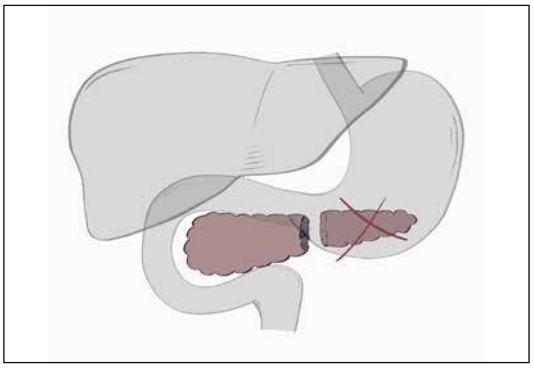

Figure 2. Patient 2 – distal pancreatectomy and suture of proximal pancreatic duct

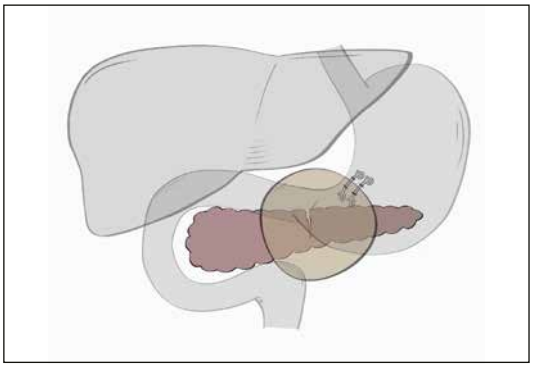

Figure 3. Patient 3 – cystogastrostomy

Minimally Invasive Surgical Approach in Primary Fallopian Tubal Torsion: A Single-Center Experience

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Background: Isolated Fallopian tube torsion (IFTT) is a relatively rare condition affecting young female patients, presenting as nonspecific abdominal pain (acute or chronic), often associated with vomiting. Diagnosis through standard procedures is not always conclusive, and for most patients, the definitive diagnosis is achieved through minimally invasive surgical exploration.
Aims: To share our experience in managing IFTT, focusing on the challenges of the diagnostic process and evaluating the role of minimally invasive surgery as a primary approach.
Methods: We performed a retrospective case review series of pediatric patients with IFTT treated at our institution between 2021 and 2024. Clinical presentations, ultrasound efficacy, the utility of secondary imaging exams (CT and MRI), and types of surgical treatment were analyzed.
Results: Four cases of IFTT were included, all of whom with an associated paratubal cyst. Two patients underwent laparoscopic hemi-salpingectomy with ovarian preservation, while two required laparoscopic tubal de-rotation and fenestration of the cyst. MRI was used in all cases to complete the diagnostic process.
Conclusion: Due to its low frequency and the lack of clear guidelines, diagnosing IFTT remains challenging. MRI appears to facilitate the diagnostic process. A laparoscopic approach is safe, feasible, and remains the gold standard for treatment. We propose our protocol to enable prompt diagnosis and avoid extensive surgical interventions.

Spigelian-Cryptorchidism Syndrome in a Preterm Infant: Management by Laparoscopic Assisted Orchidopexy and Open Herniorraphy

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Background: Spigelian hernia (SH) is a rare abdominal wall defect in infants. SH can be associated with ipsilateral cryptorchidism, with the testis located within the hernia – referred to as Spigelian-cryptorchidism syndrome.
Case Presentation: A male preterm infant born at 28 weeks of gestational age developed at 11 weeks of age a painless right abdominal wall swelling. The location was consistent with a SH. The right hemiscrotum was empty and an ectopic testis was palpable within the swelling. Abdominal ultrasound confirmed a SH containing a loop of small bowel and the right testis of appropriate size. At the time of diagnosis the infant was requiring respiratory support for bronchopulmonary dysplasia, therefore surgery was postponed. At 11 months of age, a laparoscopic assisted right orchidopexy and open hernia repair were performed. Laparoscopy allowed very good recognition of a 2 cm wall defect above a closed deep inguinal ring, lateral to the right rectus abdominis muscle. The right testis, with normal looking vas deferens and blood vessels, as well as the right colon were contained within the hernia sac. The SH was repaired by open herniorraphy. The recovery was uneventful, and the patient was discharged on postoperative day 1. Follow-up up to now (3 months) showed no complication.
Conclusion: A laparoscopic guided approach allows for better understanding of the location and the size of the wall defect, length of the testicular vessels and presence of inguinal canal and gubernaculum. To our knowledge, this is the first reported case of Spigelian-cryptorchidism syndrome in a preterm infant. In Spigelian-cryptorchidism syndrome, preoperative abdominal ultrasound can help assess the presence of the testis within the SH and guide surgical planning.

Figure 1. Abdominal wall swelling

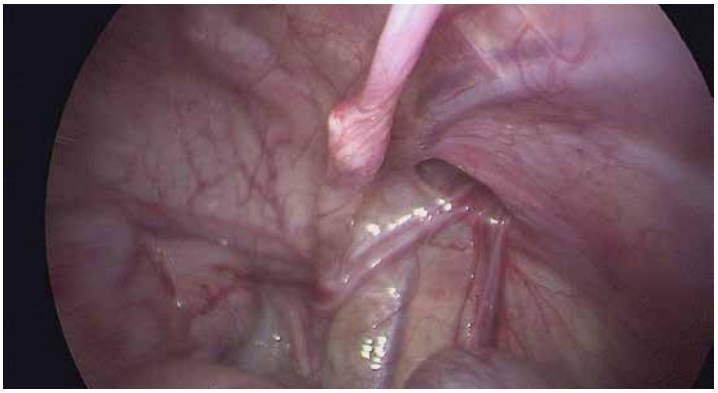

Figure 2. Laparoscopic assessment

Figure 3. Spigelian hernia and testis

Robotic Transabdominal Preperitoneal Repair for Epigastric Hernia in a 16-Year-Old Patient: A Case Report

M. Garatti, E. Montaruli, F. Hamitaga, N. Voumard, R. Carulli, M. Mendoza Sagaon
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Background: Robotic epigastric hernia repair using the transabdominal preperitoneal (rTAPP) approach is a well-established technique in adult patients. The robotic approach enhances precision, improves ergonomics, and reduces complication rates. However, there is limited evidence regarding its application in the pediatric field. This report describes the case of a 16-year-old female patient who underwent rTAPP surgery for an epigastric hernia.
Aims: To highlight the feasibility and efficacy of robotic transabdominal preperitoneal repair in managing epigastric hernias in pediatric patients, particularly in the presence of obesity.
Methods: We present the case of a 16-year-old Caucasian female with a history of chronic supraumbilical abdominal pain lasting over five years. The patient's medical history included Cornelia de Lange syndrome with developmental delay, exogenous obesity, insulin resistance, and pilonidal disease. An ultrasound revealed an epigastric hernia defect. Robotic transabdominal preperitoneal repair was performed using standard rTAPP technique.
Results: The robotic repair successfully addressed the epigastric hernia, resulting in significant post-surgical pain relief. The approach was effective in overcoming the challenges posed by the patient's obesity, demonstrating the precision and adaptability of robotic techniques in complex pediatric cases.
Conclusion: The experience gained from rTAPP in adults can be effectively translated to the pediatric population. This case highlights the potential of robotic surgery to address complex pediatric hernias. Further research is needed to build a robust case series and establish appropriate criteria for surgical indications in pediatric patients.

Penetrating Head Injury After Horse Riding Injury – A Case Report

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Background: Penetrating head injuries are not common in children but can represent major trauma.
Case Presentation: We present a 14-year-old girl with penetrating head injury after horse riding injury. During transportation she was always awake and responsive, however developed monocular hematoma. On arrival at our emergency department, we found a left frontal laceration, the frontal bone visible and horsehair contaminating the wound. A CT scan revealed a 2 cm depressed skull cap fracture involving the frontal sinus, the roof and floor of the orbita and the left maxillary sinus. The open fracture was explored through coronal incision. We performed a cranioplasty of the orbital roof, microsurgical dural plasty, reconstruction of the periorbita and osteosynthesis of the orbital roof and the frontal bone with lactosorb re-absorbable plates and screws. Postoperative transfer to the pediatric intensive care unit for one day, then transfer to the normal pediatric surgical ward. The patient received antibiotic treatment for five days, drains could be removed after three days. Glasgow-Coma-Scale (GCS) monitoring was always 15. Ophthalmologic examinations revealed regular findings both initially and during hospitalization. The patient could be discharged on postoperative day 8, outpatient rehabilitation was carried out. Two months postoperative, there are no postoperative complications, but the patient is still not able to attend school for a full day.
Conclusion: The patient always revealed a GCS score of 15, however proved to have a significant open traumatic brain injury, whose true extent could only be seen in cCT. Scandinavian guidelines suggest a further subdivision of mild traumatic brain injury; in the presence of risk factors such as clinical signs of an impression fracture, CT imaging is primarily indicated.

Biliary Complication Under Nonoperative Management in High-Grade Liver Injury: A Case Report

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Background: Nonoperative management (NOM) of isolated solid organ injury in pediatrics is an established way of treatment in hemodynamically stable patients. However, close monitoring and reevaluation are indicated, as complications may occur and may need diagnostic or therapeutic adjuncts. Among them, traumatic bile leak (TBL) requires a multidisciplinary approach.
Case Presentation: We report a 13-year-old male with AAST grade IV liver injury qualifying for NOM after initial hemodynamic stabilization. The clinical course was complicated with increasing amounts of intra-abdominal free fluids leading to laparoscopic exploration and later on diagnosis of biliary leak. The patient was then treated with biliary stenting and iterative ERCP procedures, documenting a successful management of the biliary leak.
Conclusion: A high index of suspicion of complications must be maintained in patients selected for nonoperative management, including TBL. ERCP may be considered as an adjunct in the NOM in appropriate cases.

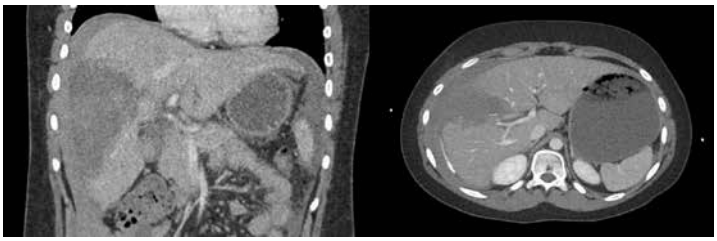

Figure 1. Liver injury coronal and transversal

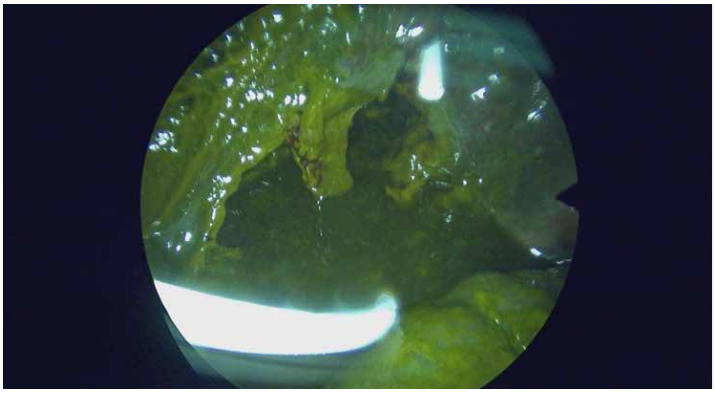

Figure 2. Intraoperative situs

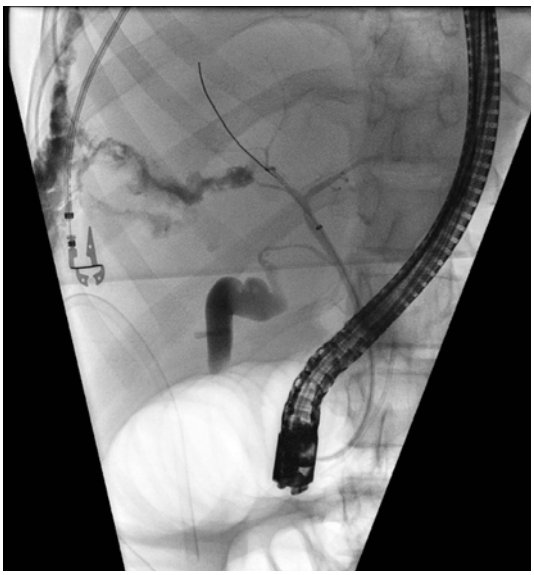

Figure 3. Biliary leak, ductus hepaticus dexter

Full Thickness Genitoperineal Pressure Ulcer in a Female Pediatric Patient Undergoing Orthopedic Surgery on a Traction Table: A Case Report

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Background: Traction tables are widely used in orthopedic procedures. Although rare, potential complications include nerve injuries, fractures, and soft tissue damage. This case report documents the first reported case and management of extensive genitoperineal necrosis in a pediatric patient following femoral fracture fixation related to a traction table. This case report aims to describe the presentation, management, and long-term implications of genitoperineal necrosis related to the use of an orthopedic traction table as well as to raise awareness, and to propose strategies for prevention in the pediatric population.
Case Presentation: A 10-year-old girl underwent closed reduction and intramedullary nail fixation of a femoral shaft fracture using a traction table with standard padding and positioning. Operative time was 183 minutes. At the end of the procedure an extensive full thickness pressure necrosis in the genitoperineal area was observed. Postoperatively, a multidisciplinary team involving plastic surgery, urogynecology and orthopedic surgery managed the wound conservatively including topical antiseptics, local steroids and estrogens. No surgical intervention was needed but several sedations for wound care. A transurethral catheter was left in place for 25 days for pain and wound management. The patient was hospitalized for 28 days. Full wound epithelialization was achieved after 44 days. At seven months follow-up, the patient did not exhibit any urinary complaints or pain, however synechiae involving the clitoral hood and labia minora had developed. Further follow-up is planned and surgical correction of synechiae will most likely be necessary during puberty.
Conclusion: This case highlights the vulnerability of pediatric soft tissue to ischemic damage during prolonged traction table use. Preventative strategies should include increased awareness, team education, minimizing operating time, optimizing padding, and considering intraoperative tissue perfusion monitoring. Multidisciplinary care and long-term follow-up are essential to address such complications. Genitoperineal injuries usually respond well to conservative management without need for a primary surgical approach.

Spondylodiscitis Following Button Battery Ingestion – A Rare, Severe Long-Term Complication

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Background: Button battery ingestion with esophageal impaction can result in severe, potentially life-threatening complications, including long-term sequelae.
Case Presentation: A case of a 22-month-old boy with a button battery impacted in the upper esophagus, immediately removed after an impaction time of 4 hours is presented. The patient was treated with a naso-gastric tube, maintained npo, and given intravenous antibiotic treatment and a PPI. Subsequent MRI revealed reactive mediastinitis, which resolved within 8 days. On day 10, a fibrin patch persisted on the dorsal wall at the site of impaction. Antibiotic treatment were discontinued, oral liquids were started and well tolerated, and the patient was discharged on day 13. On day 17, the esophageal mucosa was fully restored. However, after 6 weeks a polypous structure was noted at the impaction site, limiting the patient to soft foods or small portions. An MRI at 10 weeks revealed spondylodiscitis of T1/T2, with a fistula between the esophagus and the intervertebral disc. However, the patient remained asymptomatic except for dietary limitations. He was treated with a 6-week course of antibiotic treatment, including 14 days of intravenous therapy at the beginning. Systemic inflammation markers became apparent only 6 days after initiating the antibiotic treatment. The spondylodiscitis resulted in a bony defect at the ventral edge T1/T2 accompanied by mild kyphosis. At 12 months post-ingestion, the patient recovered to full without clinical symptoms.
Conclusion: Spondylodiscitis is a rare but severe complication of button battery ingestion that can develop subclinically. While the immediate removal of an impacted button battery is crucial to minimizing severe and potentially life-threatening complications, such as for example esophageal-aortic fistulas, long-term follow-up is equally crucial. In cases of abnormal findings, endoscopic and magnetic resonance imaging is indicated to evaluate and manage these patients effectively.

Acute on Chronic Decompensation of a Chiari I Malformation in a 5 Y/O Boy Following Traumatic C0/C1 Instability

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Background: Trauma-related epidural haematoma dorsal to the clivus down to the level of C1 following sports related TBI in infants and children is a rare condition.
Case Presentation: We present a 5 ½ year old boy who presented with sub-febrile temperatures three days after traumatic brain injury with brief unconsciousness following a skiing accident. Initial clinical assessment showed a left abducens and hypoglossal palsy. There was also latent strabismus, persistent neck pain, as well as increased fatigue. A low dose CCT revealed an epidural haematoma with compression of the medulla oblongata and a cranio-cervical dissociation. A surgical cranio-cervical fixation and a suboccipital decompression of the foramen magnum was performed. Post-traumatic cerebrospinal fluid circularisation disorder later devel-

oped at the level of the posterior fossa potentially accentuated by the Chiari I malformation, therefore a ventricular-peritoneal shunt was placed.
Conclusion: This case represents a rare and complex post-traumatic injury related to a previously not apparent and undiagnosed malformation. Children suffering from TBI with cranial nerve deficit should be carefully observed for clival fractures and hematomas and/or consecutive traumatic instability of the cranio-cervical junction respectively.

Acute Care Surgery

A Single-Center Assessment of the Antibiotic Therapy Protocol for Pediatric Patients with Complicated Appendicitis
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Background: The treatment of children with complicated appendicitis (CA) involves administering intravenous antibiotics for several days to prevent postoperative complications. Since 2013, our institutional postoperative management protocol for CA in children has recommended Ceftriaxone/Metronidazole (CM) as the first-line treatment. According to the protocol, if a fever >38.5°C occurs 72 hours after the surgery, a switch to Piperacillin/Tazobactam (PT) is indicated and PT is continued for an additional 5-7 days. Fever is the only criterion used to initiate the CM to PT switch.
Aims: This study aims to identify factors that predict the need to switch from CM to PT, enabling PT to be considered as a primary treatment option for more effective management.
Methods: This retrospective study included children aged 0–16 years with CA, treated according to our institutional antibiotic protocol, from 1/2013 to 12/2023. Collected data included patient demographics, medical history, biomarkers, imaging findings, appendix characteristics, surgical details, antibiotics, and additional treatments. Variables were analyzed at three time points: T0, pre-operative assessment; T1, peri-operative period; and T2, first 72 hours post-operatively.
Results: A total of 256 children were included in the study, median age at surgery 10 years (interquartile range: 7–13). Thirty-nine patients (15%) underwent antibiotic switch, while 217 (85%) did not. Factors significantly ($p > 0.05$) associated with switch included: at T0, generalized peritonitis, dehydration necessitating intravenous fluid bolus, elevated C-reactive protein levels, imaging findings of collections and/or stercolith; at T1, the presence of intra-abdominal abscesses, and prolonged anesthesia and/or surgical duration; at T2, a higher frequency of febrile peaks >38.5°C.
Conclusion: 15% of children with CA required a switch from CM to PT. Several factors appear to predict the need for this adjustment. Patients showing these characteristics are at a higher risk of insufficient response to CM and may benefit from primary treatment with PT.

Management of Extensive Necrotizing Fasciitis: 2 Cases With 20-40% Total Body Surface Area Involvement and Reconstruction Using BTM Novosorb® and Split-Thickness Skin Grafts
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Background: Necrotizing fasciitis (NF) is a severe soft tissue infection requiring aggressive surgical debridement, often resulting in extensive tissue loss. The currently advocated techniques for reconstruction after necrotizing fasciitis are either local flaps, free flaps, or split-thickness skin grafts. Other options include the use of subdermal synthetic material. This case series explores the use of BTM Novosorb®, a synthetic dermal matrix, followed by split-thickness skin grafts as an alternative reconstruction technique for large total body surface area (TBSA) involvement in NF cases. Additionally, we aim to provide an overview of the diagnostic and therapeutic decision-making process for this complex clinical picture in the emergency setting, focusing on rapid assessment and initiation of life-saving measures.
Case Presentation: Two patients with Streptococcus pyogenes-induced NF were treated: a 33-year-old male with 40% TBSA involvement of the trunk and a 59-year-old female with 20% TBSA involvement of the left thigh and lower leg. Treatment included multiple surgical debridements, antibiotic therapy, intensive care management, application of BTM Novosorb®, and split-thickness skin grafting after BTM integration. The final results showed very well-integrated split-thickness skin grafts without signs of wound dehiscence or persistent infection. For the 33-year-old male patient, we achieved a split-thickness skin graft take rate of 95%, and for the 59-year-old female patient, a take rate of just under 100%.
Conclusion: While various techniques for defect coverage after necrotizing soft tissue infections are described in the literature, our approach using subdermal synthetic material (BTM Novosorb®) followed by split-thickness skin grafts proved effective for large TBSA involvement. With graft take rates of 95-100%, we consider Novosorb a viable alternative to conventional techniques for reconstruction after necrotizing fasciitis, particularly in cases with extensive tissue loss.

Figure 1. Case 1

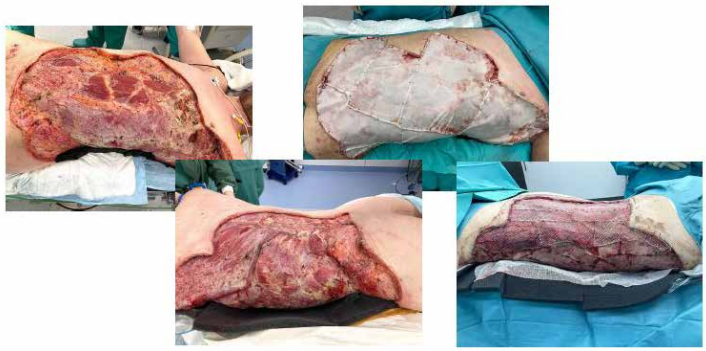

Figure 2. Case 2

Figure 3. Result

Minimally Invasive Management of a Thoraco-Abdominal Penetrating Injury: A Case Report and Review of Current Evidence
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Background: Penetrating thoraco-abdominal injuries (TAI) present significant diagnostic and therapeutic challenges. Prompt recognition and appropriate surgical intervention are crucial to prevent complications. Despite a sometimes impressive penetrating trauma, a minimally invasive approach can be appropriate. This case report details the laparoscopic management of a patient with TAI in our surgical department in the light of the current evidence and practice guidelines.
Case Presentation: A 58-year-old male presented to the emergency department following acute alcohol intoxication and a self-inflicted stab wound with a knife embedded in the inferior left parasternal area. The patient remained hemodynamically stable throughout evaluation. Thoracoabdominal CT imaging revealed the knife penetrating the left thoracic base and hypochondrium. Suspected injuries included the 10th rib, diaphragm, and possibly the stomach. Given the patient's stability and no major vessel involvement, an exploratory laparoscopy was performed to provide a wide overview with a limited surgical burden. The knife was carefully removed under laparoscopic guidance. Exploration revealed a left paramedian diaphragmatic tear extending into the left perigastric area. The anterior gastric wall had a small, non-transfixing serosal breach, repaired with a single Vicryl 2-0 suture. The diaphragmatic tear was closed using a running absorbable 0 V-lock suture. A monitoring drain was placed, and a postoperative thoracic radiograph confirmed no significant pneumothorax. The drain was removed on day 2, with an uneventful recovery.
Conclusion: This case underscores the importance of rapid but thorough assessment of TAI, with CT scans, playing a major role in surgical approach selection. Surgical exploration and repair remain the definitive treatment, but laparotomy, once the gold standard, should not be considered the only option depending on hospital resources and surgeon's experience.

A review of the existing literature and the EAST guidelines suggests that a prompt surgical exploration prioritizing a laparoscopic approach for hemodynamically stable patient reduces the morbidity and mortality in TAI.

Figure 1. CT-scan sagittal

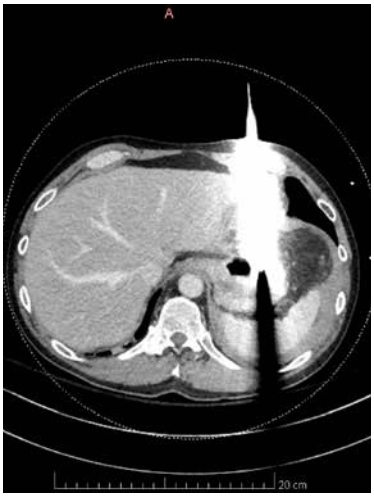

Figure 2. CT-scan axial

Figure 3. CT-scan 3D reconstruction

Meta-Analysis of Randomised Clinical Trials Comparing Intraumbilical Versus Periumbilical Incision in Laparoscopic Appendectomy

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Background: Laparoscopic appendectomy (LA) has become the standard treatment for acute appendicitis. However, surgical site infections (SSI) still occur in up to 8% of patients.
Aims: The aim of this review was to compare the short-term outcomes of an intraumbilical incision (IU) with a periumbilical incision (PU) for umbilical port placement in LA.
Methods: A systematic literature search was performed in CENTRAL, PubMed, EMBASE and Web of Science. All randomised clinical trials (RCTs) comparing IU with PU port placement were included. Internal organ injury, umbilical SSI, operation time, and length of hospital stay were meta-analysed in a random-effects model. Risk of bias (Cochrane 2.0) was assessed for every RCT and certainty in evidence (GRADE) was determined for every outcome.
Results: Six RCTs from Asia with 1576 patients were included. There was no difference in internal organ injuries (OR 0.70, 95%-CI: 0.34 to 1.43, p=0.33) or umbilical SSI (OR 0.76, 95%-CI: 0.40 to 1.44, p=0.40). In addition, there was no difference in operation time (MD -1.57 minutes, 95%-CI: -5.30 to 2.16, p=0.41) or length of hospital stay (MD 0.17 days, 95%-CI: -1.12 to 1.47, p=0.79). There was a high risk of bias in all included RCTs and the certainty in evidence was low to moderate.
Conclusion: There is no difference in all short-term outcomes between IU and PU port placement in laparoscopic appendectomy. Surgeons should use their preferred approach. The body of evidence would benefit from a high-quality study in a Western population.

A Novel Technical Step During Laparoscopic Cholecystectomy as an Addition to Strasberg's Safety Rules

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Background: French surgeons performed the first laparoscopic cholecystectomies in 1987/88. It quickly became the standard technique for the majority of indications. The most dreaded complication still is a common bile duct (CBD) injury. In order to minimize CBD injuries, the critical view of safety (CVS) was introduced in 1995 and is widely used ever since. Despite Strasberg's rules the incidence of CBD injuries still lies between 0.2 – 0.4%.
Aims: To introduce a novel and simple non-traumatic technique of visualizing the common bile duct at the beginning of a laparoscopic cholecystectomy as an initial add-on step to Strasberg's rules. This technique delineates the right lateral border of the hepatoduodenal ligament and helps define the anatomical course and direction of the CBD in the vast majority of cases.
Methods: We recorded short video sequences during consecutive emergency and elective laparoscopic cholecystectomies. All patient data has been anonymized. Prior to the start of this pilot study, the project was presented to the local ethics committee, no ethics application was required. All recorded sequences were combined and are demonstrated in a short video.
Results: From June 2024 to January 2025 the technique has been performed in 60 laparoscopic cholecystectomies. The visibility of the CBD was clearly better and the CBD easier to demonstrate in elective cases than in patients with acute cholecystitis. However, even in cases with inflammation, extensive adherences or after previous abdominal surgery the CBD could readily be demonstrated in the majority of patients.
Conclusion: This novel technical step to visualize the common bile duct helps surgeons and in particular inexperienced surgeons to orient and navigate during laparoscopic cholecystectomies. We propose to introduce it as a simple non-traumatic initial step prior to the start of the dissection of Calot's triangle.

The Influence of Surgical Teaching for Laparoscopic Cholecystectomies on Outcomes: A Propensity Score-Matched National Cohort Study

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Background: Teaching in the operating room represents the cornerstone of surgical education. A sufficient number of basic procedures in training is needed to gain independence. However, it is still debated whether surgical teaching has a negative impact on outcomes.
Aims: This study aims to determine the impact of surgical teaching for laparoscopic cholecystectomies on patient outcomes.
Methods: We conducted a retrospective study using the national database of the Swiss Association for Quality management in Surgery (AQC). We identified adult patients who underwent a laparoscopic cholecystectomy between 2009 and 2019. Baseline characteristics were analyzed, and a propensity-score was constructed based on age, gender and American Society of Anesthesiologists (ASA) classification. Patients were then matched in a 2:1 ratio (non-teaching vs. teaching), and surgical outcomes were assessed.
Results: We included 26'871 cholecystectomies in our analysis. After propensity-score matching, 7'172 interventions used for surgical teaching were compared to 14'344 performed by board-certified surgeons. Mean cohort age was 52 years, and 8% of patients had an ASA >II. A majority of teaching cases were operated in hospitals >200 beds (p<0.001). Teaching was associated with a longer mean operative time (85±39 vs. 77±45 minutes, p<0.001), a higher rate of conversion to laparotomy (29% vs. 12%, p<0.001), but a shorter total length of stay (4.71±5.97 vs. 5.10±7.01 days, p<0.001), and fewer intraoperative complications (0.6% vs. 0.9%, p=0.032). Postoperative complications were similar both in terms of frequency (1.4% vs. 1.5%, p=0.5) and severity with 0.7% requiring surgical management in both groups (p=0.5).
Conclusion: Teaching of a common surgical procedure such as cholecystectomy appears safe with a similar rate of intraoperative and postoperative complications. Teaching is currently only performed in a minority of procedures and should be promoted further to improve training in Switzerland.

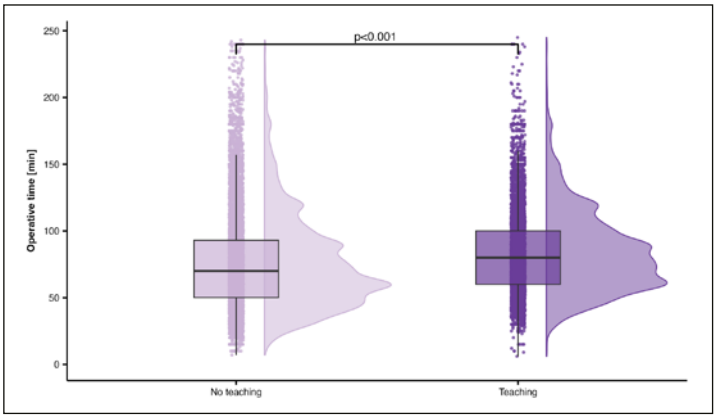

Figure 1. Boxplot operative time CCK v1

Is Measurement of Bilirubin a Valuable Predictive Tool to Detect Choledocholithiasis Before Cholecystectomy?

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Background: Laparoscopic cholecystectomy is the treatment of choice for acute or chronic cholecystitis and symptomatic cholelithiasis. Preoperative measurement of Bilirubin is standard of care in most surgical clinics, while the predictive value of its measurement to detect choledocholithiasis is questionable.
Aims: We aimed to investigate the association of preoperative high bilirubin and detection of choledocholithiasis diagnosed with preoperative MRCP.
Methods: This is a retrospective multicentre cohort study including all patients receiving preoperative MRI-MRCP before undergoing elective or emergency cholecystectomy between 2010 and 2020. Preoperative blood parameters such as Bilirubin and MRCP reports were documented as well as postoperative outcome of the patients.
Results: 3163 patients have undergone laparoscopic cholecystectomy between 2010 and 2020, of which 2568 have shown normal cholestatic parameters preoperatively. Of these patients, 684/2568 (27%) have been male and 1884/2568 (73%) female. The most frequent indications for laparoscopic cholecystectomy have been cholecystolithiasis in 72% (1845/2568) of cases, followed by cholecystitis in 18% (465/2568). The majority of patients (2267/2568, 88%) have received pMRCP, while only 301/2568 have not. We could detect silent CBD-stones in 6% of the patients with normal preoperative cholestatic parameters in MRCP (130/2267). Sensitivity of elevated bilirubin to detect CBD stones was only 33%.
Conclusion: Silent CBD stones are common and MRCP is a good diagnostic tool to detect them. Preoperative elevated bilirubin is not necessarily associated with CBD stones and patients should always receive MRCP. In normal lab tests preoperatively, the value of MRCP regarding cost-effectiveness remains debatable.

Dexter-Assisted Cholecystectomy: The First Prospective Multicenter Study

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Background: The evolution of robotic platforms has transformed minimally invasive surgery, improving ergonomics and precision. The Dexter robotic system, designed for accessibility and ease of use, offers a new approach to robotic-assisted surgery, particularly for routine procedures such as cholecystectomy.
Aims: This study aimed to evaluate the perioperative safety and performance of Dexter-assisted cholecystectomy in a prospective, multicenter, multinational setting.
Methods: A prospective single-arm study was conducted across four hospitals in three countries, involving six surgeons with varying robotic surgery experience. Fifty-one patients (32 females, 19 males) underwent robotic-assisted cholecystectomy using the Dexter system for indications including symptomatic cholelithiasis, cholecystitis, choledocholithiasis, and biliary pancreatitis. Trocars ranging from 8 to 12 mm in diameter were used. Follow-up was conducted for 30 days postoperatively. Primary outcomes were the occurrence of Clavien-Dindo grade ≥3 adverse events and procedural success without conversion to open or laparoscopic surgery. Secondary outcomes included other surgical data and postoperative outcomes.
Results: Here we report the interim analysis of the perioperative data. The cohort had a median age of 59 years (IQR 42–65) and a median BMI of 28.0 kg/m² (IQR 24.9–29.6). Median skin-to-skin operative time was 58 minutes (IQR 49–78), which included a median docking time of 3 minutes (IQR 2–5) and a median console time of 25 minutes (IQR 21–36). The median estimated blood loss was 5 mL (IQR 0–10), and no blood transfusions required. All procedures were completed successfully without device deficiencies or conversions. Two minor intraoperative complications occurred, none related to the device. Median length of hospitalization was 1 day (IQR 1-2).
Conclusion: Dexter-assisted cholecystectomy demonstrated excellent safety and performance outcomes in elective surgery. The system's efficiency, minimal blood loss, and absence of device-related complications highlight its potential as a viable robotic platform for routine minimally invasive cholecystectomies.

Role of Damage Control Surgery in the Treatment of Perforated Sigmoid Diverticulitis

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Background: While primary anastomosis (PRA) is a potential option for stable, immunocompetent patients with perforated diverticulitis, non-restorative resection (NRR) remains the most common procedure. NRR frequently leads to permanent stoma and substantial morbidity related to stoma reversal. Damage control surgery (DCS) has gained attention as a potentially superior approach, offering the advantage of a higher stoma-free discharge.
Aims: To compare DCS to conventional surgical treatment (NRR/PRA) for perforated diverticulitis, evaluating stoma-free discharge rates and postoperative complications.
Methods: A prospective cohort study included 56 patients with Hinchey III/IV diverticulitis. Twenty-six patients (study group) underwent surgery from 2022 to 2024, following the implementation of a DCS-based treatment algorithm. Thirty patients (control group) were operated on from 2020 to 2022 (pre-algorithm implementation). The primary outcome was stoma presence at discharge, 6 months, and 12 months. Secondary outcomes included postoperative complications, hospital length of stay, costs and complications after stoma reversal.
Results: In the control group, 97% of patients underwent NRR. In the study group 15% received PRA, while 85% received DCS; of the latter, 18% required conversion to NRR and 82% achieved anastomosis during the second-look procedure (Figure 1). Demographics, post-operative complications and hospital length of stay were similar between groups. The control group hat significantly higher rates of stoma at discharge (100% vs 42.3%, $p < 0.001$) and at 6 and 12 months ($p=0.003$). Early complications after stoma reversal dit not differ significantly. Multivariate analysis showed that conventional treatment (NRR/PRA) was independently associated with increased stoma presence at discharge and 6 months (hazard ratio 13.1 $p= 0.05$, hazard ratio 10.65, $p= 0.013$, respectively).
Conclusion: DCS appears to be a safe and effective strategy, resulting in significantly higher rates of stoma-free discharge compared to conventional treatment for perforated diverticulitis.

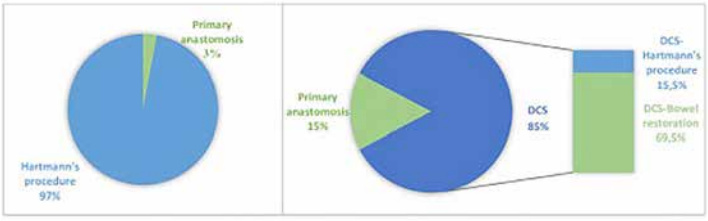

Figure 1. Procedures performed before and after the implementation of the damage control surgery treatment algorithm

How I do it

Video: Robotic-Assisted Cytoreductive Surgery and Hyperthermic Intraperitoneal Chemotherapy (CRS and HIPEC) – Case Report and Video Demonstration of Surgical Technique

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Background: Cytoreductive Surgery (CRS) with or without hyperthermic intraperitoneal Chemotherapy (HIPEC) is the preferred treatment of peritoneal carcinomatosis of various cancer types such as ovarian, gastric or colorectal cancers. Usually, these often complex procedures are performed using an open approach. In patients with limited peritoneal cancer index or in the prophylactic setting according to recent studies, minimally invasive techniques are possible. Robotic-assisted CRS and HIPEC – first described in 2019 – has not yet found its way into daily practice.
Case Presentation: A 63-year-old male patient presented with anemia and abdominal pain. Further investigation revealed a cT4 adenocarcinoma of the cecum without distant metastasis. Multidisciplinary tumorboard recommended prophylactic CRS including right hemicolectomy, right parietal peritonectomy, omentectomy and HIPEC according to results of the recent HIPECT4-trial.
We performed robotic-assisted CRS and HIPEC as follows (video sequences):
(1) right parietal peritonectomy from right inguinal region to hepatic flexure,
(2) inferior approach of right hemicolectomy, mobilization of right hemicolon and small bowel until Ligament of Treitz and Pancreas including Gerota's fascia,
(3) complete omentectomy until small gastric vessels, omentum is left at hepatic flexure, superior mobilization of transverse colon entering lesser sac,
(4) central ligation of ileocolic vessels,
(5) dissection of transverse colon and distal ileum, en-bloc removal of the specimen via Pfannenstiel laparotomy,
(6) intracorporal side-to-side anastomosis, closure of mesentery,
(7) placing of HIPEC tubes,
(8) hyperthermic (41-43°C) chemotherapy (Mitomycin C) for 90 minutes,
(9) rinsing of the abdomen (saline) and closing of incisions.
Postoperatively, the patient was monitored for one night at the Intermediate Care Unit. Discharge was at day 7 after surgery. Adjuvant chemotherapy was given for 6 months. Until today, no recurrent disease has been diagnosed.
Conclusion: Robotic-assisted surgery is gaining importance in the surgical treatment of cancer. Using the advantages of a robotic approach such as improved dexterity, better 3D visualization and increased precision could also improve outcomes in cytoreductive surgery and HIPEC.

Video: Ileostomies – A Patient Education Video

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Background: Ileostomies are created primarily to reduce complications of anastomotic leakage, for example after low anterior rectum resections. Although named diverting or "protective" ileostomies, they themselves are associated with significant complications and a high

readmission rate. It is therefore essential to provide patients with comprehensive information about stoma care. It is well known that patients do not fully absorb the information from lengthy surgical consenting's and often have difficulties implementing instructions. According to the cognitive theory, multimedia education is therefore more suitable. In particular, educational videos are an effective method of communicating complex content.
Aims: For these reasons, we have created a patient education video on the subject of ileostomy.
Methods: On the basis of a detailed literature search and years of clinical experience, as well as in interdisciplinary discussions with ostomy nurses, the most important points of patient education were identified and a storyboard written. Illustrations were done in collaboration with the experts of the multimedia team.
Results: The patient education video on ileostomies covers the topics of nutrition with an ileostomy and early warning signs of impending complications, especially dehydration due to high-output ileostomy. It also refers to effective initial measures and provides general tips for maintaining a balanced fluid intake.
Conclusion: Videos offer the opportunity to access information in a visually comprehensible way and to retrieve it independently and repeatedly. Our video is now being distributed to patients and the impact on postoperative complications, patient safety and the promotion of independence in dealing with the ileostomy is being analyzed. The aim is for patients to be able to recognize stoma-related problems at an early stage and, ideally, to solve them without medical assistance, thereby obviating the need for readmission.

QR Code_Ileostomies – a patient education video

Video: Minimally Invasive Simgoid Resection With the Dexter System™
N. Seeger, T. Bächler, F. Grieder, S. Breitenstein
Department of Visceral and Thoracic Surgery, Cantonal Hospital Winterthur, KSW, Winterthur

Background: The evolution of robotic-assisted surgery offers new opportunities for precise and effective treatment of sigmoid colon cancer. The Dexter Robotic System™ is a versatile and compact robotic platform featuring a three-arm setup with a sterile console, enabling full integration into standard laparoscopic workflows while offering benefits like robotic precision, wristed instrument articulation and ergonomics.
Aims: To demonstrate the feasibility, surgical technique, and clinical outcomes of robotic-assisted sigmoid resection using the Dexter Robotic System™ for the treatment of sigmoid adenocarcinoma.
Methods: A 53-year-old woman (BMI 21 kg/m²) with no prior abdominal surgery presented with a stenosing sigmoid mass confirmed as adenocarcinoma (cT3-4 cN+ cM0) following an episode of diverticulitis. The procedure commenced with laparoscopic mobilization of the sigmoid colon due to adhesions to the lateral abdominal wall. The Dexter robotic platform was then docked, utilizing previously used laparoscopic trocars. Robotic-assisted steps included precise medial-to-lateral dissection, central vascular dissection of the inferior mesenteric artery and vein, and mobilization and division of the mesocolon. Laparoscopic instruments, including an advanced energy sealer and stapler, were employed for division of the rectum and creation of the colorectal anastomosis. Dexter was subsequently used to secure the anastomosis with additional sutures. The video illustrates the surgical technique.
Results: The surgery was completed successfully without complications or the need for a blood transfusion. Estimated blood loss was 100 mL, and the total operative time was 271 minutes. The patient had an uneventful recovery, with a hospital discharge on postoperative day 3. Histopathological staging revealed pT3a pN1a (1/15) L1 V1 Pn0 R0.
Conclusion: This case demonstrates that robotic-assisted sigmoid resection with the Dexter Robotic System™ is a safe and effective technique for sigmoid adenocarcinoma. It offers precise tissue dissection, reliable suturing capabilities, and favourable short-term outcomes, underscoring its potential in minimally invasive oncological surgery.

Video: Robotic Rectopexy With Dexter
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Background: The key benefits of robotics are improved precision and control, thanks to fully articulated robotic instruments and enhanced, stable endoscope control.
Case Presentation: The herein video demonstrates a fully robotic anterior mesh rectopexy in a 53-year-old patient with obstructed defecation syndrome (ODS). Standard laparoscopic 3-D camera, insufflator, trocars and energy devices, available in all hospitals performing laparoscopic surgery, were used in combination with the Dexter System from Distalmotion SA. Dexter is a compact, multiport platform which includes two robotic instrument arms, one robotic endoscope arm and an open, sterile surgeon console. Four trocars and three single-use instruments (scissors, Maryland dissector and needle holder) were used for this robotic procedure. After dissection of the recto-vaginal septum a DynaMesh®-PRR (FEG Textiltechnik mbH, Aachen, Germany) was sutured to the anterior rectal wall and fixed to the promontory. The peritoneum was closed entirely covering the mesh. The procedure lasted 107 minutes with no intraoperative adverse event. No conversion to standard laparoscopy was necessary in this procedure. The patient was discharged at postoperative day two and had an uneventful recovery. At 3 months, no post-operative adverse event was noted and the ODS symptoms improved with an ODS score before the operation of 22 to 12 post-operatively.
Conclusion: Dexter is a valid open platform robotic solution combining the best of two worlds: robotics where precision and enhanced dexterity are required and standard laparoscopy (with all the equipment already present at every hospital) where it is at its best. The surgeon remains scrubbed-in at all times, allowing a switch between robotics and laparoscopy within seconds.

Video: Robotic Right-Posterior Sectionectomy for Hepatocellular Carcinoma
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Background: Hepatocellular carcinoma presents significant surgical challenges due to its anatomical complexity and proximity to vital structures. Traditional open approaches have been associated with considerable morbidity and laparoscopy has its limitations due to the limited range of motion. The advent of robotic surgery offers enhanced precision and dexterity, potentially improving outcomes in complex hepatobiliary procedures.
Case Presentation: We present a case of a 70-year-old male diagnosed with hepatocellular carcinoma located in the right posterior section of the liver measuring 6cm. Preoperative imaging, including MRI and CT scans, confirmed the tumour's resectability. The patient underwent a robotic right posterior sectionectomy using the da Vinci Xi Surgical System. The procedure was performed with the patient in a supine position tilted to the left. Four robotic ports and two assistant ports were utilised. Key steps included complete mobilisation of the right liver, identification and precise division of critical vascular and biliary structures, and precise parenchymal transection using vessel sealer and the "scissor hand" technique. Intraoperative ultrasound was employed to delineate tumour margins and critical vessels. The operation was completed successfully with a total operative time of 240 minutes and an estimated blood loss of 200 ml. The patient had an uneventful postoperative course and was discharged on postoperative day 7. Histopathological examination confirmed clear resection margins (R0).
Conclusion: This case demonstrates the feasibility and safety of robotic right-posterior sectionectomy for hepatocellular carcinoma. The robotic approach provides superior visualisation and precision, facilitating complex liver resections with minimal morbidity. According to the IDEAL stages of surgical innovation, more randomised trials are now warranted to compare long-term outcomes of robotic versus conventional techniques in hepatobiliary surgery.

Video: Robotic Technique for Resection of Liver Tumors Close to Major Intrahepatic Vessels: How I Do It Without the Cusa
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Background: Precise vascular dissection during liver surgery is mandatory. Specific instruments for parenchymal transection, however, are lacking in robotic hepatectomy (RH) compared to laparoscopy or open. In particular, the lack of CUSA has been an issue of debate. Thereby surgeons adopted alternative hybrid solutions (CUSA used by the table-assistant) or fully robotic ones with bipolar and robotic sealers versus double bipolar. In the present video, we show some technical examples of precise portal and hepatic veins dissection, and dealing with the hepatocaval confluence, performed with robotic sealer and bipolar forceps, for tumors in close relationship with main biliary/vascular pedicles within the liver.
Case Presentation: Case 1 (Left hepatectomy extended to segment 1 and middle hepatic vein, HCC with left portal thrombosis)
Confluence of the left (LHV) and middle hepatic vein (MHV) exposition. US confirmed tumor invasion of the MHV and left portal thrombus. Hilar approach with left portal vein isolation, thrombus management.
Case 2 (Right hemihepatectomy for iCAA after right portal embolization)
Hilar approach of the plate which is dissected from the porta, hilar plate section to expose right portal branch for section.
Case 3-4 (Right-posterior sectionectomies, HCC close to RHV and iCCA)
Full right liver mobilization with exposure of inferior vena cava (IVC) and right hepatic vein (RHV). Intraparenchymal isolation and dissection of pedicles for posterior section. Tumor detachment from the RHV.
Case 5-6 (Wedge resections in segment 8 at the hepatocaval confluence, CRLM)
Confluence of RHV and MHV exposed from above. Dissection of the tumor from major vessels upon US-guidance up to vena cava.
Case 7 (HCC recurrence after open left-lateral sectionectomy, at the confluence of LHV-MHV and vena cava)
Tumor dissection from hepatocaval confluence in cirrhotic liver. R1vascular for necessity.
Case 8 (S2 segmentectomy, CRLM)
Full LHV exposition during parenchymotomy.
Conclusion: Robotic sealer and bipolar forceps is safe for precise anatomical vascular dissection.

Video: Robotic Right Hemihepatectomy: Ready for Prime Time?
P. Müller, C. Kuemmerli, A. Billetter, P. Dutkowski, B. P. Müller
Department of Surgery, Clarunis University Digestive Health Care Centre Basel, Basel

Background: Robotic right hemihepatectomy has emerged as a highly effective, minimally in-

vasive alternative to traditional open surgery for the resection of liver lesions. This approach combines the precision and dexterity of robotic systems with the benefits of laparoscopic surgery, offering improved visualization, reduced blood loss, and faster recovery times.
Case Presentation: We presents the case of a 33-year-old patient with a 6 cm inflammatory adenoma, who underwent robotic-assisted right hemihepatectomy. The procedure was performed using the robotic platform. The adenoma was situated on the portal vein bifurcation of the right anterior and posterior branches. Key surgical steps included:
1. Positioning and Trocar Placement: The patient is placed in a supine position. Four robotic and two laparoscopic trocars are placed.
2. Initial Exploration and Mobilization: The liver is carefully explored with intraoperative ultrasound to assess the location of the adenoma and any surrounding structures. The right lobe is mobilized.
3. Hilar disection: The right hepatic artery, right portal vein, and right biliary duct are identified. These structures are dissected, clamped and cut.
4. Parenchymal Transection: After administration of 3mg ICG, the cutting plane on the right side of the middle hepatic vein is marked. Using robotic scissors the liver parenchyma is transected along the demarcated line, near the middle hepatic vein. The right hemi liver is extracted through a Pfannenstiel incision. The surgery lasted 4 hours, with a blood loss of 50 cc. There were no intraoperative complications. Postoperative recovery was uneventful, with the patient being discharged within 5 days.
Conclusion: This case highlights the potential of robotic right hemihepatectomy as a safe and effective option for the resection of liver lesions. The technique offers significant advantages over traditional open surgery, with favorable outcomes in terms of blood loss, recovery time, and patient satisfaction. This video abstract will provide a detailed demonstration of the robotic procedure, showcasing key steps and technical considerations.

Video: Laparoscopic Liver Resection of Hepatic Cystic Echinococcosis in Segment VIII: A technical Video

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Background: Cystic Echinococcosis (CE) is a very rare zoonotic infection in Western Europe caused by Echinococcus granulosus, predominantly affecting the liver (approximately 80%). Symptoms often merge only after cyst rupture. Treatment options include antiparastitic medications and invasive interventions such as PAIR (puncture, aspiration, injection, and reaspiration) and open or minimally invasive surgery depending on the extent and the location of the disease.
Aims: We aim to present the video of a laparoscopic liver resection of a large hepatic CE in Segment VIII, highlighting procedural steps and potential pitfalls.
Methods: The patient was positioned in the French position, slightly raised to the right, and with the right arm abducted overhead. Trocar placement included 5 12mm trocars along the right subcostal line and a 5 mm trocar for the Pringle tourniquet in the left hemi-abdomen. The right liver was fully mobilized, and intraoperative ultrasound guided resection margins. Liver resection was performed using (CUSA®) and (HarmonicTM) devices.
Results: We report a case of a 38-year-old female with hepatic CE, pre-treated with a stereotactic PAIR procedure. Our center has treated 61 CE patients with 36 undergoing hepatic resections. In this case, a laparoscopic atypical liver resection of segment VIII was completed without significant bleeding. Preoperative PAIR and resection of the cyst with surrounding liver tissue instead of only an enucleation minimized rupture risk. Intraoperative medical prophylaxis against anaphylaxis was performed, as well as peri-operative treatment with Albendazol. The patient recovered uneventfully and was discharged on postoperative day three. Figure 1A shows the resection site, Fig. 1B/C the resected specimen.
Conclusion: Despite its technical challenges, laparoscopic resection of a segment VIII liver lesion represents an effective surgical approach for managing liver tumors including CE. The potential benefits include reduced postoperative morbidity, shorter hospital stay and faster recovery.

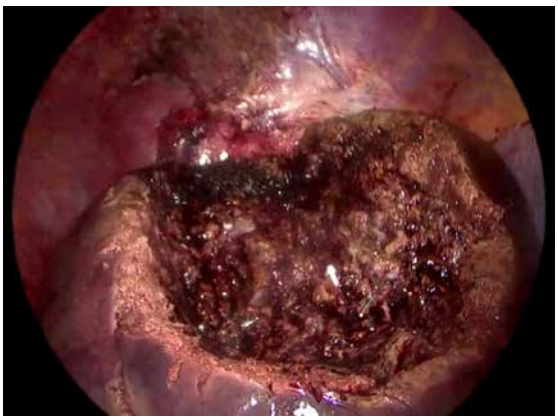

Figure 1A

Figure 1B

Figure 1C

Video: Innovation in Minimally Invasive Pancreatic Surgey: Dexter-Assisted Left Pancreatectomy

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Background: Minimally invasive surgery (MIS) has progressively become the standard for various procedures, with robotic surgery playing an increasingly important role in this evolution. Robotic platforms are having a growing impact on complex procedures, such as pancreatic surgery, by providing enhanced dexterity, precision and ergonomics. The Dexter robotic system allows smooth transitions between standard laparoscopy and robotic assistance, providing greater flexibility during surgery. This feature enables surgeons to maximize the advantages of both techniques and facilitate intraoperative teaching.
Aims: To demonstrate the feasibility of a Dexter-assisted distal pancreatectomy and highlight its advantages.
Methods: We present a clinical case of a patient undergoing a Dexter-assisted distal pancreatectomy, highlighting the advantages of combining standard laparoscopy with the Dexter robotic platform.
Results: We present the case of a 63-year-old patient with a history of coronary artery disease treated with stenting and previous open appendicectomy. The patient presented with a pulsatile abdominal pain, and an ultrasound showed a 20 mm hypervascular lesion in the body of the pancreas. Subsequent CT scan and MRI confirmed an 18 mm lesion. A PET/CT was also performed and showed an increased uptake of the pancreatic lesion measuring 33 mm, with no other fixations. Endocrinological evaluation revealed slightly elevated chromogranin and glucagon levels. Biopsy confirmed a well-differentiated grade 1 neuroendocrine tumor. Following a multidisciplinary tumor board discussion, surgical resection was indicated due to the uncertainty of the tumor size. The patient successfully underwent a laparoscopic distal pancreatectomy assisted with the Dexter robotic system, achieving a complete resection with preservation of splenic vessels and spleen. The surgery was complicated by a pancreatic fistula, which was manages conservatively.
Conclusion: The Dexter robotic system provides an innovative and effective approach for complex pancreatic surgery, combining the advantages of laparoscopic and robotic surgery. Its flexibility enhances surgical precision and facilitates intraoperative teaching.

Guardians of the Scalpel: Securing Excellence Through Collaboration in Pediatric Urology

Save the Ovaries: Surgical Management of Simple Ovarian Cysts in Children and Adolescents

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Background: Simple ovarian cysts in girls are common and typically occur during phases of hormonal stimulation. While small cysts are treated conservatively, surgical intervention is required in cases of cyst growth or complications. The most common laparoscopic ovarian-sparing methods are laparoscopic cyst enucleation and cyst deroofing. Adult studies have shown low recurrence rates and a reduction in ovarian reserve following cyst enucleation compared to cyst deroofing. However, no studies have been found on this topic for girls.
Aims: We aimed to compare laparoscopic cyst enucleation with laparoscopic cyst deroofing regarding postoperative recurrence rates and ovarian reserve in girls.
Methods: We conducted a retrospective multicenter study in two Swiss institutions. Pre- and postoperative demographic, clinical, and sonographic parameters were analyzed. Recurrence was defined as the presence of an ipsilateral ovarian cyst within 3 months postoperatively, while estimation of ovarian reserve was assessed using sonographic ovarian volume and the adnexal ratio. Descriptive statistics of demographic data were performed. Endpoints were analyzed using unadjusted risk differences, odds ratios, and linear regression models.
Results: From 2012 to 2022, 129 patients underwent surgery for simple ovarian cysts (enucleation: n=42, deroofing: n=65). The mean age at surgery was 13.6 years, and the mean preoperative cyst size was 53 mm. Postoperative recurrence rates were similar for both methods (deroofing: 9.5%, enucleation: 7.5%, p=0.786). However, ipsilateral ovarian volume and the adnexal ratio were lower after cyst enucleation, indicating a potential decrease in postoperative ovarian reserve.
Conclusion: We demonstrated that laparoscopic cyst enucleation and cyst deroofing showed no difference in postoperative recurrence rates. Laparoscopic cyst enucleation appeared to have a more negative impact on postoperative ovarian volumes. The findings of our study will serve as basis for a planned prospective study and will help to standardize the surgical management of simple ovarian cysts in girls based on evidence, with the goal of preserving ovarian reserve.

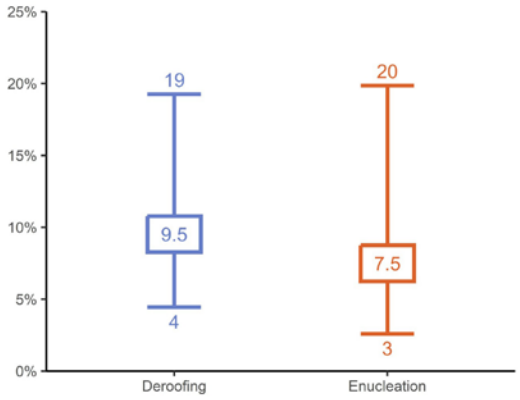

Figure 1. Recurrence Rates

Urological Outcomes of 5-Year-Old Patients After Open Prenatal Spina Bifida Aperta Repair

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Background: Neurogenic lower urinary tract dysfunction (NLUTD) is a severe and frequent burden in patients with spina bifida aperta (SBA). Less than 10% of patients with postnatal SBA repair achieve normal bladder function (NBF) by the typical toilet training age.
Aims: This study aimed to assess if open prenatal spina bifida aperta repair (OPSBAR) improves urological outcome at age five, when most healthy children have bladder control.
Methods: Patients undergoing OPSBAR at our institution are followed prospectively in a standardized way, with data collected in a REDCap registry. We reviewed urological outcome data at age five, including bladder diary, urodynamic and ultrasound findings, need for clean intermittent catheterization (CIC) and anticholinergics. NBF was defined as age-appropriate voiding patterns in a bladder diary, age-appropriate bladder capacity, absence of detrusor overactivity, leakage or pressure increase during filling, normal detrusor contractility, absence of detrusor-sphincter-dyssynergia, and voiding without significant residual urine.
Results: 22% (20/91) of patients showed a NBF, all exhibited spontaneous micturition. 60% (12/20) were fully continent, 30% (6/20) required night-time diapers, and 10% (2/20) were not yet fully toilet trained and used diapers during the day. 78% (71/91) had NLUTD, with 19% (17/91) developing NLUTD related to inclusion cysts. CIC was performed by 70% of patients (64/91), and 45% (41/91) required anticholinergic therapy, all of whom also performed CIC. A subgroup analysis showed a higher percentage of NBF in patients operated on after 2017 (35% vs. 12%, $p<0.05$), correlating with a significant decreased incidence of inclusion cysts.
Conclusion: After OPSBAR, 22% of patients exhibit NBF by age five, increasing to 35% for those operated on after 2017. Compared to postnatal SBA repair, this represents a significant improvement in urological outcome.

Pediatric Robot-Assisted Partial Nephrectomy With Intraoperative Indocyanine Green: A Report of Two Cases

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Background: In recent years, innovative technologies have been introduced to improve the outcomes of robot-assisted partial nephrectomy (RAPN). Among these, indocyanine green (ICG) has been proposed to assess intraoperative kidney perfusion in the pediatric population.
Aims: To report our experience with ICG-guided RAPN and evaluate its role in performing partial nephrectomy in pediatric patients.
Methods: We retrospectively analyzed data from two pediatric patients who underwent RAPN at our center in 2024 for non-functioning upper poles in duplex renal systems. Both patients underwent preoperative MAG3 scintigraphy to evaluate residual renal function. During surgery, ICG was administered intravenously at a dosage of 0.2–0.3 mg/mL/kg. The da Vinci Xi robotic platform, equipped with the Firefly fluorescence imaging system, enabled real-time switching to near-infrared fluorescence (NIRF) imaging for visualization of the target organs.
Results: The study included one male and one female patient, with a median age of 2 years. Both procedures were completed without conversion to laparoscopy or open surgery. No adverse reactions to ICG, including allergies or anaphylaxis, were observed. The use of NIRF imaging allowed clear delineation of functional and non-functional renal segments, facilitating precise resection. Follow-up confirmed preservation of residual renal function in both patients.
Conclusion: Our experience suggests that intraoperative ICG administration is a valuable tool for guiding surgeons in assessing functional renal moieties in pediatric duplex kidneys. Additionally, this technique may help shorten the learning curve for young surgeons adopting pediatric robotic surgery. Further studies with larger patient cohorts are required to validate these findings

Posterior Urethral Valves – An Underestimated Cause for Lower Urinary Tract Symptoms in Older Boys?

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Background: Posterior urethral valves (PUV) are the main cause for lower urinary tract obstruction in boys and still 17% of cases end up in end-stage renal disease once in their life. Most cases are detected prenatally or in early childhood, but up to one third of the patients are diagnosed later. We present a series of older boys with lower urinary tract symptoms caused by PUV.
Aims: The aim of this analysis is to show a correlation between persistent lower urinary tract symptoms and PUV in older boys.
Methods: Restrospective analysis of all boys older than 8 years, who underwent diagnostic cystoscopy for persistent lower urinary tract symptoms (i.e incontinence of different severity, voiding disorders or urinary tract infections) from January 2023 until December 2024. Indication for cystoscopy was made after unsuccesful conservative treatment. PUV were defined as narrowing of the urethra at typical localization of at least 30%.
Results: A total of 23 boys older than 8 years underwent diagnostic cystoscopy during January 2023 and December 2024 due to unsuccesful conservative treatment of lower urinary tract symptoms. In 22 of these boys, PUV were detected and treated. In 13 patients, symptoms resolved completely within the first 6 months. There was no improvement of symptoms in 3 patients. In the rest (6 patients), a partial resolution of symptoms could be seen.
Conclusion: PUV are an underestimated cause of LUTS in older boys. Therefore, cystoscopy should be considered in patients with unsuccesful conservative treatment.

Treatment of burned children (MHS) in Zurich and in Lausanne: similarities and differences

Benefits of Sphincteroplasty on Speech in Children with Velopharyngeal Insufficiency and Cleft Lip and Palate

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Background: Velopharyngeal insufficiency (VPI), a potential sequela of cleft lip and palate (CLP) repair, is the passage of air from the oral cavity into the nasal cavity during phonation. An altered nasal resonance, sometimes translated as a high-pitched voice, is a compensatory mechanism for VPI and may worsen intelligibility. The treatment of VPI is based on speech

therapy; surgical intervention may be considered if symptoms persist. The most commonly used techniques are superior/inferior pharyngeal flap or sphincteroplasty. These two techniques have not shown any difference in terms of hypernasality, i.e., the passage of air through the nasal cavity during speech. However, the alteration of nasal resonance, with the clinical manifestation of a high-pitched voice, has not yet been studied in the literature.
Aims: The aim of this study is to investigate the change in nasal resonance following sphincteroplasty.
Methods: This study includes children born with a CLP who underwent sphincteroplasty for VPI between April 2023 and July 2024 at our university hospital. Pre- and postoperative phonation assessments were carried out using the Borel-Maisonny classification and vocal frequency measurements obtained with a validated phonetic analysis software.
Results: Five out of six children, aged 12 to 19 years, showed postoperative phonation improvement. A decrease in vocal frequency was observed in the four children who had a high-pitched voice preoperatively.
Conclusion: The results demonstrate a reduction in VPI and a decrease in vocal frequency following sphincteroplasty, resulting in a more harmonious voice quality and better intelligibility. These findings suggest that sphincteroplasty may offer additional benefits over pharyngeal flap. A prospective study with a larger cohort of patients undergoing sphincteroplasty, and with a longer recruitment period, is being conducted. This study will precede a comparative analysis between these two pharyngoplasty techniques.

Figure 1. Sphincteroplasty

ICP Elevation in Scaphocephaly – A Retrospective Study
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Background: Synostosis of the sagittal suture resulting in scaphocephaly is known to be the most common form of craniosynostosis. Although the severity of presentation may vary, there is a large consensus on the indication for surgical treatment due to an increased risk of intracranial pressure (ICP) and the abnormal skull shape. However, the prevalence and significance of elevated ICP remains unclear.
Aims: To evaluate a patient cohort with delayed diagnosis of scaphocephaly with regard to ICP elevation.
Methods: A retrospective study of a cohort of five patients with delayed diagnosis of scaphocephaly. As a control group, we included three infants who underwent osteoclastic craniectomy within the same time. The data collection involved meticulous reviews of medical records, diagnostic imaging, and clinical assessments, with a focus on demographics, clinical presentations, imaging results, Cranial Index (CI) measurements, presence of papilledema, and intraoperative documentation, including ICP measurements.
Results: There was no significant difference in the preoperative CI between the two groups ($p = 0.14$). All patients diagnosed with scaphocephaly were assessed for papillary edema by our ophthalmologists. Two cases in the late-treatment scaphocephaly group presented with papillary edema at diagnosis. There were no cases of papillary edema in the control group. All five late treatment-group scaphocephaly patients underwent modified Pi-plasty procedures with systematic ICP-monitoring. The mean opening pressure was 24mmHg which significantly dropped to a mean closing pressure of 7.5mmHg. In comparison, the control group had a significantly lower mean opening pressure of 5mmHg ($p < 0.01$).
Conclusion: Our study demonstrates that all patients in the late-treatment scaphocephaly group showed elevated intracranial pressure at the time of surgery. Despite variability in presentation, the elevated ICP in these patients highlights the importance of timely diagnosis and intervention to mitigate the risk of intracranial hypertension.

Single-Center Experience With Pediatric Endoscopic Pilonidal Sinus Treatment (PePSiT): A Safe and Low-Recurrence Minimally Invasive Technique in the Paediatric Population
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Background: Pilonidal sinus disease (PSD) is a common condition affecting the natal cleft, often complicated by infection or abscess formation. Traditional surgical approaches include excision with open wound healing or primary closure. Minimally invasive techniques, such as pediatric endoscopic pilonidal sinus treatment (PePSiT), have shown significant improvements in outcomes. This study reports our single-center experience with PePSiT in paediatric patients.
Aims: To evaluate the safety, efficacy, and long-term outcomes of PePSiT as a minimally invasive treatment for PSD in paediatric patients.
Methods: A retrospective analysis was conducted on 72 paediatric patients treated between 2015 and 2024. All patients followed a standardized protocol, including preoperative laser hair removal therapy. A minimum follow-up of 2 years was ensured, except for recent cases still under observation. Outcomes assessed included healing rates, morbidity, PSD characteristics, recurrence rates, and quality of life (QoL). Patients older than 18 years were excluded.
Results: The mean age was 15.4 ± 1.6 years (range 11.6–18), with a male-to-female ratio of 1.3:1. Large cavities (>3 cm) were present in 27.8% of cases, and abscess formation was the most common presentation (49%). The mean procedure duration was 35 ± 8.8 minutes. All patients were discharged the same day, resumed activities within 10 days, and achieved complete wound healing within 4 weeks in 96% of cases. The overall recurrence rate was 6.9%, decreasing to 3.8% in the last 5 years.
Conclusion: PePSiT is a safe, effective, and minimally invasive treatment for PSD in paediatric patients. Its low recurrence rate, absence of hospitalization, and inclusion of laser hair removal therapy improve outcomes and reduce costs. PePSiT is recommended as a first-line treatment for this age group, with future studies needed to confirm these findings

Visual Abstracts

Peritoneal Recurrence Following Laparoscopic vs. Open Gastrectomy for Gastric Adenocarcinoma
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Background: Despite surgical resection representing the mainstay of curative treatment for gastric adenocarcinoma, the risk of postoperative recurrence remains substantial. Among the various patterns of relapse, peritoneal recurrence is often associated with poor outcomes. Although laparoscopic gastrectomy (LG) has become increasingly adopted in clinical practice, its specific impact on peritoneal recurrence rates compared to open gastrectomy (OG) remains to be fully elucidated.
Aims: The aim of this study was to evaluate the risk of peritoneal recurrence following curative-intent LG versus OG.
Methods: All consecutive patients with gastric adenocarcinoma undergoing oncologic gastrectomy with curative intent between January 2007 and December 2021 were retrospectively analyzed. Clinico-pathological characteristics, survival and recurrence were compared between LG and OG patients. The x2 test was used for categorical variables and the t-test for continuous ones. Survival was assessed with the Kaplan-Meier method and log-rank test, as well as a multivariable Cox regression analysis.
Results: A total of 145 patients were included in the study, 99 (68.3%) in the OG group and 46 (31.7%) in the LG group. Baseline demographics, surgical and staging characteristics were similar in both groups. There was no significant difference in 5 year overall survival (59.2% for OG, 39.5% for LG, p=0.976) and recurrence rate (44.3% for OG and 28.3% for LG, p=0.066). Recurrence patterns were likewise comparable, with locoregional recurrence in 7.7% after LG versus 9.3%, and distant recurrence in 84.6% versus 76.7%. Mixed types of recurrences were found in 7.7% versus 14% (p=0.810). However, a significant difference emerged in the rate of peritoneal recurrence, which was higher after OG (31.3%) compared to LG (15.2%, p=0.040).
Conclusion: Our findings indicate a potential benefit of laparoscopic gastrectomy in reducing peritoneal recurrence compared with open gastrectomy. Further studies are warranted to confirm these preliminary observations and clarify the underlying mechanisms.

Buschke-Löwenstein Tumour Surgical Management: A Case Report and Literature Review
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Locarno

Background: Giant Condyloma Acuminatum (GCA) represents a rare sexually transmitted disease caused by the human papillomavirus (HPV) subtypes 6 and 11. It is a rare exophytic lesion with a tendency to infiltrate adjacent tissues. It is characterised by a high recurrence rate and associated with the potential for malignant transformation.
Aims: The aim of our case report is to highlight the complexity and importance of surgical intervention in the case of Giant Condyloma Acuminatum.
Methods: The case concerns a 61-year-old patient known to have metastatic carcinoma of the larynx. He was known to have a peri-anal lesion for roughly 40 years without ever having consulted a physician. A routine follow up CT scan of the abdomen, showed a thickening at the

intergluteal site for which, following a proctological examination, a diagnosis is made of GCA. The anoscopy showed the absence of inter-anal mucosal involvement and therefore surgical resection was indicated.
Results: Cytology confirmed the HPV 6 and 11 phenotypes. In the immediate post operative period there was a wound dehiscence that was subsequently treated conservatively through healing by secondary intention. At two-months follow-up, we observed almost complete epithelisation of the surgical wound in the absence of local recurrence.
Conclusion: There are several therapies for the management of the disease. The choice of therapy must be individualised based on the extent of the disease, patient preference, cost, adverse effects, treatment availability and response to previous treatments. Complete surgical excision is the treatment of choice for GCA.

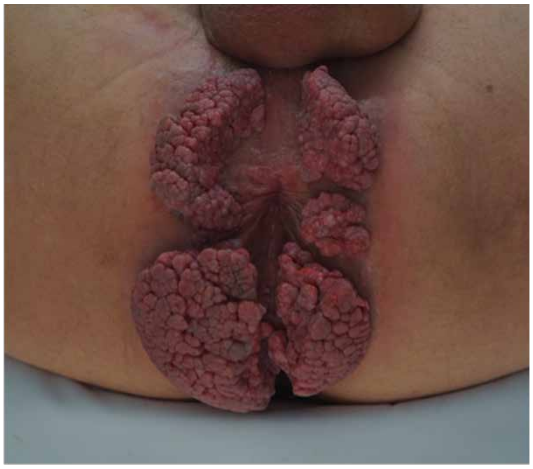

Figure 1. Preoperative lesion of Giant Condyloma Acuminatum

Figure 2. Operative closure post-exision

Figure 3. Surgical wound at two-months follow-up

Comparing Laparoscopic and Robot-Assisted Surgery: A Subjective Evaluation of Surgeon and Assistant Workloads Using the Nasa Task Load Index at a Single Center
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[1]Visceral Surgery, Clarunis University Digestive Health Care Centre Basel, Basel; [2]Department of Surgery, UC San Diego, San Diego; [3]Forschungsgruppe Chirurgie, St.Clara Forschung AG, Basel

Background: With the rise of minimally invasive surgery, attention to ergonomic challenges for the operating team has increased, as they can lead to musculoskeletal disorders and decreased performance of surgeons. However, their impact on assistants remains unclear.
Aims: This study aims to investigate the correlation of ergonomics and robot-assisted versus laparoscopic surgery for surgeons and assistants.
Methods: This study was conducted prospectively in a single center between 1/5/2024 and 31/12/2024. Procedures routinely performed with both techniques were included (sigmoidectomy, right and left hemicolectomy, fundoplication, left pancreatectomy, rectopexy, and low anterior resection). To assess ergonomics, mental and physical workload were examined using primarily the NASA-TLX score. Information was collected using a postoperative RedCap survey and patient charts.
Results: A total of 108 operations (46.3% laparoscopic, 53.7% robot-assisted) with 243 survey responses (154 as surgeons, 89 as assistants) were included. In the surgeon group, 73.2% were male and 26.8% were female, while in the assistant group, 34.83% were male and 65.2% were female. The mean operation time was shorter for laparoscopic procedures (180.2 vs. 274.2 minutes). Height (centimeter) was 174.48 in the assistant group versus 179.72 in the surgeon group. Prior presence of back pain was significantly higher for assistants than for surgeons ($p<0.0001$). When comparing laparoscopy and robot-assisted surgery, only physical demand was significantly higher for surgeons (58.26 versus 40.70), $p<0.0001$). No significant differences were reported by surgeons for mental demand (59.64 vs. 63.60, $p=0.7840$), temporal demand (50.74 vs. 52.68 $p=0.8416$), performance (65.90 vs. 70.49, $p=0.3322$), effort (64.06 versus 69.68, $p=0.3322$), or frustration (38.24 vs. 40.59, $p=0.9078$). Similarly, no differences were noted for assistants across both access modes.
Conclusion: Our preliminary analysis indicates that robot-assisted procedures reduce surgeons' physical workload without affecting assistants' workload.

Robotic Vertical Gastrectomy With a Suprapubic Approach: A Video Case Report
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Background: Robotic assistance in bariatric surgery has been established as both feasible and safe, offering valuable support in challenging cases. Traditional approaches often result in abdominal scarring, which can be particularly concerning for younger patients. Conversely, the suprapubic approach may be preferred for its potential aesthetic benefits. Despite existing literature on robotic techniques in sleeve gastrectomy (SG), the suprapubic robotic approach was not described yet. This video case report aims to illustrate the application of the suprapubic robotic approach in sleeve gastrectomy for morbid obesity.
Case Presentation: The patient, a 55-year-old woman with grade III obesity (BMI 41.7kg/m^2) and no obesity-related comorbidities, was selected due to her lack of prior intra-abdominal surgery and height under 175 cm. A suprapubic approach for sleeve gastrectomy was chosen. The procedure began with a supra-umbilical incision, through which an 8 mm trocar for the camera was inserted. Additional trocars were placed suprapubically, including a 12 mm trocar in the left iliac fossa and a 5 mm trocar for assistance in the left hypochondrium. Docking was successful, followed by resection of the gastro-colic ligament and dissection up to the left diaphragmatic pillar to free the His angle. Gastrolysis was performed, leaving a 4-6 cm distance from the pylorus. The antrum was divided using a 60 mm stapler, followed by longitudinal gastrectomy using additional 60 mm staplers, guided by a 42-French bougie. The resected stomach was safely extracted through the 12 mm port using an Endo Catch, with no complications reported during or after surgery. The patient experienced an uneventful recovery, achieving a weight loss of 15 kg at the 3-month follow-up.
Conclusion: This case demonstrates that the suprapubic robotic approach is a viable option for sleeve gastrectomy in patients with morbid obesity. Careful patient selection is crucial when considering this surgical technique.

Life-Threatening Hemorrhagic Shock From a Ruptured Pancreaticoduodenal Artery Aneurysm: An Unusual Clinical Presentation
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Visceral Surgery, Geneva University Hospitals, HUG, Geneva

Background: Pancreaticoduodenal artery aneurysm (PDAA) accounts for < 2% of all visceral aneurysms often associated with celiac trunk stenosis, itself often caused by a hypertrophic arcuate ligament. PDAA can rupture unexpectedly and cause a life-threatening emergency. Its rare and unspecific presentation makes early diagnosis and management challenging, especially in critically unstable patients.
Case Presentation: A 61-year-old healthy man presented with sudden epigastric pain, nausea, and modified EKG, suggesting a myocardial infarction. He underwent an emergency coronary angiography, which ruled out any cardiac issues. However, he became critically unstable with signs of hypovelomic shock and was rushed to the emergency room for resuscitation. Bedside extended focused assessment with sonography for trauma (E-FAST), revealed free intraperito-

neal fluid. An emergency exploratory laparotomy was performed, without preoperative CT imaging. Intraoperative findings included massive hemoperitoneum and retroperitoneal hematoma. A supra-coeliac aortic clamping allowed stabilization of the patient. Exploration revealed a ruptured PDAA, causing destruction of the head of the pancreas. A total pancreatectomy was performed. A laparostoma was placed, allowing for 2 days of fluid resuscitation in the intensive care unit. CT scan demonstrated a hypertrophic arcuate ligament with hemodynamic repercussion, confimed by Doppler ultrasound. Therefore, digestive and biliary reconstruction was performed during second look surgery, associated with the release of the arcuate ligament. The postoperative recovery was uneventful.

Conclusion: Sudden abdominal pain and shock in a healthy patient often point to septic shock from digestive perforation, hypovolemic shock from a ruptured abdominal aneurysm, or severe dehydration from bowel obstruction. CT angiography remains the gold standard for diagnosing aneurysms, which require treatment (open or endovascular) if their anteroposterior diameter exceeds 2 cm. Inspiratory and expiratory vascular imaging determines whether arcuate ligament release is necessary. This case highlights the importance of considering visceral aneurysm rupture in sudden abdominal pain with shock; immediate surgery and awareness of PDAA etiologies are crucial.

Retrorectal Tumors: Single-Center Experience

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Background: Retrorectal tumors are rare and present significant challenges in terms of diagnosis, surgical treatment, and follow-up, particularly in cases of local recurrence. This study aimed to report a single-center experience in managing retrorectal tumors, with a focus on surgical techniques, outcomes, and follow-up strategies.

Aims: The aim of this study was to share a single-center experience in the treatment of retrorectal tumors.

Methods: Between 2018 and 2024, patients diagnosed with retrorectal tumors and treated at eHnv Hospital were retrospectively analyzed. Six patients were included in the review, with a median follow-up period of 18 months.

Results: The posterior approach, using intersphincteric excisions, was preferred due to its advantages in achieving complete resection, minimizing morbidity, and preserving anal function. The median age was 41 years. All patients underwent clinical examinations, endorectal 3D ultrasonography, and perineal MRI as part of their diagnostic and follow-up protocol. Among the six patients, two presented with symptoms: one reported dyschezia, while the other experienced anal soiling. One patient developed a recurrence three months postoperatively, manifesting as a fistula. After undergoing a second intersphincteric resection, this patient remained disease-free. Another patient reported perineal pain and dyschezia, which resolved completely after 18 sessions of biofeedback physiotherapy. No cases of incontinence were observed during the follow-up period. At a median follow-up of 18 months, five patients were confirmed to be disease-free.

Conclusion: Although retrorectal tumors are rare, their management remains complex. This study highlights potential risk factors for local recurrence, including patient-related factors (e.g., the presence of a perineal mass), tumor characteristics (e.g., size), and surgical factors (e.g., incomplete resection). The posterior approach is recommended for low retrorectal tumors. A follow-up protocol is proposed, including clinical examinations, endorectal 3D ultrasonography, and pelvic MRI performed annually up to 5 years.

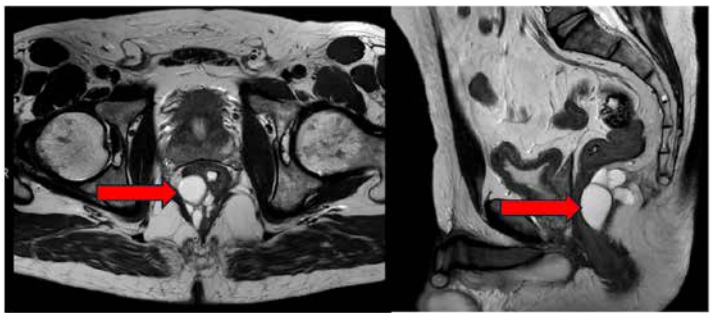

Figure 1. Coronal and sagittal imaging of a multilobulated retrorectal tumo

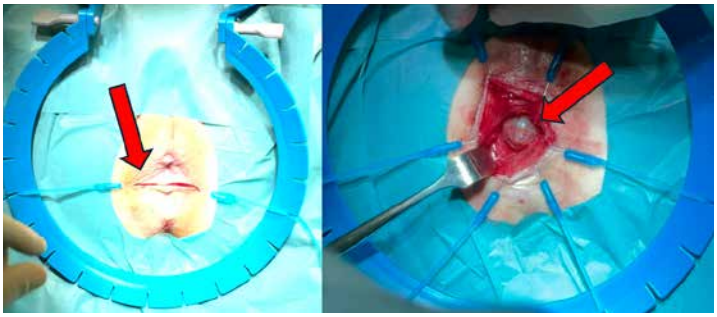

Figure 2. Posterior approach for a retrorectal tumor located in the suprasphincteric space

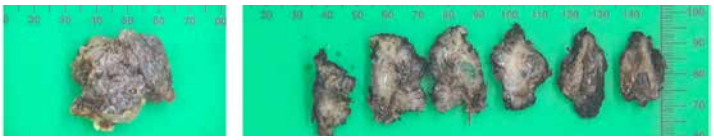

Figure 3. Multilobulated retrorectal tumor

Volvulus of the Gallbladder

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Background: Cholecystectomy is one of the most frequently performed abdominal surgical procedures, indicated for gallstones disease, polyps, and, exceptionally, for volvulus of the gallbladder. Nowadays, laparoscopy is the gold standard approach for cholecystectomy due to reduced operative pain, shorter hospital stays and better cosmesis compared to open surgery. The most frequent complication of this surgery compared to open surgery is an injury of the common bile duct, even if various measures implemented overt time mitigated the occurrence.

Case Presentation: We report the case of an 86 year old female presenting to the emergency department with mild diffuse abdominal pain and constipation. Blood tests showed no signs of inflammation. A CT-scan showed vesicular hydrops and fecal impaction in the colon. She was given an enema and was discharged. She came the next day with significant worsening of the pain, localized now in the right upper quadrant without nausea, vomitting or fever. The white blood cell count was at 13.9 G/l and serum CRP at 186 mg/l with mild cytolysis and cholestasis without elevation of the bilirubin. The new CT-scan showed signs of a volvulus of the gallbladder with ischemia and perforation. The patient underwent a laparoscopic exploration which confirmed a volvulus of the gallbladder with intraperitoneal liquid but without franc perforation. A flabby peritoneum was the most probable explanation for the volvulus. A cholecystectomy was performed without complication. Post-operative recovery was uneventful under 48h of parenteral ceftriaxone-metronidazole. Histopathologic results showed necrosis of the gallbladder without gallstones.

Conclusion: This case shows the importance to recognize the radiological features and the clinical awarenes for a good global management of the patients resulting in good outcomes.

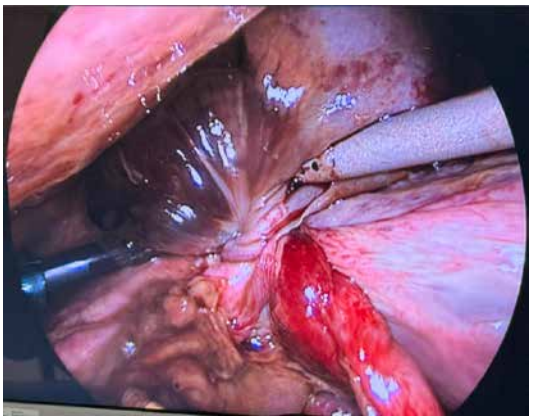

Figure 1

An Internal Hernia With an Incarcerated Ileal Loop Through a Defect in the Left Broad Ligament: A Case Report

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Background: Internal hernias through the broad ligament of the uterus are rare, accounting for approximately 0.2%-0.35% of all hernias. Often underestimated, they predominantly affect multiparous women. A review of the literature revealed a scarcity of articles on the subject, consisting mainly of case reports describing late diagnosis, frequently leading to intestinal resections, with limited data on morbidity and mortality. This case report aims to raise awareness and emphasize the importance of prompt and accurate diagnosis to prevent life-threatening outcomes.

Case Presentation: A 68-year-old female with a history of open appendectomy and vaginal delivery presented to the emergency department with sudden onset abdominal pain, vomiting, and liquid stools. On examination, she exhibited abdominal tenderness without rebound or guarding and was discharged with a diagnosis of gastroenteritis. She returned 24 hours later with persistent pain and acute abdominal signs. Laboratory tests revealed significant inflammation. Abdominal CT imaging showed a mechanical small bowel obstruction caused by an incarcerated ileal loop in the pelvis, with signs of intestinal ischemia. The patient underwent laparoscopic exploration. A 30 cm necrotic segment of the small intestine incarcerated through an orifice in the left broad ligament, specifically the mesovarium was found. The procedure was converted to an infra-umbilical laparotomy. The affected bowel was resected, followed by side-to-side anastomosis and closure of the defect to prevent recurrence. The patient recovered uneventfully and was discharged on postoperative day four.

Conclusion: Internal hernias through the broad ligament are often strangulated and require emergency surgery, as they can rapidly progress to bowel ischemia. A high index of suspicion is

crucial in female patients presenting with acute small bowel obstruction and a scannographic transition point in the pelvis.

Figure 1. Pelvic closed loop

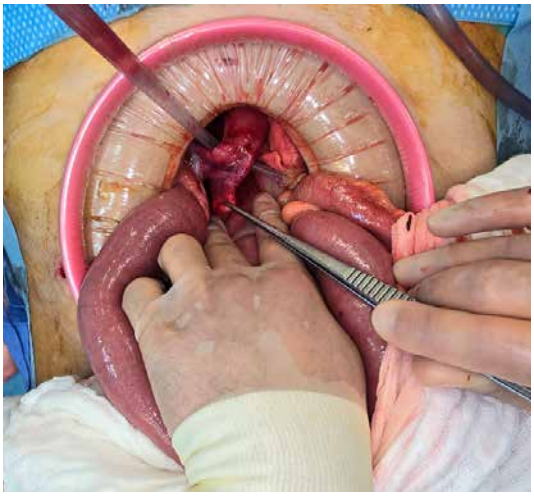

Figure 2. Orifice in the left broad ligament

Figure 3. Ileal necrosis

Evaluation of the Competency Evolution of Trainees With a Thoracic Surgery Simulation Program Using the Kirkpatrick Model

A. Tudor[1], E. Zanfrini[2], C. Forster[1], E. Abdelnour[2], M. Gonzalez[1], T. Krueger[1], Y. Perentes[2]
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Background: Minimal invasive thoracic surgery has become standard, however, teaching this technique remains challenging. There are several frameworks to guide program directors in designing a fit-for-purpose curriculum.
Aims: We evaluated how our simulation program improved trainee skill, knowledge, and behavior, in the context of practice-based leaning using the Kirkpatrick model.
Methods: We developed a video-assisted thoracic surgery training program on a simulator (J&J Stupnik® V3.2) to teach right lung segment resections throughout training. Our paradigmatic approach is post-positivistic, and we used the Kirkpatrick model to inform us on different aspects of training: reaction (level 1), learning (level 2), and behavior (level 3). All our residents were included in the program. We preliminarily evaluated results after 7 months of segment 6 resections for trainees that participated in 3 or more sessions (n=3) using a multiple-choice test (MCQ), given before and after the training. This evaluated knowledge of anatomy, sequence, and technical aspects of the task. A feed-back survey using the Likert scale probed participant satisfaction. Additionally, skills were observed by senior staff surgeons, documenting time to task completion and number of mistakes. Finally, we conducted informal interviews with faculty to inform us on trainee progression in the operating room (OR).
Results: After the observation period we noted a 10% increase in MCQ results, a 35% decrease in task completion time, and in the number of mistakes (28% for minor mistakes, and 75% for major mistakes). The overall participant satisfaction was high. The informal interviews with faculty members revealed a positive perception of expected trainee behavior during surgery in the OR.
Conclusion: Our preliminary results show that the implementation of our simulation program objectively increases the efficacy in task completion of trainees, positively impacting the perception of the learning experience by trainees, and the perception on trainee behavior by faculty.

Combination of Traumatic Diaphragmatic and Costal Rupture With Organ Herniation: Report of a Case

I. Porcellini[1], W. Karenovics[2], P. Compagnon[3], C. H. Wassmer[1], E. Patané[1]
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Background: Traumatic diaphragmatic rupture is a rare, life-threatening injury, often caused by blunt or penetrating trauma. Its nonspecific presentation and association with other injuries frequently delay diagnosis and treatment, increasing the risk of complications. Definitive treatment is surgical repair, often performed by a multidisciplinary team.
Case Presentation: A 77-year-old female involved in a high-speed motor vehicle collision presented with thoraco-abdominal pain. CT-scan revealed a 10 cm diaphragmatic tear associated with an abdominal wall rupture, altogether resulting in an intra-thoracic hernia involving the colon and the liver. Additional injuries included a right pneumothorax, rib fractures, a sternal fracture, and seatbelt-related hematomas. Surgical exploration by visceral and thoracic surgeons required an incision centered on the tear along the axis of the ribs and involved reducing herniated organs, repairing diaphragmatic and abdominal wall defects, reconstructing the costal margin, and stabilizing ribs with a Stratos staple (Fig. 1, 2, 3) . The patient recovered without complications and was discharged after two weeks.
Conclusion: High-speed collisions are a major cause of traumatic diaphragmatic rupture (TDR), with delayed diagnoses often due to nonspecific symptoms. While TDRs typically affect the left side due to the liver's protective effect, this case involved a right-sided rupture combined with an abdominal wall tear resulting with organs herniation. Imaging findings were consistent with severe cases, but the combination of abdominal wall hernia and extensive rib fractures represents a rare presentation. Prompt surgical intervention, usually performed via thoracotomy, laparotomy, or minimally invasive methods, is critical. We opted for an open approach, given the the size of the defect and organ herniation. This case emphasizes maintaining high suspicion for diaphragmatic injuries in high-energy traumas. Multidisciplinary collaboration and timely surgical intervention are key to favorable outcomes.

Figure 1

Figure 2

Figure 3

A Strangulated Meckel's Diverticulum in a Femoral Hernia (Littré's Hernia)

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Chirurgische Klinik, Spital STS AG, Thun

Background: A femoral hernia usually presents as a bulge on the medial side of the thigh, 2-3cm below the inguinal ligament. Among abdominal wall hernias, femoral hernias are the second most common groin hernias. They are characterised by a high level of incarceration or strangulation. Meckel's Diverticulum (MD) is a remnant of the omphalomesenteric duct and it occurs in about 2% of the general population. In rare cases, MD can become incarcerated or strangulated within an abdominal wall hernia, known as Littré's hernia. With an incidence of <0.1% of all complicated hernias, only about 100 cases have been published over the last 300 years. To our knowledge, no cases have been reported in Switzerland.
Case Presentation: We present the case of a 75 year old women with a 2-day history of groin pain. On examination an irreducible mass with local skin inflammation was noted. No signs of intestinal obstruction were present. She had an elevated CRP at 95.6 mg/l without leucocytosis. On ultrasound imaging the suspicion of a groin abscess was raised. Intraoperatively the mass revealed to be an incarcerated femoral hernia. We performed a diagnostic laparoscopy where a small bowel loop was adherent to the inguinal region (Fig. 1). After gentle traction a MD could be extracted from a 1-cm femoral ring (Fig. 2). After a TAPP-Repair was performed, the MD was resected with a stapler (Fig. 3).
Conclusion: A mass in the groin with no signs of intestinal obstruction should raise suspicions preoperatively for the presence of a Littré's hernia. In such patients conducting a CT scan may have a key role in reaching this difficult diagnosis before surgery. The repair of Littré's hernia includes both Meckel's Diverticulum resection and hernia repair. This can be achieved successfully laparoscopically.

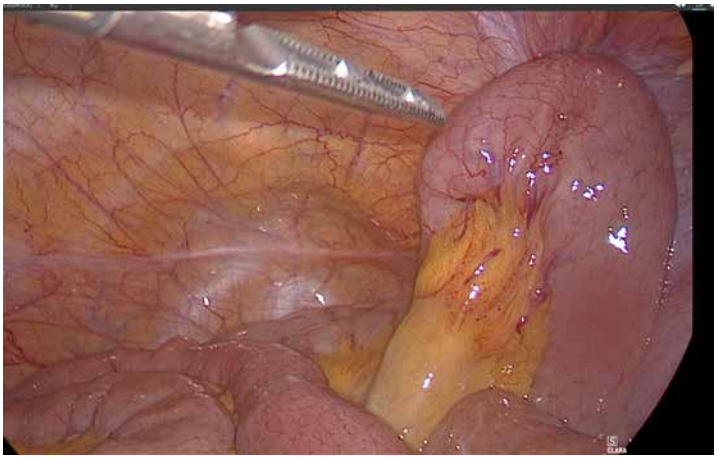

Figure 1

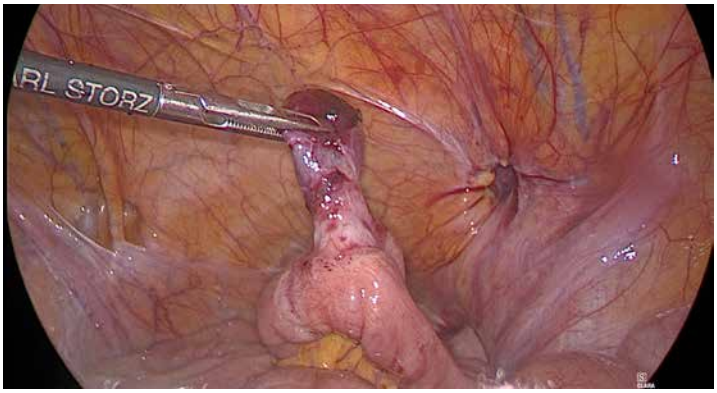

Figure 2

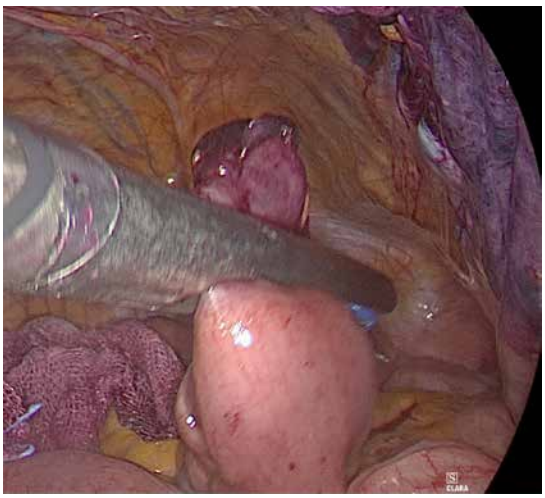

Figure 3

Incidental Discovery of Pneumatosis Intestinalis in an hemodialysis Patient

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General Surgery, Etablissements Hospitaliers du Nord Vaudois, eHnv, Yverdon-les-Bains

Background: Pneumatosis intestinalis (PI) is a clinical condition characterized by the presence of gas within the bowel wall and is considered a rare medical finding. In some cases, it may be a harmless incidental discovery; however, in others, it can indicate more severe forms of gastrointestinal disease.
Case Presentation: We present the case of an 87-year-old male with end-stage kidney disease on hemodialysis, in whom PI was incidentally discovered during a routine follow-up computed tomography (CT) scan for a renal mass (Figure 1). The patient was asymptomatic, and imaging showed no signs of ischemia, bowel obstruction, or perforation. The absence of symptoms or complications allowed for successful conservative management.
Conclusion: This case highlights the incidental discovery of PI in an asymptomatic patient with chronic kidney disease. The absence of complications and risk factors underscores the benign nature of idiopathic PI in some patients, allowing for conservative management. This report emphasizes the importance of distinguishing between benign and life-threatening forms of PI through thorough clinical and radiological evaluation. Further research is needed to explore the relationship between chronic kidney disease, hemodialysis, and the development of PI, as well as to refine management strategies for this rare condition.

Figure 1. Axial abdominal CT scan image where the arrow points to the presence of pneumatosis intestinalis

Magnetic Resonance Imaging Versus 18F-FDG-PET/CT in the Detection of Tuberculous Spondylodiscitis: Results From the Spinal TB X Cohort

J. Scherer[1,2], S. Mukasa[3], K. Wolmarans[3], R. Guler[4], T. Kotze[5], T. Song[6], R. Dunn[2], M. Laubscher[2], H. C. Pape[1], M. Held[2], F. Thienemann[3,7]
[1]Traumatology, University Hospital of Zurich, USZ, Zurich; [2]Orthopaedic Research Unit, University of Cape Town, Cape Town; [3]GMGH, University of Cape Town, Cape Town; [4]Institute of Infectious Diseases and Molecular Medicine, IDM, University of Cape Town, Cape Town; [5]CUBIC, University of Cape Town, Cape Town; [6]Division of Medical Microbiology, University of Cape Town, Cape Town; [7]Medicine, University of Zurich, UZH, Zurich

Background: Magnetic resonance imaging (MRI) is the current imaging gold standard for the radiological assessment of tuberculous spondylodiscitis, with good sensitivity and. Recently, a study showed that 18F-Fluorodeoxyglucose Positron Emission Tomography-computed Tomography (PET/CT), as a whole-body imaging modality, may produce comparable sensitivity but a better specificity than MRI in the detection of spondylodiscitis.
Aims: In this preliminary analysis we assessed and compared the detection of lesions and the number of diseased vertebras per lesion caused by Mycobacterium tuberculosis between the two imaging modalities in 25 patients with confirmed spinal tuberculosis (STB).
Methods: The Spinal TB X cohort is an ongoing prospective cohort study describing the clinical phenotype of spinal TB using whole-body 18FDG-PET/CT (PET/CT) and whole-spine MRI at baseline with repeated PET/CT at six- and 12-months to monitor treatment respond.
Results: 31 patients were enrolled and underwent both MRI and PET/CT. 25 patients had microbiologically confirmed STB (56% male, 44% HIV-infected, median age 47 years, IQR 23). Spinal skip lesions were detected by PET/CT in five patients (80% HIV-uninfected) whereas MRI detected spinal skip lesions in only one patient (p=0.02). Psoas abscess formation was detected by PET/CT in 16 patients (MRI 14 patients). The mean lesion count per patient was 1.3 (SD 0.6) on PET/CT and 1.1 (SD 0.4) on MRI. (Shapiro-Wilk<0.001, p=0.096). PET/CT identified an average of 3.3 diseased vertebras per lesion (SD 1.3), whereas MRI detected an average of 2.4 (SD 0.6) diseased vertebras per lesion. (Shapiro-Wilk<0.001, p=0.052).
Conclusion: In our findings, we had a higher rate of lesion detection using PET/CT including spinal skip lesions, compared to the current imaging gold standard. Further, more diseased vertebras per lesions were detected by PET/CT compared to MRI. PET/CT might be an advantageous imaging modality to quantify the extent of disease in patients with STB. With increasing sample size, we aim to confirm these findings.

Correlation Between Inflammatory Markers on Whole-Body 18F-FDG-PET/CT and Quality of Life in Spinal Tuberculosis: Insights From the Spinal TB X Cohort Study

J. Scherer[1,2], S. Mukasa, K. Wolmarans, T. Kotze, R. Guler, T. Song, R. Dunn, M. Laubscher, H. C. Pape, M. Held, F. Thienemann
[1]Traumatology, University Hospital Zurich, USZ, Zurich; [2]Orthopaedic Research Unit, University of Cape Town, Cape Town

Background: Whole-body 18FDG-PET/CT (PET/CT) in spinal tuberculosis (STB) can detect disseminated disease and allows monitoring of treatment response. We are conducting the Spinal TB X cohort study at the University of Cape Town including serial PET/CT imaging.
Aims: The aim of this analysis was to assess the correlation between inflammatory markers and quality of life during the 12 months of treatments.
Methods: We assessed the total lesion glycolysis (TLG), C-reactive protein (CRP), pain visual analogue scale (pVAS), Oswestry Disability Index (ODI) and EQ-5D-5L values in patients diagnosed with STB, at baseline PET/CTBL and 12 months end-of-treatment PET/CTEND. Decrease over time and correlations between the assessed parameters were analysed using repeated measures ANOVA and Pearson's correlation (r).
Results: We analysed 10 patients (median age 43.5 years, 30% female, 30% HIV-infected) with 14 spinal lesions. The median TB treatment duration at PET/CTEND was 51 weeks; one patient received MDR treatment. The mean TLG of all lesions decreased from 343.8 (PET/CTBL) to 33.1 (PET/CTEND), p=0.017. Persistent 18FDG uptake at PET/CTEND was observed in 3/14 spinal lesions. The mean CRP decreased from 54.5 to 5.4 mg/L (p=0.112); pVAS from 6.7 to 0.5 (p<0.001); ODI from 27.2 to 2.9 (p<0.001); and EQ-5D-5L from 14.9 to 5.8 (p<0.001). (Figure 1) The decrease in CRP (r=0.683, p<0.001), pVAS (r=0.659, p<0.001), ODI (r=0.666, p<0.001), and EQ-5D-5L (r=0.601, p=0.005) correlated significantly with the decrease of TLG over time. At PET/CTEND, nine patients were pain-free (pVAS 0) and had an EQ-5D-5L of 5 and five patients had an ODI of 0.
Conclusion: Clinical improvement at end of 12 months of TB treatment correlates with decrease in spinal inflammation. PET/CT can monitor treatment response in our cohort. The majority of patients had no persisting morbidity at the end of treatment

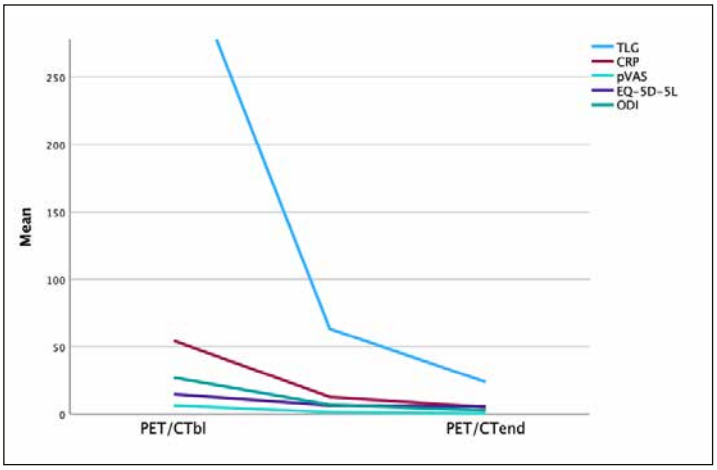

Figure 1. Correlation of biomarkers, PET/CT markers and quality of life scores over 12 months

A Comprehensive Review of Artificial Anal Sphincters for Faecal Incontinence: Comparisons With Urinary Incontinence Devices and Future Directions

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General Surgery, Geneva University Hospitals, HUG, Geneva

Background: Faecal and urinary incontinence are both prevalent conditions worldwide, leading to significant negative impact on quality of life. Artificial sphincters offer a bioengineered solution to replicate the function of biological sphincters. Although designed to imitate the biological function closely, these devices exhibit limitations and are sometimes suboptimal in performance. Advancements in anal sphincter technology remains limited in comparison to urinary sphincters.
Aims: This review aims to systematically evaluate the existing research on artificial anal sphincters for faecal incontinence.
Methods: A total of 105 relevant studies, including 3 RCTs, 8 clinical trials, 3 meta-analyses and 91 reviews, were retrieved from online databases and analysed.
Results: We describe an overview of current anal sphincter technology being used for faecal incontinence, describing their mechanisms, functionalities, success rates and complications profile. To contextualise these findings, we compare them with urinary incontinence treated with implantable devices research, such as the artificial urinary sphincter or transobturator tapes, which has seen more extensive development and positive outcomes. Similar keywords retrieve over 300 RCTs, 575 clinical trials, 128 meta analyses and 990 reviews. Finally, we explore future directions for biomedical innovation, including potential applications in stoma care and endoluminal devices.
Conclusion: This review underscores the need for continued advancements in anal sphincter technology to improve outcomes for patients with faecal incontinence.

Allergy Transfer From Donor to Recipient in Lung Transplantation – A Case Report

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Background: Allergy transfer from donor to recipient is an extremely rare phenomenon, with few peanut allergies reported. Only one case of drug allergy transfer was published after lung transplantation. We report a case of severe anaphylaxis-type drug allergy transfer during lung transplantation.
Case Presentation: A 62-year-old female with end-stage COPD GOLD 4 without any history of allergy was listed for lung transplantation. The 57-year-old female donor with moderate asthma, died of an anaphylactic reaction to ciprofloxacin treatment with severe bronchospasm. Initial assessments of the donor lungs were promising with a P/F-ratio of 368, unremarkable bronchoscopy and good compliance. Following implantation of the first (right) lung, there was an inability to ventilate the graft, characterized by persistent hyperinflation and strongly reduced compliance, prompting the decision for unilateral transplantation. Afterwards, unilateral left-sided ex-vivo lung perfusion (EVLP) was performed for further investigation and poor compliance persisted over the evaluation period. Post-transplant, the patient experienced multiple allergic reactions to Amphotericin B causing bronchospasm. Respiratory decompensation required re-intubation, tracheostoma placement, vv-ECMO, and ultimately due to weaning failure unilateral

left-sided lung transplantation on the POD 52. After the second transplantation, the patient was weaned promptly. In the most recent follow-up (5-months post-transplantation) she is mobile without oxygen supplementation in the outpatient rehabilitation process. Aside from lethal ciprofloxacin allergy the donor showed high spec. IgE to tropomyosin, arginin kinase and peanut storage proteins. The recipient's ciprofloxacin sensitivity results were inconclusive, however, total IgE-levels remained elevated. There were no specific IgE detected pre-or 1-month post transplantation. Examination of the left donor lung from the first transplantation revealed significant edema, bronchial changes, and eosinophilia. A complete allergy work up is in progress.
Conclusion: Allergy transfer in organ transplantation is rare but can have detrimental consequences. Donors with a history of anaphylaxis require careful evaluation and should undergo thorough evaluation in an EVLP setting.

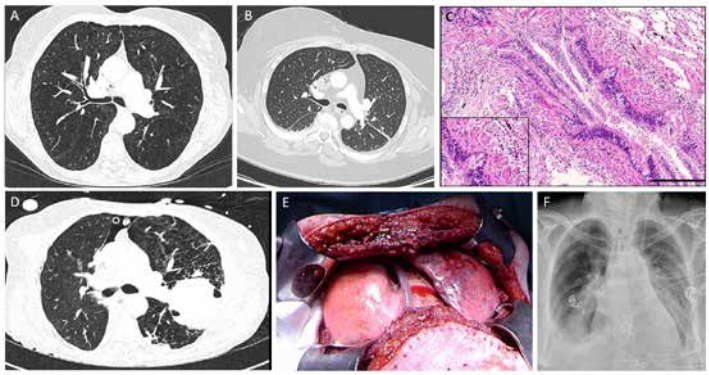

Figure 1

The Role of Indigenous Healers in Treating Surgical Conditions in the Rural Eastern Cape of South Africa

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Background: Indigenous knowledge healers (IKHs) provide alternative healthcare to formal health services in rural South Africa, but there is a gap in knowledge regarding their treatment of surgical conditions.
Aims: This study evaluated IKH surgical care and described their perspective of the dual health system.
Methods: A cross sectional survey of IKHs in the Madwaleni Hospital catchment of the Eastern Cape, South Africa was conducted. Topics included the training and experience of IKHs, treatment of nine common surgical conditions, referral patterns, disease origin beliefs, benefits and limitations of care, and collaborative opportunities between the two health systems.
Results: Thirty-five IKHs completed the survey. IKHs were consulted by persons with all nine surgical conditions. The most common forms of treatment were application of an ointment on the affected site (88%) and oral medication (82%). Operative treatment was only done for abscess. Referrals to the formal healthcare sector were made for all surgical conditions. IKHs reported that they were limited by their lack of training and resources to perform operations. On the other hand, they perceived the treatment of the spiritual aspect of surgical disease as a benefit of their care. Thirty-five (100%) IKHs were interested in closer collaboration with the formal health sector.
Conclusion: IKHs treat surgical conditions but refer to the formal health sector when diagnostic and operative services are needed. More research is needed to determine the potential advantages and disadvantages between the formal health sector and IKH collaboration.

Access to Care in Afghanistan: A Mixed-Methods Study Exploring Access to Emergency, Critical and Operative Care in 11 Afghan Provinces

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Background: Afghanistan's health system has been impacted by 4 decades of war. Despite progress in health service coverage through NGO interventions, access to emergency, critical, and operative (ECO) care remains limited.
Aims: The aim is to evaluate barriers and facilitators to access to ECO care in 11 provinces in Afghanistan, that impede patients to seek, reach, receive and adhere to adequate emergency and surgical care. Moreover, it aims to identify key gaps and needs in ECO service delivery, assessing the overall timeliness, capacity, safety, accessibility, affordability and availability of ECO care.
Methods: The study uses a mixed-methods approach. Part 1 will involve descriptive analysis of health records from the facilities of the EMERGENCY NGO to identify trends. Part 2 will use questionnaires for patients and staff to explore accessibility, affordability, and availability of ECO care. Part 3 will include semi-structured interviews with health professionals to evaluate service status. Part 4 will employ the WHO Harmonized Health Facility Assessment tool to assess surgical capacity and quality in selected facilities. Data collection and analysis will take place between October 2024 and January 2025.
Results: We will analyse facilities' records from 11 provinces, reviewing existing data, collecting approximately 1200 questionnaires, conducting ca. 40 interviews, and quantitatively assessing care capacity of selected health facilities. Data will provide an extensive overview of the universal and equitable access to ECO services in Afghanistan, including the points of view of both beneficiaries and healthcare providers.
Conclusion: This study will produce recommendations on how to expand patient access to ECO services in urban and rural areas, to integrate ECO services into essential health packages, to improve coordination among health providers, and to enhance the sustainability and resilience of Afghanistan's health system.

Another Case of Gist-Plus Syndrome?

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Background: GIST-plus syndrome or PDGFRA-mutant syndrome is an extremely rare condition related to a germline mutation of PDGFRA which causes sporadic gastrointestinal stromal tumor (GIST) and inflammatory fibroid polyps (IFP).
Case Presentation: A 44-year old healthy man was referred to out-patient clinic for long-standing, colicky, diffuse abdominal pain, nausea and vomiting. He reported of feeling feverish with night sweats, a weight loss of 8 kg in the last year, and fatigue. Laboratory tests showed carential anemia, thrombocytosis and mild inflammatory syndrome. Abdominal CT scan revealed a distal invagination of the small bowel. After a not-conclusive colonoscopy, a multidisciplinary discussion recommended a surgical resection. The patient underwent exploratory laparoscopy converted into laparotomy finding a large intestinal mass causing invagination and two implants in the lesser gastric curvature. Other multiple smaller intestinal lesions were found after enterotomy. The major lesion and one of the gastric implants were resected. An ileal end-to-end anastomosis and a regional lymphadenectomy were performed. The patient developed a post-operative paralytic ileus that was conservatively treated and had finally a full recover. Final pathology revealed a gastric GIST and an ileal IFP which both consisted of densely cellular areas of spindle cells without necrosis. Next Generation Sequencing analisys found a Variant of Unknown Significance (VUS) for PDGFRA gene, although exons 12, 14, 18, which are usually mutated in GIST-plus syndrome, were wild-type. The patient is waiting for formal genetic workup with germline testing and gastroscopy.
Conclusion: Genetic testing in case of concomitant GIST and IFP is mandatory for assessing if mutation of PDGFRA gene is present and if it is germline. Besides some renowned mutations, other genetic variants might be culprits, being potentially targeted by immunomodulation therapies.

The Risk of Barbecuing: Metal Bristle Ingestion Can Cause Gastrointestinal Perforation – A Case Report

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Background: While barbecuing in summer is a popular activity, it bears a rare but dangerous risk of ingestion of metal bristles attached to the grilled food. This case reports describes a liver abscess caused by gastric perforation due to metal bristle ingestion.
Case Presentation: A 33-year old man presented with fever and weakness of unknown origin. Computed tomography scan showed a liver abscess with a metal foreign body. Eventually, diagnostic laparoscopy showed a small gastric perforation next to the liver abscess with migration of the metal bristle into the liver, causing the abscess. Consecutively, liver abscess evacuation, recovery of the foreign body and gastric perforation repair with sutures was performed. The patient received intravenous antibiotic treatment for 10 days followed by oral antibiotics for another 4 days. Follow-up showed decreasing CRP and WBC and rapid recovery after surgery.
Conclusion: Utensils used for food preparation should be considered in differential diagnosis for bowel perforation and liver abscesses. Thin metal wires can detach, be ingested and cause gastrointestinal complications.

A Case Report of the Surgical Management of an Elderly Patient With Biliary Ileus

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Background: Biliary ileus is a rare cause of intestinal obstruction, accounting for roughly 1% of ileuses and associated with the presence of a biliary-enteric fistula, known as "Mirizzi syndrome". It's management can be complex in elderly patients, the dominating symptomatic population, where the balance between conservative and surgical management is crucial.
Case Presentation: Our case involves an 88-year-old female, resident in a long term care facility (LTCF) with a medical history of Alzheimers disease and cholecystolithiasis. She presented to the emergency department for an aspecific clinical deterioration and agitation. Clinical

exam demonstrated abdominal distension and absence of bowel sounds. A CT scan showed ileus caused by a biliary stone of the middle-ileal tract, with a cholecystduodenal fistula with pneumobilia, known as the classical "Riglers triad". Due to the patients general condition and family wishes, conservative therapy was undertake. Within 24hours of hospitalisation a Xray showed no progression of the calculus towards the terminal ileum. Additionally, patient management with nasogastric tube resulted difficult due to the cognitive state. Following a familial conference, laparoscopy and extra-corporeal enterotomy of the obstructed ileum and calculus extraction was indicated. The post-operative course was regular, with progressive clinical improvement and discharge to the LTCF.

Conclusion: This case highlights the classical signs and symptoms of biliary ileus, being "Riglers triad" and the challenges in the elderly population. The decision between conservative and surgical approaches requires careful risk-benefit analysis however surgical management remains the treatment of choice also in the fragile polymorbid population. Targeted management, considering the patient's general condition and collaboration with family members, can ensure a favourable outcome even in the most complex cases.

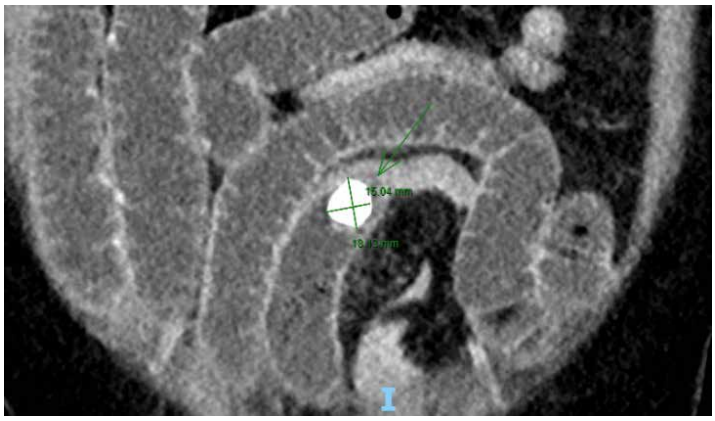

Figure 1. Coronal View

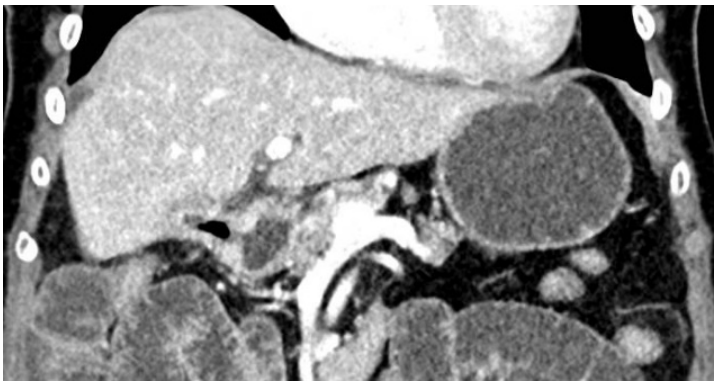

Figure 2. Fistula

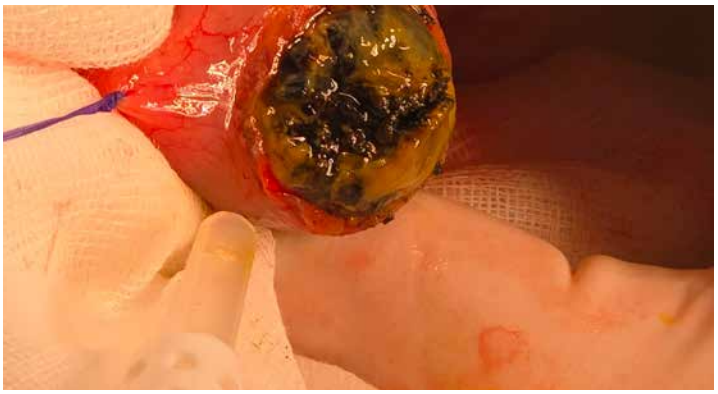

Figure 3. Enterotomy

Bubbles in the Bowel: A Pneumatosis Intestinalis Case Report

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Background: Pneumatosis intestinalis (PI), a radiological finding of gas within the intestinal wall, is increasingly detected due to Computed tomography scans. It may be a primary idiopathic condition or secondary to benign (e.g., pulmonary diseases, corticosteroid use) or life-threatening causes (e.g., obstruction, ischemia). The challenge lies in identifying cases that require surgical intervention.

Case Presentation: We report a case of a 50-year-old male who presented with acute epigastric pain and abdominal distension. Clinical examination revealed a tense abdomen with tenderness in the epigastric region. Laboratory findings showed mildly elevated inflammatory markers. Computed tomography of the abdomen with contrast (Figure 1) showed distended small bowel loops, free fluid interenteric and in the upper abdomen as well as signs of hollow organ perforation with free air predominantly interenteric and in the mesenteric fatty tissue. Given these findings, surgical exploration was performed. A 15 cm midline laparotomy revealed pneumatosis (Figure 2) affecting approximately 80% of the proximal 280 cm of the jejunum, interspersed with normal areas. The remaining bowel appeared healthy. No perforation or peritonitis was identified. The abdomen was irrigated, no resection was done and closure was performed.

Conclusion: Pneumatosis intestinalis may indicate life-threatening conditions like bowel ischemia or benign causes. Signs like portal venous gas and pneumoperitoneum should be interpreted with caution, as they may arise from benign Pneumatosis intestinalis rather than perforation. Management should be guided by the clinical status of the patient and laboratory findings. Conservative treatment is appropriate for benign cases, while surgical intervention is reserved for suspected perforation or ischemia.

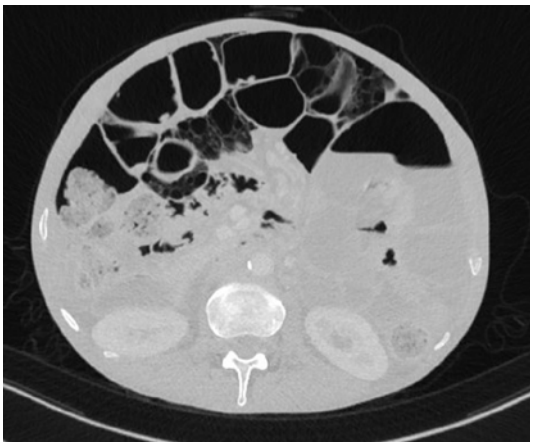

Figure 1

Figure 2

Management of Unexpected Intestinal Nonrotation During Elective Bariatric Surgery

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Background: This case report with intraoperative video documentation details the management of an unexpected anatomical anomaly encountered during elective bariatric surgery. A 54-year-old male patient was admitted for the laparoscopic creation of a proximal gastric bypass due to WHO class III obesity (BMI 40 kg/m²). The patient's medical history included arterial hypertension and symptomatic cholecystolithiasis.

Case Presentation: First, a routine laparoscopic cholecystectomy was performed without complications, followed by the preparation of a gastric pouch. However, an unexpected anomaly of intestinal anatomy was identified, consistent with nonrotation. Nonrotation is a rare congenital malrotation variant where the small intestine predominantly occupies the right abdomen, and the large intestine is displaced to the left. This posed a significant surgical challenge, as the pre-constructed gastric had already been prepared. Intraoperatively, due to the completely altered abdominal anatomy and the pronounced visceral obesity with a markedly thick greater omentum, it was decided to perform a laparoscopic sleeve gastrectomy with gastrogastrostomy (OrVil™/EEA™ 25 mm circular stapler) instead, especially as the pouch was well perfused from both sides. A tension-free gastrojejunostomy was deemed unfeasible due to the aforementioned anatomical constraints.

Conclusion: The intraoperative detection of nonrotation in a bariatric surgery patient under-

scores the need for surgical adaptability. Transitioning to a sleeve gastrectomy provided a viable alternative that addressed the patient's obesity while mitigating the risks associated with performing a gastric bypass in anomalous anatomy. This case highlights the importance of intraoperative decision-making and individualized surgical strategies when unexpected anomalies arise. The successful adaptation to a sleeve gastrectomy with gastric reanastomosis demonstrates the utility of alternative approaches in complex scenarios.

Patient Clusters and Compliance to Enhanced Recovery Items – Time for a Tailored Perioperative Care Protocol?

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Background: Perioperative enhanced recovery care (ERAS) protocols for a given procedure apply to all patients, regardless of comorbidities, surgical difficulty, or functional recovery. Therefore, there is a need to refine protocols towards a more personalized, tailored approach. The aim of the present study was to use machine learning techniques to define patient clusters and tailor intra- and perioperative care protocols to anticipate challenges and improve postoperative recovery and outcomes.
Aims: The aim of the present study was to use machine learning techniques to define patient clusters and tailor intra- and perioperative care protocols to anticipate challenges and improve postoperative recovery and outcomes.
Methods: This is a monocentric retrospective cohort study including consecutive patients who underwent elective colorectal surgery in the visceral surgery department at CHUV between 1st May 2011 and 31st December 2021. Preoperative data, surgical details, and ERAS compliance were collected. Unsupervised machine learning techniques, specifically K-Means clustering, were used to identify patient subgroups. These clusters were then analyzed to predict and anticipate patient trajectories.
Results: In total, 1381 patients were available for final analysis. For demographic variables, 3 clusters were identified. After analysis of the demographic and the perioperative variables, two different clusters corresponded to high and low compliance. Finally, outcome variables were grouped in 3 distinct clusters, while 2 clusters appeared for the top functional and clinical outcomes. 99.6% of the low-risk demographic cluster had high perioperative compliance, and over 90% of them had favorable functional and clinical outcomes. Only 370/1381 patients (27%) were in the cluster high perioperative compliance. 100% of the high-risk demographic group had low perioperative compliance: Furthermore, patients with low perioperative compliance had adverse functional outcomes in over 40%.
Conclusion: Preoperative knowledge of patient clusters helps to trigger efforts to optimize modifiable demographic risk factors prior to surgery and to intensify efforts to increase perioperative compliance in the sense of a tailored pathway.

Ileocecal Intussusception as a Rare Presentation of Appendiceal Mucinous Neoplasm: A Case Report

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Background: Ileocecal intussusception in adults is rare. Most cases are associated with a mass, which is often malignant. This case highlights the diagnostic and surgical management of a patient presenting with ileocecal intussusception secondary to a metastatic low-grade appendiceal mucinous neoplasm (LAMN).
Case Presentation: A 55-year-old male presented to the emergency department with acute abdominal pain. A computed tomography (CT) scan was conducted, which revealed an intussusception involving the ileocecal segment of the bowel and decision for surgery was made. Intraoperatively disseminated mucinous nodules were detected, suggestive for peritoneal carcinomatosis. Laparoscopic right hemicolectomy was performed. Histopathology confirmed the presence of a low-grade appendiceal mucinous neoplasm (LAMN) with peritoneal metastasis, consistent with pseudomyxoma peritonei. After an uneventful recovery, the patient was subsequently referred to cytoreductive surgery with hyperthermic intraperitoneal chemotherapy (HIPEC), as decided during multi-disciplinary team meeting (MDT).
Conclusion: This case underscores the importance of maintaining a high index of suspicion for malignant processes in a case with intestinal intussusception in adults. It also highlights the critical role of histopathological analysis in identifying underlying malignancies and guiding postoperative management. Early recognition and a multidisciplinary approach are essential for a preferable outcome in similar presentations.

A Case Report on the Davos Approach for Sacroiliac Bone Sarcoma Resection

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Background: Resecting sacroiliac sarcomas is challenging due to complex anatomy, proximity to critical neurovascular structures, and the need for multidisciplinary coordination. Achieving clear margins, functional preservation, and stable reconstruction demands meticulous planning.
Aims: This case highlights a rare sacroiliac bone sarcoma and the successful application of the DAVOS (Direct, Adaptable, Vigilant, Oriented, Specialized) surgical approach for R0 resection. It underscores the importance of preoperative planning and precise techniques for favorable outcomes.
Methods: A 34-year-old female with mesenchymal chondrosarcoma in the sacroiliac region underwent neoadjuvant chemotherapy and proton beam therapy.
Results: The DAVOS Approach enabled a left internal sacroiliac hemipelvectomy in floppy lateral decubitus and jackknife positioning for optimal visualization. A T-shaped incision allowed retroperitoneal access by dissecting abdominal wall musculature, thoracolumbar fascia, and paraspinal muscles. The internal iliac vessels were ligated, and the rectum mobilized. The surgical team performed sacral laminectomy with ligation of ipsilateral S1–S3 nerve roots. Osteotomies extended from the greater sciatic foramen to the iliac crest and through the sacrum, exiting caudally at S4 and cranially below the S1 endplate. Reconstruction included lumbopelvic stabilization and fibula allograft reinforcement. A biologic mesh protected the rectum and minimized herniation risks. Wound closure was completed with a multilayer technique.
Conclusion: The DAVOS Approach allows full exposuere for the precise resection with enhanced visualization, achieving clear margins while preserving function. Its adaptability makes it a valuable technique for complex tumor resections.

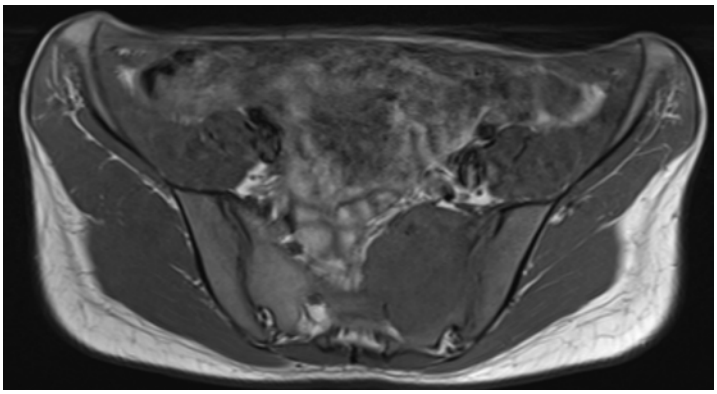

Figure 1. Sacroiliac MCS 1

Figure 2. DAVOS Approach

Figure 3. DAVOS Approach

Implementing a Surgical Robotic Program in a Tertiary Center for Pancreatic Surgery: Learning Curve for Pancreaticoduodenectomy

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Background: Robotic-assisted surgery has revolutionized complex procedures, offering im-

proved precision, and enhanced recovery. However, implementing a robotic surgical program is associated with unique challenges, including cost, expertise, and patient volume, especially for complex surgeries such as the pancreaticoduodenectomy (PD).

Aims: We aimed to describe the learning curve for complex pancreatic robotic surgery.

Methods: We performed a retrospective analysis of all robotic-assisted PD since the initiation of the pancreatic robotic program in our center. We divided the cohort in two eras, early and late, representing the first and more recently performed cases, respectively. We compared our results to the established benchmarks for open PD (Sánchez-Velázquez et al. Ann Surg 2019). It is noteworthy to mention that these benchmarks have been established on a large cohort of low-risk patients in term of comorbidities and complexity of the tumors, when our cohort includes all patients, regardless of patient and tumor characteristics.

Results: A total of 34 PD were performed in our center. Thirteen in the early group and 21 in the late group. Most patients presented with pancreatic duct and ampullar adenocarcinoma. Conversion rate to open surgery was 11.8%. Operative time was significantly reduced in the late group. Among the 13 benchmarks points explored in our study, 12 were within the benchmarks in the late group with exception for length of hospitalization (Table 1). We reported no in-hospital mortality and no major bleeding.

Conclusion: Regardless the surgical approach, PD remains a complex procedure. Implementing a surgical robotic program requires a significant surgical expertise in open and robotic surgery. Our results demonstrate that almost all benchmark objectives could be met after less than 15 procedures, despite the fact that we compared our patients, regardless of their clinical and tumor characteristics, with low-risk patients used to established the benchmarks.

	All patients of our center n=34	Early (2021-2022) n = 13	Late (2023-2024) n = 21	p value early vs late	Benchmark Cutoff on low-ri patients and tumors
Operation duration (min)	494 (404.8-602.5)*	604 (586-644)*	429 (384-488)*	**< 0.0001***	<450min
Hospital stay (day)	18 (12.4- 27.5)*	22.0 (12.5-30.2)	16.1 (12.4-25.6)	0.48*	≤ 15
Postoperative complications					
Overall, n (%)	22 (64.7)	9 (69.2)	13 (61.9)	0.73*	≤ 73%
Clavien-Dindo I-II, n (%)	14 (41.0)	6 (46.2)	8 (38.1)	0.73*	≤ 62%
Clavien-Dindo III, n (%)	6 (17.6)	2 (15.4)	4 (19.0)	> 0.99*	≤ 30%
Clavien-Dindo IV, n (%)	2 (5.8)	1 (7.7)	1 (4.8)	> 0.99*	≤ 5%
Pancreatic fistula					
Overall, n (%)	11 (32.4)	6 (46.2)	5 (25.0)"	0.27*	
Biochemical fistula, n (%)	4 (11.7)	1 (7.7)	2 (10.0)"	> 0.99*	< 13%
Grade B, n (%)	7 (20.6)	4 (30.8)	3 (15.0)"	0.39*	≤ 15%
Grade C, n (%)	1 (2.9)	1 (7.7)	0 (0)*	> 0.99*	≤ 5%
Severe postoperative bleeding (≥ III)	0 (0)	0 (0)	0 (0)	NA	≤ 7%
In-hospital mortality	0 (0)	0 (0)	0 (0)	NA	≤ 1.6%
Oncological outcomes					
R1, n (%)	8 (23.5)	4 (30.8)	4 (19.1)	0.68*	≤ 39%

* Median (IQR), Mann-Whitney test
* Fisher's exact test
" Only 20 patients included since one patient had a Whipple after a left pancreatectomy

Table 1

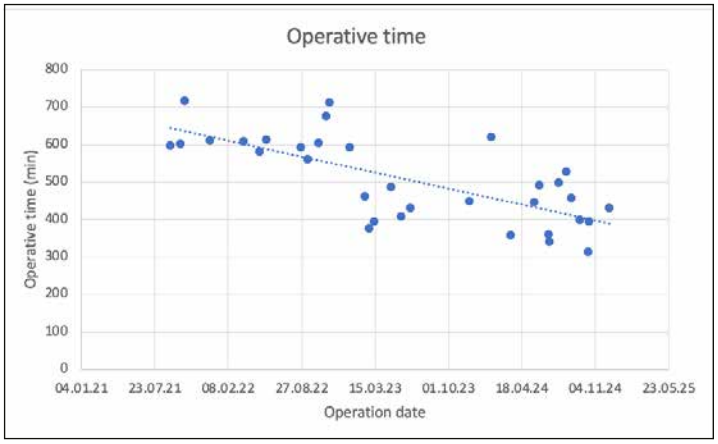

Figure 1

Multistaged Aortic Repair for a 14-Year-Old With Loeys-Dietz Syndrome: A Case Report

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Background: Loeys-Dietz Syndrome (LDS) is an autosomal dominant connective tissue disorder characterized by aggressive vascular manifestations, often necessitating early surgical intervention.

Case Presentation: We report on a 14-year-old female with LDS Type 2, with a previous open surgical repair (OSR) of aortic root and arch, who presented with a symptomatic diverticulum of the ductus arteriosus and critical right upper extremity ischemia, due to newly diagnosed subclavian artery (SA) aneurysm and occlusion immediately distal to the site (axillary and branchial artery). Urgent surgical management included the exclusion of the right SA aneurysm using a 8mm reinforced PTFE graft. Additional embolectomy through the brachial artery was performed using a Fogarty catheter, to restore blood flow, resulting in palpable radial and ulnar pulses after the operation. In a second procedure three days later, left common carotid artery (LCCA) – SA bypass and thoracic endovascular aortic repair (TEVAR) landing in zone 2 followed. Chimney stent in the LCCA was required caused by partial coverage of LCCA's origin. LSA was occluded with 14mm vascular plug. Postoperative scans revealed distal progression of the disease, resulting in distal extension with TEVAR, an open aortic repair of the thoracoabdominal segment.

Conclusion: Combined endovascular and open aortic repair can be used to treat acute aortic patholiges in LDS. In younger patients, vessel diameters are likely to expand over time, which can compromise the durability of the endovascular intervention and increase the risk of complications, such as endoleaks and fixation failures.

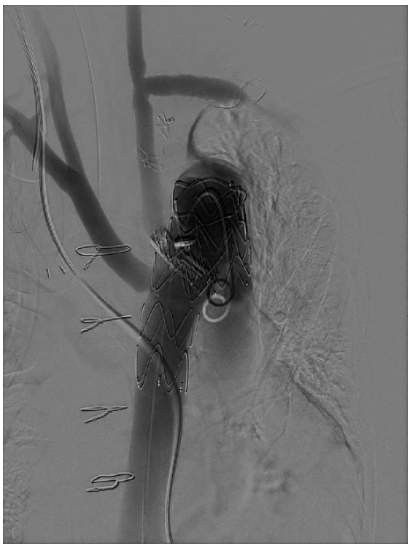

Figure 1. Pic7

Conversion of Open Vertical Banded Gastroplasty to Robotic Gastric Bypass: A Case Report

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Background: Vertical banded gastroplasty (VBG), a once-popular bariatric procedure, is associated with significant long-term failure rates due to complications such as weight regain, dysphagia, and gastro-gastric fistula. This case report describes the robotic-assisted conversion of VBG to Roux-en-Y gastric bypass (RYGB) in a patient presenting with severe dysphagia and class III obesity. The aim is to detail the surgical approach, perioperative challenges, and outcomes of revisional bariatric surgery in a complex case.

Case Presentation: A 72-year-old female with a history of open VBG, open revisional banding, and median incisional hernia repair with synthetic mesh presented with weight regain (BMI 41.3 kg/m²) and severe dysphagia. The preoperative workup (abdominal CT scan, gastroscopy, and barium study) confirmed the presence of proximal stenosis of the stomach and a gastro-gastric fistula. A robotic-assisted revisional surgery was undertaken, requiring extended adhesiolysis. After resection of the fundus of the stomach, a conventional RYGB was performed. On postoperative day 4, the patient required reoperation due to a jejuno-jejunal anastomosis stricture caused by kinking from a long and adherent barbed suture tail. The anastomosis was revised and widened with mechanical suturing. Intraoperative gastroscopy confirmed a patent gastro-jejunal anastomosis without leaks. A perianastomotic abscess developed postoperatively, likely due to intraoperative contamination, but it was successfully managed with percutaneous drainage and intravenous antibiotics. The patient recovered well, with resolution of dysphagia and initial weight loss at follow-up.

Conclusion: Robotic-assisted conversion of VBG to RYGB is an effective technique for managing weight regain and dysphagia, though its complexity entails significant risks for complications. This case underscores the importance of meticulous surgical technique, contamination prevention, and vigilant postoperative care. Robotic technology, combined with a multidisciplinary approach, serves as a valuable asset for optimizing outcomes in complex revisional bariatric surgery.

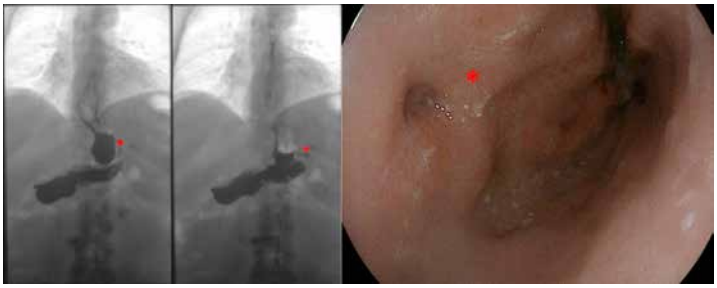

Figure 1. The pre-operative barium study and gastroscopy showed a gastro-gastric fistula (indicated with an asterisk

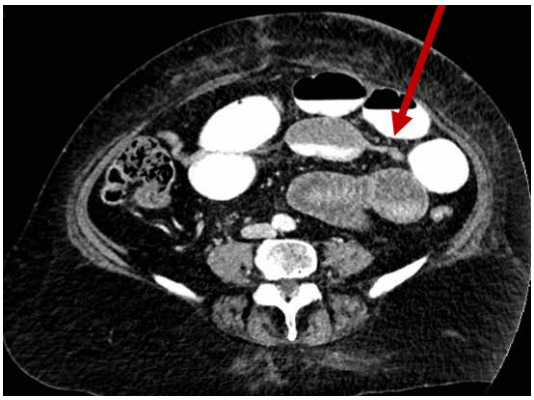

Figure 2. The abdominal CT scan performed on post-operative Day 4, showed a stenosis immediately distally of the jejuno-jejunal anastomosis (arrow)

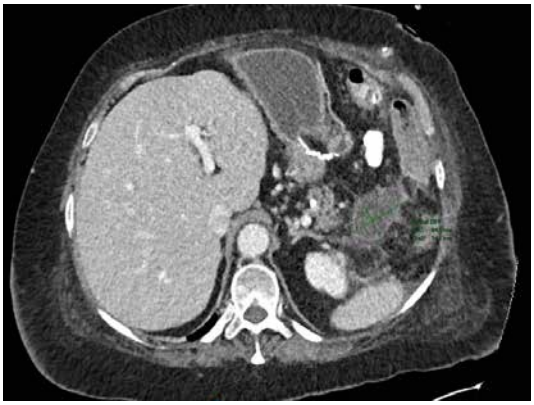

Figure 3. The abdominal CT scan performed on post-operative Day 12, showed an intra-abdominal abscess (3,4 X 5,4 cm in diameter) in the left hypocondrium

Resistant Bile Microbes: Harmless Hitchhikers or Potential Threats in Pancreatic Surgery?

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Background: Recent studies recommend piperacillin-tazobactam prophylaxis before pancreatoduodenectomy to prevent surgical site infections (SSI), suggesting that contaminated bile may foster SSIs through bacterial resistance to common single-dose antibiotics.
Aims: This study aims to assess the impact of resistant organisms in intraoperative bile samples (ROBS) on SSIs and other complications in pancreatic surgery.
Methods: Data of consecutive patients undergoing pancreatic resections between January 2015 and December 2023 were retrospectively analyzed. Pancreatic resections involving bilioenteric anastomosis with intraoperative bile sampling were included.
Results: Intraoperative bile samples were obtained in 103 pancreatoduodenectomy- and 19 total pancreatectomy patients. ROBS were identified in 68 patients. Patients with and without ROBS had a comparable mean age of (71 vs. 69 years) and median BMI (24 each). Cholangiocarcinoma was more frequent in the ROBS-group (21% vs. 3%, p=0.004). Preoperative biliary drainage was common among ROBS patients (ERCP: 83% vs. 12%, p<0.001; PTCD: 7% vs. 0%, p<0.001). Among the 59 patients without ROBS, 52 had sterile bile samples. The majority in both groups received a single-dose combination of cefuroxime and metronidazole preoperatively (85% vs. 86%, p=0.884). ROBS predominantly contained Enterococcus faecalis (71%), Enterococcus faecium (32%), and Enterobacter cloacae (31%). Superficial, deep, and organ-space SSIs occurred at comparable rates (9%, 6%, and 18% vs. 5%, 5%, and 18%, respectively). Similarly, there was no difference in pancreatectomy specific complications like post-pancreatectomy pancreatic fistula. Severe complications graded according to Clavien-Dindo were present in 33% vs. 37% of patients with a similar 90-day mortality rate of 4% vs. 7% (p=0.704).
Conclusion: Despite the presence of resistant organisms in bile samples, SSIs, POPF, and overall morbidity were not significantly increased when patients received single-dose prophylactic cefuroxime and metronidazole before pancreatectomy

Never Give up on Your Patient: A Case of Complex Midline Incisional Hernia

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Background: Botulinum toxin A (BTA) injection is a minimally invasive technique that increases the chances of fascial closure in large midline incisional hernias (MIH). Despite several studies proving its efficacy the indication remains off-label.
Aims: To present a case with a long history of burst abdomen and MIH.
Methods: A 72-year-old male patient underwent open distal esophagectomy for adenocarcinoma at the esogastric junction. During the first 16 days post-operatively the patient presented four episodes of a burst abdomen. No signs of infection were present and during the re-interventions, a Vicryl mesh was placed intra-abdominally. The patient then underwent negative pressure wound therapy. Fascial closure was achieved on post-operative day (POD) 37 and complete skin closure on day 44. The patient has been presenting with a large MIH since (Figure 1+2). Repair had to be delayed because of wound healing issues and malnutrition.
Results: Presenting with a diastasis measured at 18cm on the CT scan (Figure 3) the patient was injected with 200 units of BTA in the lateral abdominal muscles. Three weeks later the patient underwent open Rives-Stoppa repair. BTA administration can reduce the need for component separation but was still necessary in our case helping gain 3cm on each side with the Ramirez technique (Figure 4). The posterior wall was reconstructed using the hernia sac (Figure 5). Anteriorly the fascia could not be completely closed, leaving a mild diastasis of 3cm. He reported significant improvement in quality of life.
Conclusion: Complex MIH are a challenge for patients and surgeons alike. The use of BTA prior to abdominal wall reconstruction helps achieve better outcomes. This calls for an implementation of standardized technique and patient selection protocols. Lastly, even without achieving complete fascial closure, the patient's situation was considerably improved.

Figure 1. Publications using ML to predict outcome included in this systematic review, counted per year

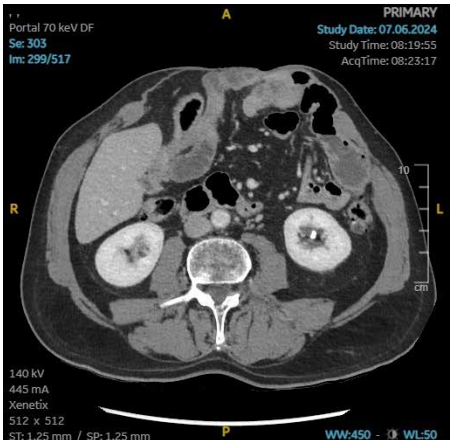

Figure 3. CT scan showing diastasis measured at 18 cm

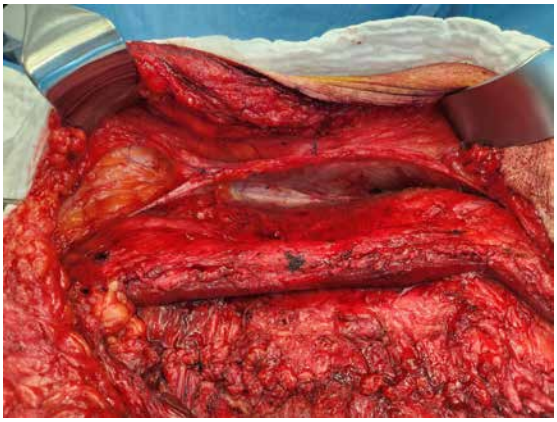

Figure 5. View after Rives-Stoppa repair with anterior component separation. The posterior wall was reconstructed using the hernia sac

Two Cases of Ciliated Hepatic Foregut Cyst

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Background: Ciliated hepatic foregut cysts (CHFCs) are rare entities with less than 150 cases reported in the literature. They are due to the persistence of aberrant embryonic foregut epithelium typically in the S4 of the left liver. Despite being benign lesions, often incidental in asymptomatic patients, CHFCs are at risk of malignant transformation into squamous cell carcinoma. Surgical resection is the only potential curative option.
Case Presentation: Two cases of CHFCs were incidentally found in asymptomatic male patients and confirmed at final pathology.
Patient 1: 19-year old male with recurrence of aspecific abdominal pain. Abdominal US revealed a hypoechoic hepatic cyst at S4a and MRI confirmed a 21 x 12 mm bilobated hypointense lesion on T1-weighted sequences and hyperintense on T2-weighted imaging, consistent with CHFC.
Patient 2: 59-year old male with liver cirrhosis AHS-NASH related was found with a S8/4a cyst during a screening work-up. MRI showed a 28 x 16 mm cystic lesion with a mixed solid-liquid content and contrast enhanced on T1-weighted imaging. Echinococcosis serology was negative twice. After multidisciplinary discussion, parenchymal sparing hepatic resection was suggested. In both cases, infectious diseases were excluded. After multidisciplinary discussion, a minimally invasive parenchymal sparing hepatic resection was suggested. Indeed, S4a wedge resections were performed with an uneventful recovery. Final pathology was consistent with CHFC for both, reporting as follow: Patient 1: 2 cm cyst with columnar pseudostratified epithelium, partially ciliated, with a muscular out layer, no atypia and no malignant features. Patient 2: 2.5 cm biloculated cystic lesion with monostratified epithelium without atypia, partially ciliated, with a subepithelial smooth muscle layer and connective tissue layer.
Conclusion: Considering the potential malignant transformation, surgical resection is safe and feasible to achieve definitive diagnosis and cure.

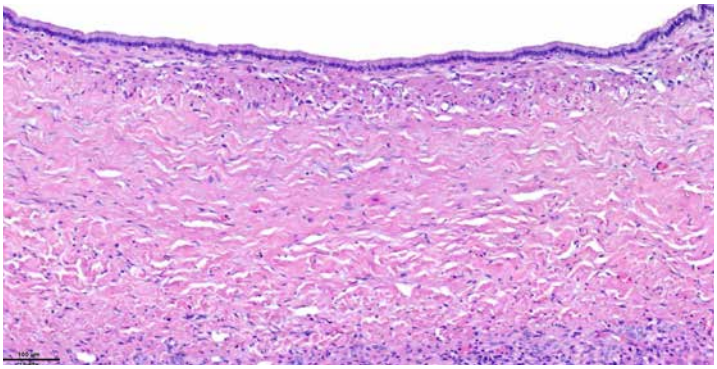

Figure 1. Monostratified epithelium without atypia, partially ciliated, with a subepithelial smooth muscle layer and connective tissue layer

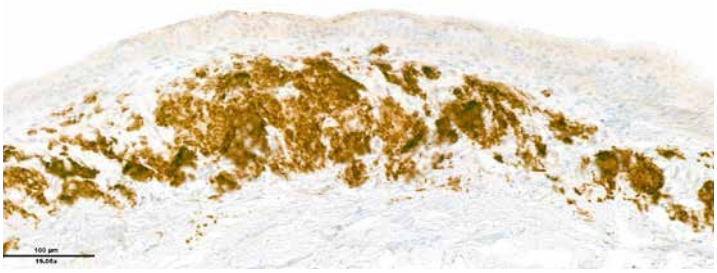

Figure 2. Desmin coloration of the subepithelial smooth muscle layer

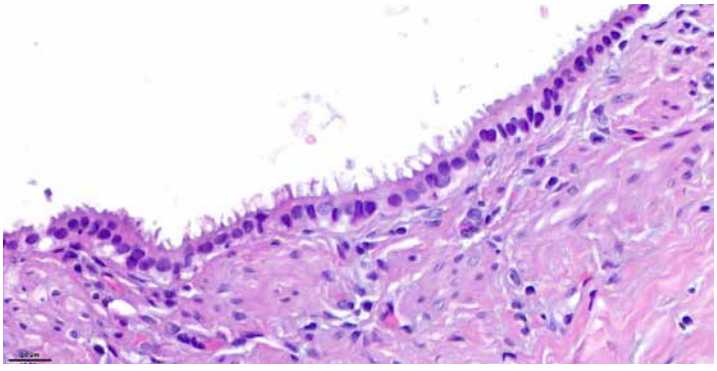

Figure 3. Partially ciliated columnar monostratified epithelium

Acute Appendicitis in an Obturator Hernia: A Case Report of a Two-Staged Surgical Treatment With a Literature Review

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Background: Obturator hernia is a rare condition, accounting for 0.07–1% of all abdominal hernias. Acute appendicitis within an obturator hernia is extremely rare, with only seven reported cases on PubMed. Diagnosis is challenging, as abdominal complaints are not always present, increasing the risk of missed diagnosis. Ultrasound is often insufficient, requiring CT scans for confirmation.
Aims: Report a case of acute appendicitis within an obturator hernia with two-staged minimally invasive surgical treatment of both pathologies. Additionally, we provide a literature review of this rare entity.
Methods: A 21-year-old healthy man presented with a two-day history of lower abdominal pain radiating to the right iliac fossa and right testicle accompanied by a fever. While appendicitis was suspected, ultrasound findings were inconclusive, and a CT scan confirmed the diagnosis.
Results: Diagnostic laparoscopy revealed a perforated appendix with a distal fecalith which was located within a right obturator hernia. With appendectomy and 48 hours of antibiotic treatment the patients had an uneventful recovery. Six months later an elective prophylactic robotic transabdominal preperitoneal obturator hernia repair (rTAPP) was scheduled. Case reports published between 1969 and 2023 reported young male and female as well as old female patients suffering from this pathology. In 43% no abdominal complaints were present. A laparoscopic appendectomy was performed as primary surgical intervention in 57% of patients, with 14% requiring conversion to laparotomy. The hernia was repaired in 29% during the first operation.
Conclusion: With less than ten case reports on PubMed acute appendicitis within an obturator hernia remains a rare entity. It can present in young and old individuals and is challenging as abdominal complaints are not always present.

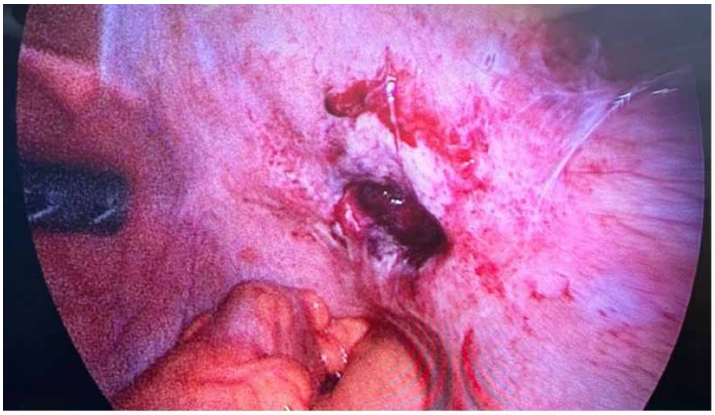

Figure 1. Intraoperative situs during laparoscopic appendectomy demonstrating the obturator hernia after removal of the appendix within the hernia

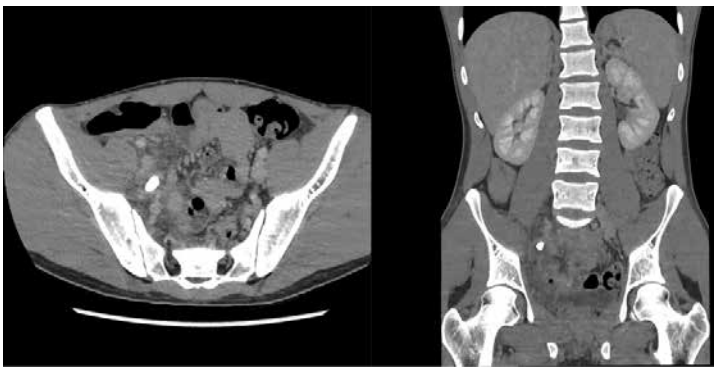

Figure 2. Preoperative imaging with the fecalith in the right obturator hernia

A Case of Spontaneous Splenic Rupture Two Weeks After Appendectomy: A Rare and Life-Threatening Condition

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Background: Spontaneous splenic rupture (SSR) is an exceedingly rare and potentially life-threatening complication, typically associated with underlying conditions such as hematologic disorders, infections, or inflammatory diseases. While SSR has been documented following various abdominal procedures, its occurrence after appendectomy is exceptionally uncommon, with only five cases reported in the literature to date (Table 1). To our knowledge, this is the first case of SSR following appendectomy successfully managed with arterial embolization. This study details a rare case of SSR in a 73-year-old male, with treatment decisions guided by a comprehensive literature review.

Case Presentation: A 73-year-old male with a history of ischemic heart disease, treated with dual antiplatelet therapy, developed spontaneous splenic rupture 14 days after laparoscopic appendectomy. The patient presented with acute abdominal pain and hypotension, without any history of trauma. Imaging confirmed a large subcapsular splenic hematoma with active bleeding (Figure 1). Following prompt diagnosis, the patient was successfully treated with arterial embolization (Figure 2). SSR following appendectomy is an exceptionally rare phenomenon, with only five cases documented in the literature. Previous cases typically involved splenectomy as the treatment of choice. In contrast, this case represents the first successful use of arterial embolization, an alternative, less invasive approach. The pathophysiology of SSR remains unclear, though factors such as postoperative inflammation, the patient's antiplatelet therapy, and potential splenic vulnerabilities may contribute. Additionally, perioperative manipulation, such as abdominal lavage and organ handling, may increase mechanical stress on the spleen or exacerbate inflammatory responses.

Conclusion: Spontaneous splenic rupture (SSR) is a rare but serious complication following abdominal surgeries. Clinicians should remain vigilant and consider SSR in cases of unexplained postoperative abdominal pain. Its potential causes are not well-defined, making diagnosis challenging. This case emphasizes the importance of early detection and timely intervention. Arterial embolization, a well-established procedure, offers a less invasive alternative to splenectomy.

Figure 1

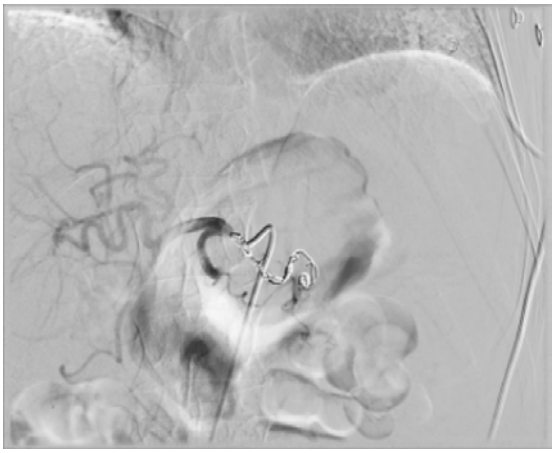

Figure 2

Age / Sex	Peroperative Diagnostic	Management (Drain : Yes / No)	Days after surgery	Clinical presentation	Management
52 / F	Appendicitis and peritonitis purulent (localized)	Laparoscopic appendectomy and peritoneal lavage. Anti-thrombotic therapy not provided. (Yes : 1 each side)	7	Weakness, pallor, hypotensive, tachycardia (Blood in the left drain)	1°: Angioembolization 2°: Splenectomy
60 / F	Perforated appendicitis and pelvic abscess	Laparoscopic appendectomy, peritoneal lavage and abscess drainage. Anti-thrombotic therapy not provided. (Yes : 1 drain (Douglas))	7	Nausea, abdominal pain, pallor, hypotensive, tachycardia (drain already removed)	Splenectomy
10 / F	Appendicitis and peritonitis purulent (localized)	Appendectomy via McBurney incision and peritoneal lavage. Anti-thrombotic therapy not used. (No)	5	*Discharged on the 3th* Admission: left abdominal pain, pallor, hypotensive, tachycardia	Splenectomy
62 / F	Perforated appendicitis and abscess (right iliac fossa)	Appendectomy via midline incision and peritoneal lavage. Anti-thrombotic therapy used. (Yes : 1 right iliac fossa)	4	Tachycardia and hypotensive (instable hemodynamically)	Splenectomy
49 / M	Necrotic appendicitis and peritonitis	Appendectomy via Lanz incision, peritoneal lavage. Antithrombotic therapy not provided. (No)	6	Abdominal distension, left shoulder tip pain, sign of hypovolemia	Splenectomy

Table 1

Surgical Management of Solitary Gallbladder Metastasis From Melanoma: An Illustrated Case Report

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Background: Melanoma is the deadliest form of skin cancer, with a 5-year survival rate of 32% for patients with distant metastases. Gastrointestinal metastases occur in less than 4% of cutaneous melanoma cases, and gallbladder metastases are exceedingly rare. Fewer than 10 cases of solitary gallbladder metastasis have been reported in the literature, with no standardized therapeutic guidelines.

Case Presentation: A 76-year-old patient, initially diagnosed in November 2022 with ulcerated melanoma (Clark IV, Breslow 5mm, pT4b cNx cM1a), underwent surgical excision and mediastinal metastasis resection in early 2023, followed by adjuvant pembrolizumab immunotherapy for a year. In late April 2024, after treatment completion, a control PET-CT revealed a suspicious gallbladder lesion, confirmed by MR cholangiography. Laparoscopic cholecystectomy was performed in May 2024, and pathology confirmed metastatic melanoma. Post-surgery, combined ipilimumab-nivolumab immunotherapy was initiated within days.

Conclusion: Gallbladder metastases are typically associated with widespread disease and abdominal symptoms. Solitary lesions, as in this case, are extremely rare, contributing to a lack of consensus on treatment. While open cholecystectomy is often recommended to prevent port-site or peritoneal seeding, a laparoscopic approach may be appropriate for isolated metastases. In this case, minimally invasive surgery allowed rapid recovery and timely initiation of adjuvant immunotherapy. This report underscores the importance of individualized treatment strategies in rare melanoma metastases.

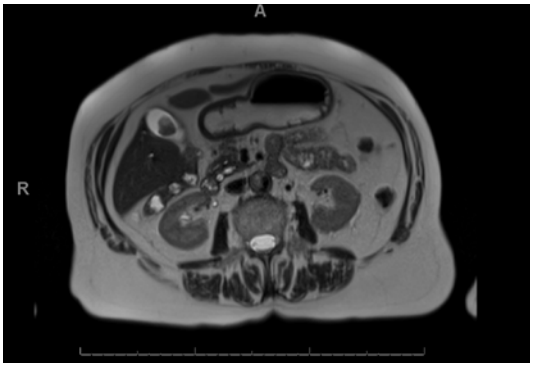

Figure 1. MRI

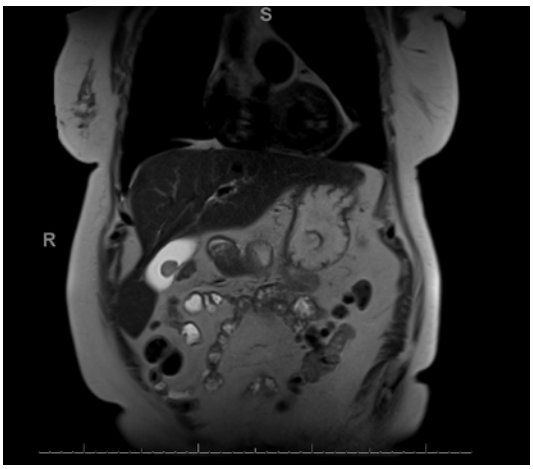

Figure 2. MRI

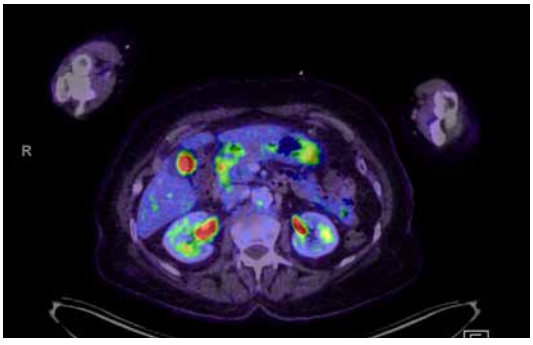

Figure 3. PET-CT

Traumatic Left Diaphragmatic Hernia of Stomach, Spleen and Left Colon. Laparoscopic Repair and Mesh Placement, 4 Years After the Initial Damage Control Open Surgery: A Case Report

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Background: Traumatic diaphragmatic hernia (TDH) occurs in 1% to 7% of blunt trauma and is mostly diagnosed by chest X-ray or CT. Treatment prioritizes airway and breathing stabilization, with damage control open surgery for unstable patients. For stable patients, laparoscopic surgical repair is considered the gold standard, offering benefits such as reduced pain, fewer wound complications, and faster recovery. The American Association for the Surgery of Trauma (AAST) recommends mesh reinforcement on the peritoneal surface for grade IV injuries (>10 cm, tissue loss ≤25 cm²). Without mesh, the recurrence rate is significantly high (42%), as demonstrated by our case report.
Aims: This case report highlights the recurrence of a diaphragmatic hernia (DH) following primary direct suture of a grade IV diaphragmatic injury without mesh reinforcement. As a secondary aim, we illustrate the feasibility of laparoscopic surgery performed four years after the initial damage control open surgery.
Methods: A 54-year-old male with polytrauma, including a left diaphragmatic rupture, underwent primary direct suture of the hernia. Four years later, he complained of a recurrent left grade IV diaphragmatic hernia (10.5x5cm). The patient was referred to our surgical consultation, and we scheduled laparoscopic surgical repair of the hernia.
Results: Significant adhesions were found between the liver, the spleen and the diaphragm. We performed extensive adhesiolysis for 180 minutes, followed by hernia reduction. The defect was closed with a PDS V-Loc 2-0, and a 10x15 cm Parietex composite mesh was placed. The entire surgery was performed laparoscopically. The patient was hospitalized for 4 days.
Conclusion: The recurrence of grade IV diaphragmatic hernia after direct suture is high and often leads to significant adhesions. Laparoscopic adhesiolysis and hernia repair are feasible following primary open surgery. To prevent recurrence, mesh reinforcement should be used even in primary repair of grade IV injuries.

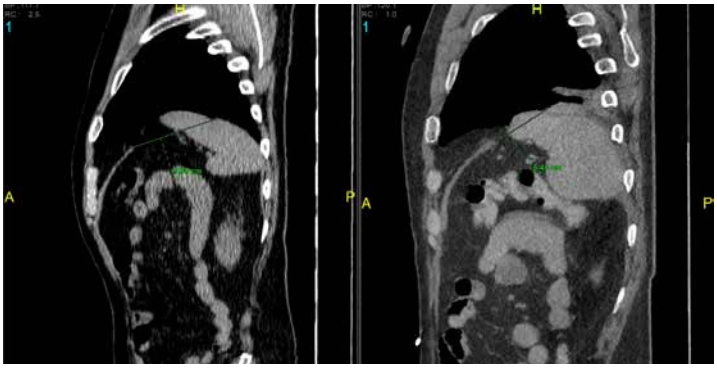

Figure 1A. Preoperative imaging of the diaphragmatic hernia with stomach, spleen and left colon.

Figure 1B

Figure 1C

Implementation of a 42+4-Hour Workweek in the Surgical Department of Our Hospital

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Background: Nationwide surveys reveal that residents face immense pressures, with about 60% of working hours spent on administrative tasks, resulting in stress, burnout, and reduced training quality. These conditions compromise resident well-being and lead to dissatisfaction, necessitating structural reforms. Our hospital addressed this by piloting a 42+4-hour workweek with a collaborating association, allocating 42 hours to patient care and 4 hours to structured education.
Aims: To present preliminary results from a step-to-step implementation of a 42+4-hour workweek at our surgical department and the evaluation of the feasibility of its transferability to other departments.
Methods: The implementation first involved analyzing the status-quo after which we developed measures to gradually reduce working hours by optimizing workflows through task delegation, expansion of dictation technology and improved schedules. Furthermore, we monitored patient care and surgery numbers to optimize resource management. We revised the daily structure to accommodate a 46-hour weekly schedule, including four hours of structured education. Three months after initiating the 46-hour workweek, we evaluated the first preliminary results and made further adjustments.
Results: As of August 2024, our department adopted the 42+4-hour workweek. Digital tracking three months after implementation confirmed adherence among 40% of residents despite staff shortages. These shortages made implementation more challenging. The preliminary results show that the average working time of the residents was 47 hours and 14 minutes. Results after six months of implementation are pending.
Conclusion: The implementation of the 42+4-hour workweek at our hospital demonstrates its viability in surgical environments. The results after three months show that not all residents could adhere to the 46-hour workweek, but the working hours fell by almost 3 hours from the initial 50-hour workweek. This model shows potential for reducing burnout, enhancing resident satisfaction, and aligning clinical hours with core competencies, serving as an example for broader application.

Management of a Patient With Acute Abdomen and Thyroid Storm – A Case Report

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Background: Acute abdomen, typically characterized by severe and sudden abdominal pain, often requires urgent surgical intervention. In some cases, thyrotoxicosis can directly or indirectly contribute to the development of acute abdomen, complicating both diagnosis and management. Understanding the interplay between thyrotoxicosis and acute abdomen is crucial for effective management.
Case Presentation: We describe a case of a 54-year-old female with no significant medical history who presented with acute abdominal pain and diarrhea, rapidly deteriorating to respiratory failure requiring intubation. Initial investigations, including computed tomography angiography, revealed an embolic occlusion of the superior mesenteric artery (SMA) and signs of bowel ischemia as well as cardiopulmonary decompensation. Subsequent thyroid function tests confirmed thyrotoxicosis. The patient underwent emergency endovascular embolectomy, bowel resection, and later a total thyroidectomy. The patient's acute abdomen was managed with embolectomy and bowel resection. When investigating the underlying cause, thyroid function tests revealed a thyroid storm, necessitating urgent total thyroidectomy. Postoperatively, the patient stabilized hemodynamically and was discharged in good condition. Histopathology confirmed chronic thyroid inflammation with increased endocrine activity. Multidisciplinary management, including endocrinology and cardiology input, was pivotal in the patient's recovery.
Conclusion: This case highlights the rare but serious complication of mesenteric ischemia due to thyroid storm. The combination of treatments not only addressed the acute vascular emergency but also stabilized the underlying thyrotoxicosis. Endovascular thrombectomy and bowel resection effectively managed the ischemia, while thyroidectomy facilitated a rapid return to a euthyroid state, preventing further complications. This case serves as a valuable reference for the management of similar complex presentations, demonstrating the potential for successful outcomes with timely, aggressive treatment.

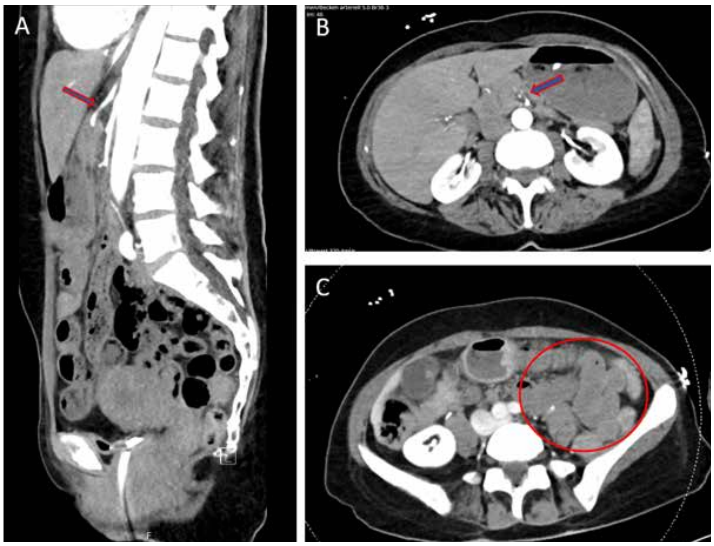

Figure 1. 1A: Sagittal view of the embolic occlusion of SMA approximately 4.5 cm distal to its origin from the aorta, sagital view. 1B: Axial view of the embolic occlusion of SMA. 1C: Hypoenhancement of the small bowel wall indicating bowel ischemia of the superior Mesenteric Artery

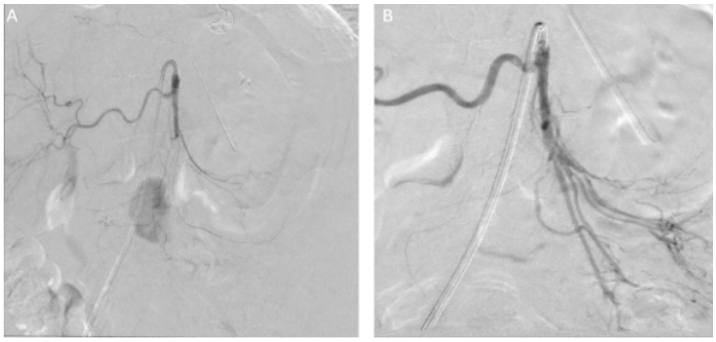

Figure 2. 2A: The DSA indicates a thrombotic occlusion of the SMA located approximately 7 cm from its origin. SMA: Superior Mesenteric Artery; DSA: Digital Subtraction Angiography

Parameter	Value	Reference range
TSH, IU/l	0.006	0.332 – 4.4490
Free T4, pmol/l	76.0	11.9 – 21.9
Free T3, pmol/l	30.9	2.6 – 5.6
T3, nmol/l	7.4	1.2 – 3.2
Anti-TPO, IU/l	389	<34
TRAK, IU/l	20.8	<1.8

Table 2. Thyroid parameters: TSH: Thyroid-Stimulating Hormone; Free T4: Free Thyroxine; Free T3: Free Triiodothyronine; Total T3: Total Triiodothyronine; Anti-TPO: Anti-Thyroid Peroxidase antibodies; TRAK: Anti-TSH Receptor Antibodies

Melanoma Metastasis to the Thyroid: An Uncommon Finding

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Background: Metastasis to the thyroid gland from non-thyroid primary tumors is uncommon, accounting for an estimated 1-3% of all thyroid malignancies. The most common sources of metastasis are lung cancer and renal cell carcinoma with cutaneous tumors making up only 4% of all primary origins. Due to its low incidence and limited number of reported cases, no consensus established on the management and role of surgery. Surgery is typically considered for local symptom control or with curative intent in selected patients.
Aims: To present a case of metastatic melanoma to the thyroid gland highlighting the diagnostic and therapeutic approaches involved.
Methods: A 76 year old male patient, with a history of cutaneous elbow melanoma diagnosed 7 years earlier and a small intestinal resection for intestinal metastasis 2 years prior, presented suspicious lesions in the left thyroid and right lung on PET-CT scan. Biopsies confirmed melanoma metastasis. Systemic therapy with Ipilimumab and Nivolumab was initiated but discontinued after one cycle due to polymyalgia. A follow-up PET-CT scan showed a persistent thyroid lesion. After multidisciplinary discussion, a surgical metastasectomy was recommended due to the patient's good condition and limited disease extent.
Results: A left thyroid lobectomy was performed and the patient discharged on postoperative day 1. Histopathology confirmed metastatic melanoma. The patient showed no recurrence of disease at 3 and 6 months.
Conclusion: Metastasis to the thyroid from non-thyroid tumors are rare and can manifest at initial presentation, during follow-up, or as a new presentation. The surgical indication for thyroid metastasis depends on disease status, the patient's general conditions and symptoms caused by the thyroid mass necessitating case-by-case discussion in a multidisciplinary setting. The surgical goal is the removal of the gross tumor with negative margins; most experts recommend lobectomy or isthmectomy for isolated nodules and total or near-total thyroidectomy in multifocal disease without prophylactic neck dissection.

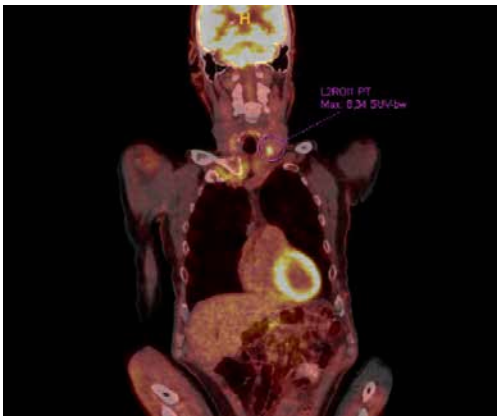

Figure 1. PET-CT

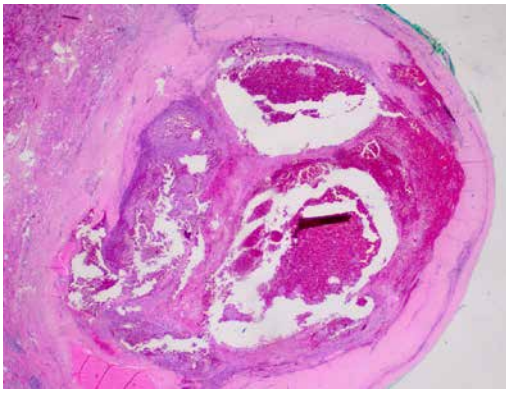

Figure 2. Histology

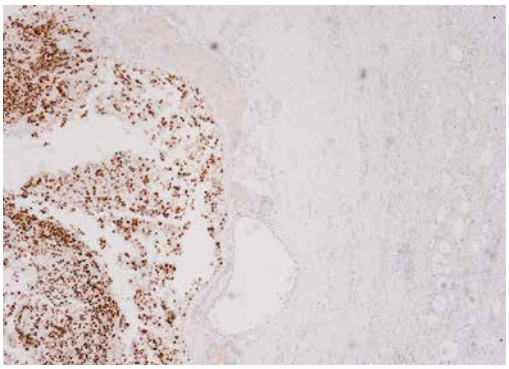

Figure 3. Histology 2

Patient-Derived Tumoroid Xenograft Models for Preclinical Validation of Therapeutics for Pleural Mesothelioma

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Background: Pleural mesothelioma (PM) is a highly heterogeneous and aggressive cancer with limited therapeutic options. To advance personalized treatments, patient-derived tumoroid cultures that preserve the morphological and molecular characteristics of their original tumors across the epithelioid-sarcomatoid spectrum were established. High-throughput screening of these tumoroids with 3,000 FDA-approved compounds identified both common and patient-specific targets.
Aims: Here, we conducted in vivo studies to validate the efficacy of promising therapeutic candidates using optimized tumoroid xenograft models.
Methods: We developed orthotopic intrapleural and subcutaneous xenograft models using PM050 PM tumoroid cell line, which represents biphasic characteristics and engineered to express fluorescent and bioluminescent markers for non-invasive monitoring of disease progression. Injection parameters were optimized to achieve reproducible tumor growth kinetics.

Pilot studies evaluated the therapeutic effects of romidepsin, a histone deacetylase inhibitor, and sepantronium bromide, a survivin inhibitor, in comparison to cisplatin-pemetrexed, the current standard of care. Tumor growth and drug efficacy were monitored through imaging and confirmed by histological analysis.
Results: Both orthotopic and subcutaneous models produced detectable tumor phenotypes with growth kinetics correlating to the cell number injected. Subcutaneous grafts developed visible macroscopic tumors, while intrapleural grafts demonstrated diffuse growth patterns. Histological analysis confirmed that xenografts retained the expression of key PM markers including negative calretinin and positive vimentin, consistent with in vitro tumoroids and the original tumor tissue. No significant tumor size reduction was observed with therapeutic intervention with cisplatin-pemetrexed or romidepsin, whereas sepantronium bromide exhibited a trend toward tumor growth attenuation, though variability warrants further study.
Conclusion: Our findings demonstrate the feasibility of tumoroid-based xenograft models for preclinical validation of PM therapies. The models accurately reflect disease heterogeneity and provide a robust platform for testing novel drugs. These initial results highlight the potential of targeting survivin with sepantronium bromide. Further studies to confirm the therapeutic potential of sepantronium bromide are ongoing.

Perineal Defect Reconstruction: An Overview of Standard Approaches and Emerging Techniques

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Background: Numerous surgical techniques have been described for the reconstruction of perineal defects. The selection of the reconstructive procedure is largely determined by the characteristics of the defect, including its size, shape, and the involvement of underlying anatomical structures. In addition to well-established methods, emerging techniques have shown promise, offering advantages in certain clinical scenarios.
Aims: This illustrative presentation aims to provide an overview of the most commonly employed methods for perineal defect reconstruction. Additionally, we will present novel or less frequently utilized approaches based on our clinical experience.
Methods: A review of the literature is conducted to identify prevalent surgical techniques for perineal defect repair. Clinical cases involving perineal defects are collected, and corresponding operative approaches evaluated. Furthermore, unconventional and patient-tailored techniques for perineal defect reconstruction from our own experience are described.
Results: In our experience, successful healing and favorable functional outcome can be achieved with both conventional and new approaches, provided the prerequisites for undisturbed healing are respected. These include well perfused, non-infected tissue, tension-free closures and clean wound conditions. Given the proximity to the anus and the increased risk of infection, the option of stoma creation should be discussed preoperatively for larger defects to minimize complications. Moreover, the patient's understanding and full cooperation are essential for success. Profound and comprehensive education is crucial to ensure active participation from both the patient and care staff.
Conclusion: Perineal defect reconstruction is a significant challenge for plastic and reconstructive surgeons. Due to the complex underlying anatomy and the proximity to the anus, the complication rate remains high regardless of the surgical approach. New techniques are continually introduced with the aim of improving both functional and aesthetic outcomes. Their long-term reliability and potential superiority must be assessed over time in various scenarios and further evaluated based on surgeons' experience.

Umbilical Pilonidal Sinus: A Rare Case, Its Diagnosis and Management

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Background: A rare and frequently overlooked disease, umbilical pilonidal sinus (UPS) typically affects young adults and is more common in men. Seldom seen in the umbilicus or interdigital spaces, the pilonidal sinus normally develops in the sacrococcygeal region.
Aims: In an effort to raise awareness among medical professionals and share our viewpoint on the proper diagnosis and successful treatment of UPS, this case illustrates the diagnostic difficulties and successful surgical therapy of the condition.
Methods: We describe a 35-year-old woman who has experienced pruritus and occasional serous umbilical discharge for 6–7 months, which are made worse by physical exercise. Clinical examination showed no signs of granulation tissue or periumbilical dermatitis, but rather a deep-seated umbilicus with serous discharge, slight erythema, and sparse hair. There was no indication of a pore with the obvious entrance, exit, or exterior opening of a UPS. While MRI revealed a limited sinus tract compatible with pilonidal sinus illness, sonography ruled out deeper structural connection. Surgical therapy included refashioning the umbilicus and layered closure after the sinus tract was removed through a periumbilical incision. Fibrolipomatous soft tissue was confirmed by histopathological investigation, although no noteworthy pathological abnormalities were seen.
Results: Follow-ups at one and six weeks showed no evidence of infection, wound secretion, or recurrence, indicating a smooth postoperative recovery. The patient reported no problems and full symptom relief.
Conclusion: A rare illness that is frequently misdiagnosed because it resembles other umbilical pathologies is the umbilical pilonidal sinus (UPS). The best course of treatment for chronic patients is surgical excision with umbilical reconstruction, which ensures symptom relief and good esthetic results, even when conservative treatments may be adequate at first.

Feasibility and Procedural Evaluation of Converting Prior Antireflux Surgery to Refluxstop in Gastroesophageal Reflux Disease: Experience From 24 Clinical Cases

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Background: Failure of anti-reflux surgery (ARS) necessitating repeated intervention is common and ranges between 10-60% depending on follow-up time and procedure used. Resurgence of reflux symptoms, dysphagia, migration/erosion, or device explant are the most common reasons for re-surgery, often including recurrence of hiatal hernia. However, technical characteristics inherent to ARS may restrict subsequent options, presenting challenges in determining the most appropriate course after ARS failure.
Aims: Feasibility and surgical considerations of failed ARS conversion to RefluxStop surgery were evaluated.
Methods: This retrospective two-centres study utilized data from patients experiencing different ARS failures converted to the RefluxStop procedure (n=24).
Results: Patients (n=24) underwent RefluxStop surgery after failed ARS, including magnetic sphincter augmentation (MSA) (38%), Toupet fundoplication (29%), Nissen fundoplication (13%), Dor fundoplication (8%), BICORN (8%), and EndoStim (4%) (Table 1). RefluxStop surgery was feasible, irrespective of the type of prior ARS in all cases. When indicated, hernia repair precedes conversion. At 1-year follow-up all patients had discontinued regular daily PPI use. In one case, the RefluxStop device asymptomatically early penetrated into the stomach cavity and was naturally expelled through the digestive tract; no re-intervention needed. It is known from the learning curve of the RefluxStop procedure that a too tight sutured pouch may force early penetration through the stomach wall, which is why extended fundal dissection is recommended if the fundus is small. However, this particular case was presumably caused by weakened fundic musculature with very thin fundus wall without muscles, and further experience of such cases with extremely thin fundus wall is recommended.
Conclusion: Conversion to RefluxStop is feasible irrespective of type of prior ARS failure of which fundoplication often requires careful vagal nerve handling, hiatal repair, and plication dissection. Although conversion from fundoplication may be more challenging due to fundus tissue fibrosis, conversion from both fundoplication and MSA are straightforward.

Prior ARS	Frequency (%)	Surgical considerations when converting to RefluxStop
MSA	38%	Device removal by cutting encapsulation (8 to 4 o'clock); normally non-challenging conversion
Toupet Fundoplication	29%	Often requires careful handling of vagal nerves, hiatus repair, and plication dissection of at least the right-dorsal gastroesophageal attachments
Nissen Fundoplication	13%	Similar to Toupet fundoplication, requires careful handling of vagal nerves, hiatus repair, and plication dissection of the gastroesophageal attachments
Dor Fundoplication	8%	Is the easiest of the fundoplication methods to convert, with more limited gastroesophageal adherences.
BICORN	8%	Similar to DOR fundoplication, easier to convert.
EndoStim	4%	Conversion is straightforward; device removal and RefluxStop implantation as recommended

ARS: anti-reflux surgery; MSA: magnetic sphincter augmentation.

Table 1. Surgical Considerations for Failed ARS Conversion to RefluxStop

International Validation of the Ao Spine Osteoporotic Fracture Classification

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Background: Osteoporosis, a public health concern of progressively escalating significance, imposes a substantial global burden, with the disease's burden having surged by over 110% in recent decades. Vertebral fractures notably emerge as a pivotal concern within the context of osteoporosis, representing the most frequent fragility fractures.
Aims: This study aimed to determine the reliability of the AO Spine-DGOU Osteoporotic Fracture Classification System within the framework of a large global, multicentric analysis.
Methods: A total of 320 participants with diverse professional backgrounds assessed 27 osteoporotic vertebral fracture cases on two occasions, four weeks apart. Inter-rater and intra-rater reliability were measured using Fleiss' kappa coefficients (κ), analyzing agreement levels in fracture classification among participants and within individuals over time.
Results: The overall agreement with the gold standard classification was 76% in both assessments. Inter-rater reliability showed moderate agreement ($\kappa = 0.57$ in the first assessment and $\kappa = 0.58$ in the second). Intra-rater reproducibility was substantial, with a mean κ of 0.66 and a median κ of 0.71. Higher agreement levels were observed for OF 4 and OF 5 fractures, while OF 3 fractures exhibited lower agreement.
Conclusion: The AO Spine-DGOU Osteoporotic Fracture Classification System demonstrates moderate to substantial reliability in an international multicenter context. These findings support its utility as a standardized tool for classifying osteoporotic vertebral fractures, potentially enhancing communication and decision-making in clinical practice.

Validation of the AO Spine Osteoporotic Fracture Classification – Effect of Geographical Region on Reliability and Reproducibility

J. Scherer, S. Bigdon, G. Camino-Willhuber, U. Spiegl, A. Joaquim, C. Singh, M. Dvorak, G. Schroeder, M. El-Sharkawi, R. Bransford, L. Benneker, K. Schnake
University Hospital of Zurich, USZ, Zurich

Background: Osteoporosis is a widespread disease with an increasing incidence. In 2018, the "Osteoporotic Fracture working group" affiliated with the German Society for Orthopaedic and Trauma Surgery (DGOU), introduced a novel classification system specifically for osteoporotic thoracolumbar vertebral body fractures.
Aims: To evaluate the influence of geographic region on the reliability and reproducibility of the AO Spine-DGOU Osteoporotic Fracture Classification System.
Methods: This study included 320 participants from various global regions who classified 27 cases of osteoporotic vertebral fractures using the AO Spine-DGOU system which categorizes the fractures to 5 subtypes (OF 1 – OF 5). Participants underwent training via an online webinar. Interobserver reliability and intraobserver reproducibility were assessed using Fleiss' kappa coefficient, and agreement with a gold-standard committee was evaluated.
Results: The classification system showed moderate to substantial agreement with the gold standard globally (initial kappa 0.58, improving to 0.61). European participants had the highest agreement (kappa 0.64 and 0.66). OF4 fractures were most accurately classified, while OF3 fractures showed the least agreement. Intraobserver reliability was highest among European participants. Post-hoc analysis indicated significantly better reliability among German-speaking participants compared to other Europeans (kappa 0.79 vs. 0.70, p=0.0026).
Conclusion: The AO Spine-DGOU Osteoporotic Fracture Classification System demonstrates moderate to substantial reliability and reproducibility, with regional differences influenced by factors such as training and clinical experience. This underlines the necessity of proper education adapted to the regional particularities.

Nuck's Canal Cyst: A Rare Case of Inguinal Pain in Women

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Background: Nuck's canal cysts are rare, benign lesions resulting from the persistence of the processus vaginalis in females. Although more common in children, they can also appear in adult women. Their rarity and limited awareness among healthcare providers often lead to misdiagnosis. These cysts may cause inguinal pain, swelling, and discomfort, making them an important, though uncommon, differential diagnosis for inguinal pain in women. Accurate diagnosis requires careful clinical evaluation supported by imaging studies, with surgical excision being the most effective treatment.
Aims: To raise awareness of this rare condition and highlight its diagnostic challenges.
Methods: We present two cases of Nuck's canal cysts, detailing their clinical presentation, diagnosis and surgical treatment.
Results: The first case involved a 62-year-old woman with a progressively enlarging, occasionally painful right inguinal bulge over several months. Clinical examination revealed a mobile, homogeneous lesion measuring approximately 4 to 5 cm in the distal and medial right inguinal fold, without signs of a true hernia. A CT scan supported the suspicion of a Nuck's canal cyst.
The second case concerned a 46-year-old woman experiencing prolonged discomfort and swelling in the right inguinal region. Examination showed a fusiform, tender swelling extending toward the base of the labium majus. Imaging via ultrasonography and MRI revealed a 50 mm cystic lesion consistent with a Nuck's canal hydrocele. In both cases, surgical exploration confirmed the presence of a cystic formation in the canal of Nuck. The cysts were excised without complications, and both patients experienced uncomplicated recoveries with no recurrence.
Conclusion: Despite their rarity, Nuck's canal cysts should be considered in the differential diagnosis of inguinal pain in women. Imaging is crucial for diagnosis, and surgical excision remains the definitive treatment with excellent outcomes and low recurrence. Recognizing this rare condition can prevent misdiagnosis and ensure proper management.

Endoscopic Resection of Intraductal Papillary Mucinous Neoplasm of the Bile Duct: The First Case Report

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Background: Intraductal papillary mucinous neoplasm of the bile ducts (IPMN-B) are pre-cancerous growth of mucin-secreting epithelium arising from the biliary tree. They have a variable risk of progressing to cholangiocarcinoma and the treatment depends on size, location, symptoms, and likelihood of malignancy. Management includes follow-up, curative strategies such as surgical resection and liver transplantation, or the palliation of symptoms with endoscopic or percutaneous biliary stenting.
Case Presentation: An 87-year-old female with Lynch syndrome and a complex oncological history—including ovarian adenocarcinoma, colon adenocarcinoma, and triple-negative breast cancer—developed recurrent cholangitis following extended right hepatectomy performed in 2019 for hilar cholangiocarcinoma (Bismuth3A, pT1N1M0R0). MRI revealed images of intraductal masses, associated with upstream biliary dilation of the left biliary duct. At multiple biopsies, low- and high-grade IPMN-B were found. Given the patient's advanced age, comorbidities, and refusal of major surgery, a novel approach was undertaken. Endoscopic resection with a diathermic loop, an approach not previously reported in the literature, was successfully performed. Follow-up at six months demonstrated excellent outcomes, including the absence of new episodes of cholangitis, preserved hepatic function, unremarkable MRI, and negative tumor markers.
Conclusion: This groundbreaking case highlights the feasibility of endoscopic resection for IPMN-B in select patients as a minimally invasive alternative to surgery or biliary stenting. The findings emphasize the potential for innovative, patient-centered approaches to complex biliary conditions, warranting further exploration and validation in broader clinical practice.

Comparative Study of Tensile Strength In Vicryl™ vs. Prolene™ 5-0 Knots: Impact of Throw Type and Count

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Background: Knots are the weakest point of sutures, making their security and tensile strength critical. While suture material and the number of throws substantially affect knot strength, surgeon's knots and suture size appear less influential. To our knowledge, however, there has been no study investigating the effect of multiple consecutive surgeon's knots on tensile strength.
Aims: To determine whether the use of multiple throws of double overhand (surgeon's) knots or single overhand knots affects the knot's tensile strength and the elongation of the suture's loop with Vicryl™ and Prolene™ sutures.
Methods: Vicryl™ and Prolene™ 5-0 sutures were tied in knots of three, four, and five throws, across twelve different knot sequences: single knots only, surgeon's knots only, and an increasing number of surgeon's knots. Samples were tested using a tensiometer applying a constant force until knot failure or slippage.
Results: The tensile strength of the knots increased significantly with the number of throws and the presence of surgeon's knots ($p<0.005$). Five-throw knots were stronger than three-throw knots regardless of the number of surgeon's knots for both types of sutures. The use of surgeon's knots only significantly increased strength in the three-throw series for both Prolene™ and Vicryl™ sutures. For both sutures, a three-throw surgeon's knot showed the same tensile strength as a five-throw simple knot. Loop elongation depended on the number of throws and surgeon's knots.
Conclusion: The use of surgeon's knots alone increased knot's breaking resistance without needing additional throws of simple knots. A three-throw surgeon's knot provides breaking resistance equivalent to a knot with more throws. If reduced loop elongation is desired, the choices would be four surgeon's throws for Vicryl™ and five simple throws for Prolene™

Migration of Hem-O-Lok Clips in the Common Bile Duct: A Very Unusual Late Complication After Laparoscopic Cholecystectomy

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Background: Laparoscopic cholecystectomy (LC) is the gold standard treatment for symptomatic gallstones. Late complications following LC (i.e., >3 months) occur in fewer than 1% of cases. These typically include stones or inflammation of the cystic stump, common bile duct (CBD) stones, CBD strictures, neuromas and incisional hernias. Clip migration into the CBD has also been reported, but recommendations about its management are lacking.
Case Presentation: This report describes the management of a highly unusual case of delayed complication after LC: Hem-o-Lok clip migration into the CBD. A 78-year-old woman presented with fever and a confusional state. Two years earlier, the patient had undergone endoscopic retrograde cholangio-pancreatography (ERCP) followed by LC for acute obstructive gallstone cholangitis. Laboratory tests on admission revealed an inflammatory syndrome characterized by elevated neutrophil count and C-reactive protein (CRP). Liver function tests were normal. Imaging studies, including abdominal CT scan and magnetic resonance cholangiopancreatography (MRCP), identified a suspected foreign body within the CBD. Diagnostic ERCP was performed. ERCP confirmed the presence of two migrated clips within the CBD, which were successfully retrieved. These clips were identified as the source of the patient's symptoms, which completely resolved following the procedure. Follow-up imaging showed no residual obstruction or complications. Revision of the literature showed 36 similar cases, of which 22 with Hem-o-lock, 9 managed endoscopically.
Conclusion: Although rare, post-cholecystectomy clip migration (PCCM) is a relevant complication that may lead to stone formation, obstructive jaundice, cholangitis, biliary colic, Mirizzi syndrome, fistula, and acute pancreatitis. Prompt diagnosis with advanced imaging techniques, resting on the awareness that the condition exists, combined with endoscopic treatment, appears to be the proper modern management.

Complications of Prosthetic Breast Reconstruction in Prophylactic Versus Therapeutic Mastectomy: A Systematic Review and Meta-Analysis

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Background: Although not routinely advocated for average-risk patients, contralateral prophylactic mastectomy (CPM) is recommended by current guidelines to reduce mortality in high-risk patients with unilateral breast cancer.

Aims: This systematic review and meta-analysis aims to provide a comprehensive quantitative assessment on the risk associated with implant-based reconstruction in CPM versus therapeutic mastectomy (TM).

Methods: A priori criteria were applied to perform a systematic review and meta-analysis of all existing comparative studies on postoperative complications associated with implant-based breast reconstruction after CPM or TM. The fixed-effects model was used to calculate Odds Ratios (ORs) and 95% confidence intervals (CIs).

Results: Five studies were included in the final analysis, representing 3543 patients who underwent 6401 mastectomies (3260 TM and 3141 CPM), followed by prosthetic breast reconstruction including Tissue Expanders and Direct-to-implants. Reconstructions after TM were associated with a statistically significant higher risk of postoperative infections [I; OR = 2.03 (CI: 1.50, 2.73)] (Figure 2) and explantation rates [EX; OR = 2.41 (CI: 1.77, 3.28)]. No significant differences were observed between the two groups in the occurrence of hematoma, seroma, necrosis and capsular contracture.

Conclusion: CPM demonstrates a lower risk of postoperative complications compared to TM for implant-based breast reconstruction. This knowledge and the quantification of risk summarized in this paper should be integrated in the shared decision making with patients and in pre-operative information.

Fig. 1. PRISMA flowchart

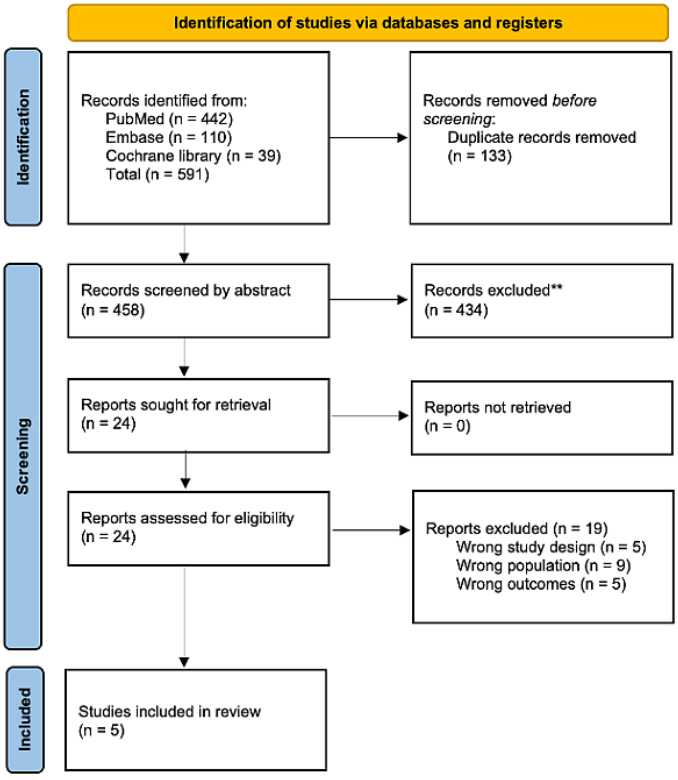
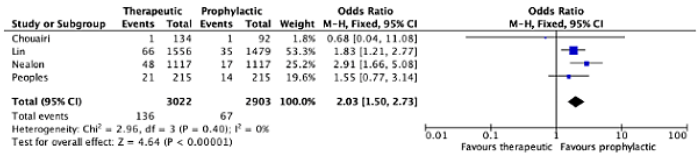


Fig. 2: Infection in TM (therapeutic) versus CPM (prophylactic)



Figures 1-2

Fig. 3: Explantation in TM (therapeutic) versus CPM (prophylactic)

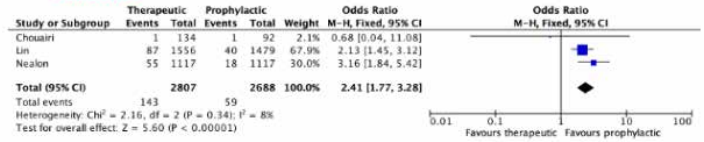


Fig. 4: Mastectomy flap necrosis in TM (therapeutic) versus CPM (prophylactic)

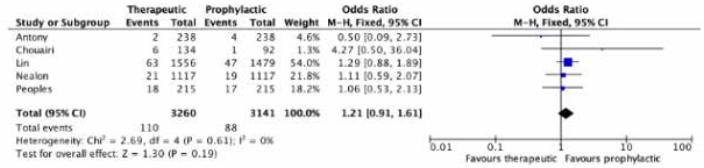


Fig. 5: Capsular contracture in TM (therapeutic) versus CPM (prophylactic)

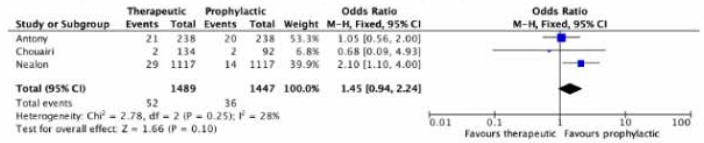


Fig. 6: Hematoma formation in TM (therapeutic) versus CPM (prophylactic)

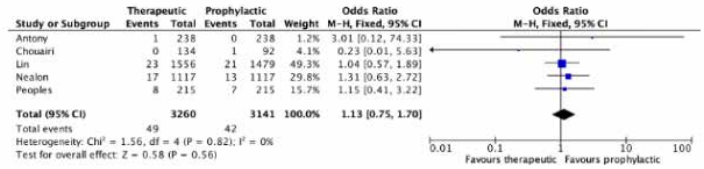


Fig. 7: Seroma formation in TM (therapeutic) versus CPM (prophylactic)

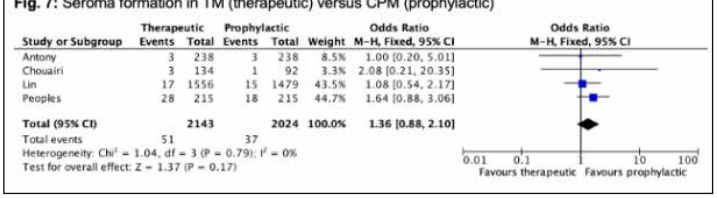


Figure 3-7

Table 1. Clinical Characteristics of the Included Studies

Author	Year	Study period	Study design	Patients (n)	Total M (n)	TM (n)	CPM (n)	Mean Age (SD)	Mean BMI	Previous irradiation (%)
Chouairi et al.	2019	2011 - 2017	R	141	226	134	92	55 (14)	27	4%
Peoples et al.	2023	2015 - 2020	R	215	430	215	215	50.6 (9.6)	27.7	15%
Antony et al.	2014	1997 - 2007	R	365	730	238	238	47 (9.4)	24.3	10.5%
Nealon et al.	2020	2008 - 2018	R	1117	2234	1117	1117	47.75 (9.08)	25.7	6.8%
Lin et al.	2023	2007 - 2019	R	1705	3035	1556	1479	48.5 (9.82)	24.5	5.6%

Abbreviations: M, mastectomy; TM, therapeutic mastectomy; CPM, contralateral prophylactic mastectomy; SD, standard deviation; BMI, body mass index; R, retrospective.

Table 1

The Impact of Staging Laparoscopy and Peritoneal Washing in Gastric Cancer – State of the Art or Outdated?

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Background: According to some guidelines staging laparoscopy can aid in decision-making in gastric cancer and is recommended prior to neoadjuvant chemotherapy. However, diagnostic laparoscopy is not routinely performed and its impact on treatment regimens is questionable.

Aims: The aim of this study is to assess the implementation and impact of a staging laparoscopy and peritoneal washing in patients surgically treated for gastric cancer and Siewert III carcinomas at our institution.

Methods: This is a single-center retrospective cohort study. Patients who underwent surgical treatment for gastric cancer between 2011 and 2023 were included. The incidence and consequence of staging laparoscopy and peritoneal washing were analyzed.

Results: In total 184 patients underwent surgical treatment for gastric cancer. 110 (60%) received a staging laparoscopy. In 57 (52%) a peritoneal washing was performed, of which 6 (11%) revealed a positive cytology. Staging laparoscopy revealed 10 patients (9%) with macroscopic peritoneal tumor lesions. 6 of these patients additionally received peritoneal washing and despite macroscopic tumor lesions, only 3 (50%) had a positive cytology. The chosen therapeutic pathway of the 10 patients with macroscopic lesions drastically varied – from palliative gastroenterostomy, to palliative gastrectomy, to chemotherapy and a form of gastrectomy with or without HIPEC. The 3 patients with no macroscopic lesions but positive cytology were all treated with chemotherapy followed by gastrectomy. Survival of patients with macroscopic and/or microscopic tumor lesions also varied – from deceased within the first 90 days postoperatively to alive and without tumor recurrence at 5-year follow-up.

Conclusion: In our experience, performing a diagnostic laparoscopy does not commonly have therapeutic consequences. Furthermore, peritoneal washing and its cytology findings do not correlate with macroscopic peritoneal lesions. The diagnostic value of a staging laparoscopy is questionable and should be reserved for individual cases.

Laser Hemorrhoidoplasty (LHP) for the Treatment of Hemorroidal Disease. Always Mucopexy? Considerations, Tips and Tricks After More Than 1000 Cases Performed by a Single Surgeon

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Background: Laser hemorrhoidal procedure (LHP) is still considered a new minimally invasive technique to treat symptomatic hemorrhoids.It is not uniformely standardized, therefore after 1000+ cases we drew some conclusions and formulated some recommendations.
Aims: To find the right technical solutions in the treatment of hemorrhoidal disease by LASER, using the LHP technique, after performing more than 1000 interventions of this type, by a single surgeon, with or without associating a short – mucopexy To establish what grade of hemorrhoids are suitable for the best results, and wether the mucopexy is getting an advantage or not.
Methods: Indications for LHP included patients with symptomatic hemorrhoids resistant to medical therapy, with low- medium-high grade of prolapse. Clinical efficiency was evaluated assessing resolution of symptoms and patient satisfaction. We compared the acceptability, postoperative evolution and levels of pain, hospitalization, and overall short time results after more than seven years of experience with LHP. As not enough standard recommendations, we tried to compare several technical approaches and we formulated some tips and tricks.
Results: Excellent re-integration of the patients after only several days, ZERO PAIN for more than 30% of the patients postoperatively, and 2-5 days of moderate pain for the majority. The good short term results, confirmed also by other studies already published, suggest that LHP is an interesting option in the treatment of hemorrhoidal disease, especially if associated to mucopexy, largely preferred by the author.
Conclusion: The LHP procedure seems to be safe and effective in patients with symptomatic hemorrhoids, even high graded, especially when short mucopexy is associated.. It is simple, minimally invasive, and relatively pain free. It can be performed in an ambulatory setting, and it achieves high patient satisfaction.

Learning Curve of Robotic-Assisted Hiatal Hernia Repair: A Cumulative Summation Retrospective Analysis of Adjusted Operative Times

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Background: In surgery, the learning curve refers to the period during which a surgeon attains proficiency in a specific surgical procedure. The widespread adoption of robotic systems has posed new challenges to surgeons and surgical trainees. Surgeons have had to learn new techniques and instrumentation, requiring significant time and the development of new surgical skills. To date, few articles have been published regarding learning curves of robotic-assisted hiatal hernia repair.
Aims: The aim of this study was to assess the learning curve of robotic-assisted hiatal hernia repair.
Methods: Patients undergoing robotic-assisted hiatal hernia repair from May 2018 to April 2024 were retrospectively included. Clinical characteristics, operative times, and postoperative data were collected. A cumulative summation (CUSUM) analysis of operative times, adjusted for surgical complexity, was conducted.
Results: We selected 101 patients who underwent robotic-assisted hiatal hernia repair performed by three surgeons. The mean age was 65.7±14.3 years, with 69 (68.3%) female patients. Fig1. Adjusted operative times were calculated based on hernia type, age, sex, BMI, and ASA score. The CUSUM analysis estimated the learning curve to be between 15 and 21 cases. Fig2. Only one minor intraoperative complication occurred. Postoperatively, 19 (18.8%) complications were observed, with only 3 (3.0%) classified as grade 3 according to the Clavien-Dindo classification. Fig3. Complications were evenly distributed between the learning and post-learning phases. After a mean follow-up of 26.5±18.0 months, 13 (12.9%) cases of recurrence were recorded, none of which required surgical revision.
Conclusion: Our findings showed that experienced surgeons performing robotic-assisted hiatal hernia repair have a rapid learning curve. Specifically, we observed a significant reduction in operative time after completing an estimated 15 to 21 cases. Intraoperative and postoperative complication rates were low and evenly distributed during and after the learning phase, underscoring the procedure's safety and effectiveness in experienced surgical teams.

	Total N=101	Learning phase N=52	Proficiency phase N=49	p
Age, years (SD)	65.7 (14.3)	66.3 (13.6)	65.0 (15.2)	0.650
Sex, female (%)	69 (68.3)	36 (69.2)	33 (67.3)	0.840
Body mass index, kg/m² (SD)	26.7 (4.3)	26.0 (4.2)	27.4 (4.3)	0.119
ASA score				
• 2, n (%)	61 (60.4)	31 (59.6)	30 (61.2)	
• 3, n (%)	37 (36.6)	19 (36.5)	18 (36.7)	0.866
• 4, n (%)	3 (3.0)	2 (3.8)	1 (2.0)	
Comorbidities				
• Arterial hypertension, n (%)	45 (44.6)	20 (38.5)	25 (51.0)	
• Cardiac disease, n (%)	21 (20.8)	11 (21.2)	10 (20.4)	
• Pulmonary disease, n (%)	32 (31.7)	16 (30.8)	16 (32.7)	
• Previous tumor, n (%)	27 (26.7)	15 (28.8)	12 (24.5)	0.938
• Renal disease, n (%)	14 (13.9)	6 (11.5)	8 (16.3)	
• Psychiatric disease, n (%)	26 (25.7)	13 (25.0)	13 (26.5)	
• Previous abdominal surgery, n (%)	45 (44.6)	21 (40.4)	24 (49.0)	
• Smoking status, n (%)	Active 3 (3.0) Former 1 (1.0)	Active 2 (3.8) Former 1 (1.9)	Active 1 (2.0)	
Main symptoms				
• Reflux, n (%)	51 (50.5)	24 (46.2)	27 (55.1)	0.371
• Dysphagia, n (%)	50 (49.5)	28 (53.8)	22 (44.9)	
Hiatal hernia grade				
• 1, n (%)	42 (41.6)	20 (40.4)	21 (42.9)	
• 2, n (%)	3 (3.0)	2 (3.8)	1 (2.0)	
• 3, n (%)	33 (32.7)	21 (40.4)	12 (24.5)	0.087
• 4, n (%)	6 (5.9)	4 (7.7)	2 (4.1)	
• Recurrent hernia, n (%)	17 (16.8)	4 (7.7)	13 (26.5)	

Figure 1

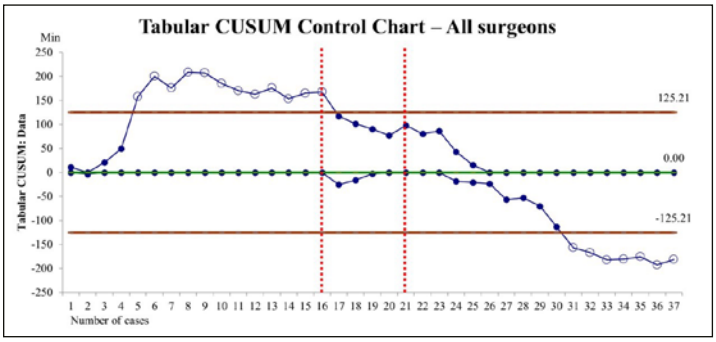

Figure 2

	Total N=101	Learning phase N=52	Proficiency phase N=49	p
Type of fundoplication, n (%)				
• Nissen, n (%)	88 (87.1)	49 (94.2)	39 (79.6)	
• Toupet, n (%)	5 (5.0)	2 (3.8)	3 (6.1)	
• Dor, n (%)	1 (1.0)	1 (1.9)	0	**0.026**
• Other techniques, n (%)	7 (6.9)	0	7 (14.3)	
Mesh implantation, n (%)	63 (62.4)	33 (57.7)	33 (67.3)	0.319
Intraoperative complications	1 (1.0)	1 (1.9)	0	0.332
Conversion to open surgery or laparoscopy	0	0	0	-
Operative time, min (SD)	149 (56)	170 (58)	126 (45)	**<0.001**
Postoperative complications (Clavien-Dindo classification)				
• 1, n (%)	9 (8.9)	5 (9.6)	4 (8.2)	
• 2, n (%)	7 (6.9)	4 (7.7)	3 (6.1)	0.908
• 3, n (%)	3 (3.0)	1 (1.9)	2 (4.1)	
Cumulative complication index (CCI), n (%)	3.3 (8.1)	3.1 (7.4)	3.5 (8.9)	0.814
Total follow-up, months (SD)	26.5 (18.0)	39.0 (15.6)	13.3 (8.4)	**<0.001**
Hernia recurrence during the follow up, n (%)	13 (12.9) After 18.1 (12.7) months	7 (13.5) After 22.0 (15.4) months	6 (12.2) After 13.7 (6.4) months	0.873
Length of hospital stay, days (SD)	Mean 5.0 (3.8) Median 4.0 (IQR 3.0-6.0)	5.1 (3.8)	4.9 (3.8)	0.795

Figure 3

Safety and Efficacy of Cisplatin and Nab-Paclitaxel Pressurized Intraperitoneal Aerosol Chemotherapy (PIPAC) in Patients With Peritoneal Carcinomatosis: Nab-PIPAC Phase IB Study

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Background: Platinum and taxanes are backbone chemotherapy in multiple solid tumors but their combination through PIPAC has not been investigated in peritoneal carcinomatosis.
Aims: To investigate the use of Nab Paclitaxel and Cisplatine in PIAC, as the first phase 1 study in the world.
Methods: Nab-PIPAC is a phase IB trial investigating PIPAC administration of cisplatin at 10.5 mg/m^2 and escalating dose of nab-paclitaxel with a 3+3 design (7.5, 15, 25, 37.5, 52.5 and 70 mg/m^2). PIPAC was repeated at 4-6 weeks intervals for up to three courses.
Results: We enrolled 22 patients with previously treated peritoneal carcinomatosis, of whom 18 received at least one PIPAC: 6 ovarian, 9 gastric and 3 pancreatic cancers. Three patients did not receive PIPAC due to ileus (n=1) or no access to peritoneal cavity (n=2). Median age was 67 years (43-81). In total, 47 PIPAC procedures were administered and 12 of 18 (67%) patients completed three PIPAC cycles. There was no dose limiting toxicity. One patient had grade 3 treatment related adverse event (asthenia). One patient had bladder lesion during a PIPAC procedure and needed surgical reintervention. Median progression-free survival was 3.1 months. Median overall survival (OS) was 9.4 months and OS rate at 1 year was 47.1%. Pharmacokinetic analyses showed good linearity between nab-paclitaxel dose and the exposure i.e., AUC0-last (R2=0.90), and the maximum concentration (R2=0.77).
Conclusion: The combination of nab-paclitaxel and cisplatin administered by PIPAC was safe and well tolerated in patients with previously treated peritoneal carcinomatosis.

Perioperative Real Time Glucose Assessment as a Predictive Tool for Complications After Pancreatic Resection – A Prospective Single Center Pilot Study

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Background: Postoperative hyperglycaemia was described as an early marker for complications after pancreatic resection. Nevertheless, evidence heavily relies on retrospective assessment of arbitrary serum blood sugar measurements. In contrast, continuous glucose monitoring (CGM) systems allow real-time monitoring of glucose fluctuations.
Aims: The aim of this study was to examine continuous perioperative glucose changes after pancreatic resections and the impact these changes have on postoperative complications.
Methods: Prospectively, twenty (n=20) consecutive patients undergoing pancreatic resection were included. Additionally, n=5 patients undergoing other major abdominal surgeries served as control group. The Dexcom G6 CGM system was utilized. Time in euglycemic Range (TIR) and peak glucose levels were analyzed. Furthermore, routine serum glucose measurements and daily C-reactive protein (CRP) levels were assessed. Comprehensive Complication Index (CCI) was used to quantify postoperative complications.
Results: No adverse event was observed related to CGM devices. Glucose levels significantly increased from a median 7mmol/l (IQR 6-8mmol/l) to 9 mmol/l (IQR 8-1mmol/l, P=0.026) after pancreatic resection. Accordingly, 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 of 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 failed to predict complications.
Conclusion: In this pilot study, peak glucose levels on day 1 after pancreatic resections were associated with adverse events. CGM may be a valuable tool to detect patients at risk for complications.

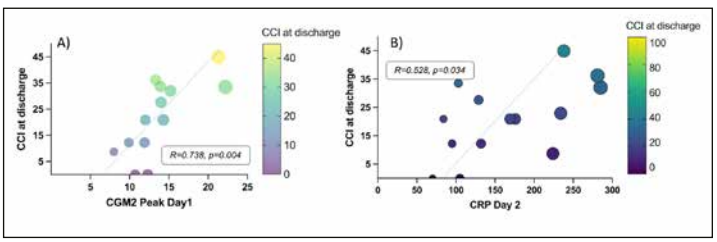

Figure 1

Comparative Analysis of 2D and 3D Visualization Techniques in Minimal Invasive and Robotic Surgery: A Systematic Review

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Background: Minimally invasive surgery (MIS) is used due to its advantages and reduced complications in patient recovery compared to open surgery. Visualization during surgery is crucial, and both two-(2D) and three-dimensional (3D) technologies can be employed. However, the comparative effectiveness of these technologies in improving surgical outcomes, particularly in robotic surgery, remains debated.
Aims: This systematic review evaluates the impact of 2D versus 3D visualization on safety and performance metrics in robotic and minimally invasive surgery, emphasizing intraoperative blood loss, complication rates, and operative efficiency.
Methods: A systematic review was conducted, searching databases including MEDLINE and Cochrane for peer-reviewed studies published from 2015 to 2024. Studies comparing 2D and 3D visualization in laparoscopic and robotic surgery were included, focusing on outcomes such as operative time, blood loss, complication rates, length of hospitalization and task performance.
Results: We identified a modest reduction in operative time with 3D visualization, particularly in specific procedures like hernia, colorectal surgery, bariatrics and minimal invasive gastrectomy. 3D visualization also improved depth perception, especially for novice surgeons, in robotic setting. However, findings regarding blood loss and complication rates were inconsistent across studies, with no clear consensus regarding on its benefits.
Conclusion: While 3D visualization offers certain performance improvements, particularly in surgical time reduction and depth perception for novice surgeons to some extent, the overall clinical advantages remain variable. The high cost of 3D systems may not always justify their routine use, especially when 2D systems can achieve comparable outcomes. Further research is needed to fully assess the long-term clinical and economic impact of 3D visualization in MIS and robotic surgery.

Giant Duodenal Brunneroma: Report of a Rare Case and Review of the Literature

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Background: Brunneromas are exceedingly rare benign tumors originating from Brunner's glands in the duodenum. These lesions often remain asymptomatic or present vague symptoms, making diagnosis challenging. While typically benign, their differentiation from malignant lesions is crucial. Timely surgical or endoscopic management ensures an excellent prognosis. This report highlights a case of a giant Brunneroma causing gastrointestinal bleeding and anemia, managed with duodenum-preserving excision.
Case Presentation: A 39-year-old male presented with a 2-month history of melena, intermittent epigastric pain, and anemia. A CT scan revealed a large (8 cm) tumor in the second segment of the duodenum (Image 1.). Endoscopy confirmed a polypoid mass, with biopsies suggesting a hypertrophic Brunner's gland polyp (Image 2.). The multidisciplinary team recommended duodenotomy with radical tumor excision. Surgery involved resection of a 7.5×5.1×4.1 cm tumor near the ampulla of Vater, preserving duodenal integrity (Image 3.). Postoperative recovery was uneventful, requiring only a single-unit blood transfusion. Histopathology confirmed a benign Brunneroma without malignant features. Follow-up endoscopy at 3 months showed no recurrence.
Conclusion: Giant Brunneromas, although rare, should be considered in the differential diagnosis of upper gastrointestinal lesions causing bleeding or obstruction. Accurate diagnosis through imaging, endoscopy, and multidisciplinary evaluation is essential. Surgical excision remains the definitive treatment for large or symptomatic lesions, ensuring excellent outcomes and minimal recurrence risk. This case emphasizes the importance of interdisciplinary collaboration and tailored surgical approaches for optimal patient care

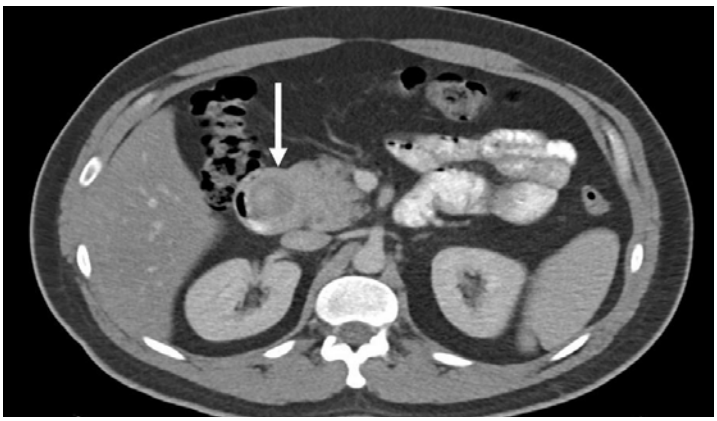

Figure 1. CT scan showing a filiform stenotic tumor (indicated by the arrow) in the second segment of the duodenum

Figure 2. Endoscopic image showing a polypoid mass in the second segment of the duodenum

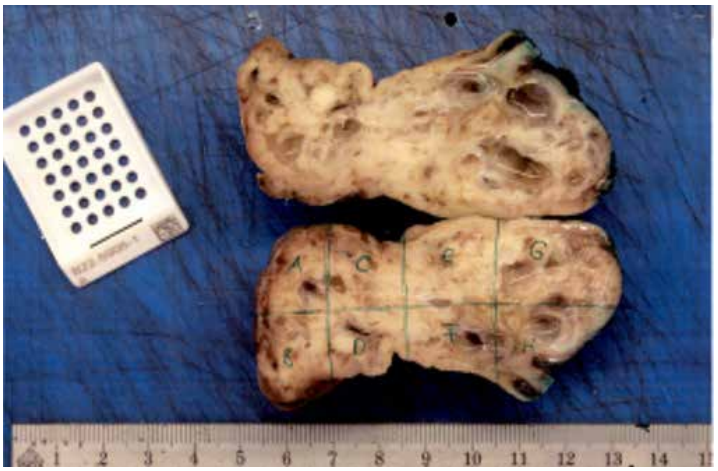

Figure 3. Specimen of the resected Brunneroma, measuring 7.5×5.1×4.1 cm, with visible internal cystic structures

Map-Care: Enhancing Cross-Lingual Surgical Terms Analysis Through Multilingual Embeddings

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Background: The integration of multilingual surgical procedure data is critical for advancing global surgical research and clinical collaboration. Current systems often fail to address linguistic and structural variations in procedural classifications, limiting cross-language interoperability and hindering effective data sharing.
Aims: To develop a framework that facilitates the alignment, analysis, and retrieval of surgical procedure codes across languages and healthcare systems, thereby improving interoperability and accessibility.
Methods: MAP-CARE employs state-of-the-art large language models (LLMs) to translate surgical procedure classifications, including CHOP (Swiss Classification of Operations) and OPS (German Classification), from German, French, and Italian into English. The translated terms are enriched with contextual details and embedded into a high-dimensional semantic space using advanced deep learning models. These embeddings are integrated into a hierarchical graph database to support semantic search and structured navigation.
Results: MAP-CARE demonstrated high performance in cross-system mapping and semantic alignment of multilingual surgical procedure codes, achieving high accuracy in identifying equivalent terms. The framework enables natural language search in English, providing precise retrieval of multilingual procedural data. These capabilities significantly enhance interoperability and facilitate benchmarking of surgical procedures across healthcare systems.
Conclusion: MAP-CARE represents a scalable and robust approach to harmonizing surgical procedure terminologies across languages and systems. Its ability to unify multilingual data and improve semantic search functionality offers practical benefits for surgical research, benchmarking, and clinical applications, addressing critical challenges in surgical informatics.

Twelve-Month Clinical Outcomes Following Refluxstop Surgery: First 100 Patients From a Swiss Institution

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Background: The RefluxStop procedure for the treatment of gastroesophageal reflux disease (GERD) restores key components of the antireflux barrier without encircling the food passageway, thereby avoiding adverse effects common to traditional antireflux surgical techniques. This procedure is offered at our clinic, following the excellent outcomes reported in clinical trial. However, many of the patients seen in clinical practice have more complex clinical characteristics, such as large hernias or comorbid motility disorders, which may influence outcomes.
Aims: To provide real-world outcome data on patients undergoing RefluxStop surgery, inclusive of a complex patient population.
Methods: This retrospective study analyzed outcomes at 12 months in 100 consecutive patients to undergo RefluxStop surgery at a single Swiss institution. The primary effectiveness outcome was GERD Health-Related Quality of Life (GERD-HRQL) score. Secondary outcomes included patient satisfaction, proton pump inhibitor (PPI) use, and adverse events (AEs).
Results: Table 1 shows patient characteristics. Total GERD-HRQL score (0-75 points) decreased from a median (IQR) of 41 (28.75-50) preoperatively to 1 (0-5) at 12 months ($p<0.001$), with 92% of patients reporting satisfaction. PPI usage was discontinued in 92%, whereas preoperatively 95% required PPIs. AEs included: early device penetration to the stomach (n=1) ascribed to overly tight suturing of the invagination pouch, no intervention required; device dislocation (n=1) ascribed to insufficient closure of the pouch/deployment tool channel; and re-do hiatal repair unrelated to the device sitting intact in its pouch (n=3), all three in patients with very large (>7 cm) hiatal hernia.
Conclusion: This study provides favorable real-world evidence on the RefluxStop procedure in a population of substantially severe sufferers that included esophageal motility disorder (66%) and hiatal hernia >3 cm (55%), with excellent effectiveness quantified by GERD-HRQL score and supported by patient satisfaction and PPI discontinuation in the context of a low rate of AEs.

Table 1 Baseline clinical characteristics

Characteristics	*N=100 (100%)*
Age, years, mean (SD)	55.9 (14.9)
Sex, male, n (%)	54 (54%)
Regular daily PPI use at baseline, n (%)	95 (95%)
Hernia size, cm, mean (SD)	3.8 (1.7)
Hernia size >3 cm	55 (55%)
Hernia size 5-10 cm	25 (25%)
IEM	66 (66%)

IEM, ineffective esophageal motility; IQR, interquartile range; PPI, proton pump inhibitor; SD, standard deviation.

Table 1. SCS abstract patient characteristics

The Utility of Intraoperative Ultrasound in the Localization of Post-Open Appendectomy Interstitial Incisional Hernia: A Case Report

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Background: Appendectomy is one of the most commonly performed surgical procedures, with incisional hernias occurring as a rare complication in 0.12% of cases. Interstitial incisional hernia is a specific type of hernia wherein the hernial sac protrudes through a defect in the transversus abdominis and internal oblique muscles, but not through the intact external oblique aponeurosis, often posing a diagnostic challenge.
Case Presentation: We present the case of a 59-year-old woman who came in with a painful bulge in the right hemiabdomen, located above her previous McBurney incision, following an appendectomy eight months earlier. Ultrasound and CT scans (Figure 1) led to a diagnosis of an interstitial hernia. During surgery, the exact location of the defect was difficult to pinpoint, so an intraoperative ultrasound was conducted (Figure 2). The defect was then repaired with mesh through an open surgical approach (Figure 3).
Conclusion: Incisional hernias following an open appendectomy via the McBurney incision are uncommon. Two types of incisional hernias can occur post-appendectomy. The more common type involves the hernia traversing all layers of the abdominal wall. The less common type, known as the interstitial hernia, occurs when the hernia passes through a defect in the transversus abdominis and internal oblique muscles, while the aponeurosis and muscles of the external oblique remain intact. One anatomical factor contributing to the development of the latter is the obliteration of the transversalis fascia in the area.
Interstitial hernias can be easily missed, and ultrasonography of the abdomen or non-contrast CT of the abdomen can help confirm the diagnosis. However, in cases where there is no noticeable bulge or palpable defect in the external oblique aponeurosis, intraoperative ultrasound can help locate the defect and hernial sac, preventing incorrectly placed incisions and ensuring proper repair.

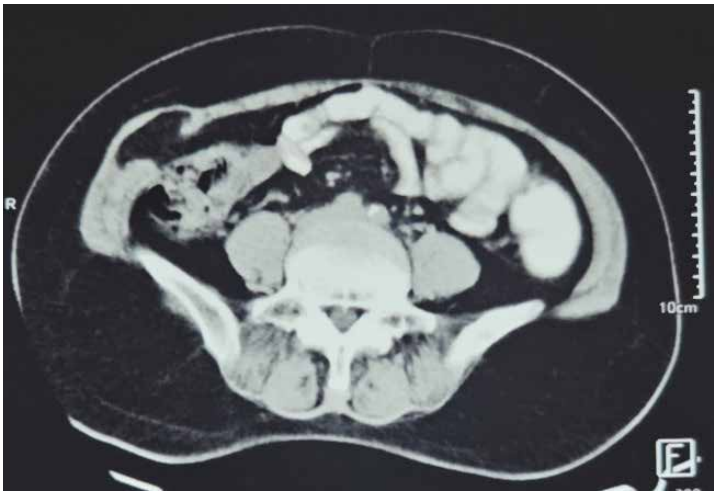

Figure 1. A CT scan plate showing the dehiscence of the internal oblique and transversus abdominis muscles and an intact external oblique aponeurosis

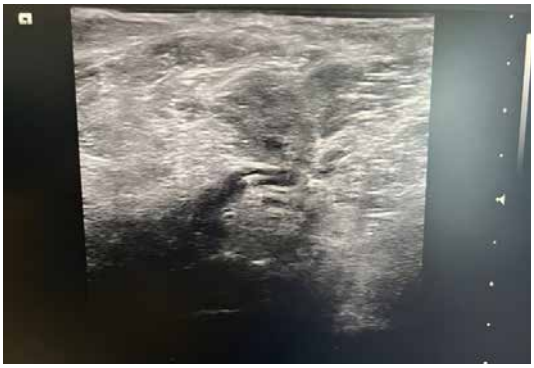

Figure 2. On ultrasonography, the anechoic area represents the defect in the internal oblique and transversus abdominis muscles. The hypoechoic area represents the omental fat herniating through the defect

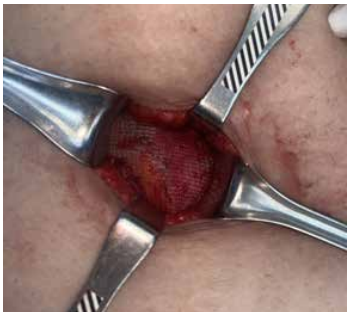

Figure 3. A mesh was placed over the closed peritoneum with a 5 cm circumferential overlap and was then fixed using glue

Laparoscopic-Assisted Pancreatic Necrosectomy (LAPN) in the Treatment of Walled off Pancreatic Necrosis: A Retrospective Study

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Background: Acute infected necrotizing pancreatitis is associated with high rates of organ failure and mortality. The step-up approach which combines percutaneous drainage with laparoscopic-assisted pancreatic necrosectomy (LAPN) or transgastric drainage with necrosectomy, has reduced complications and mortality.
Aims: This study aimed at comparing surgical and endoscopic step-up approach treatments.
Methods: A retrospective analysis of patients with infected necrotizing pancreatitis treated using the step-up approach between 2019 and 2023 was conducted. Surgical treatment involved CT-guided percutaneous drainage followed by LAPN if needed, while the endoscopic approach used transgastric drainage and endoscopic necrosectomy as required. The primary endpoint was a composite of major complications and 6-month mortality. Secondary outcomes included complication rates, reinterventions, and duration of hospital stay.
Results: The study included 31 patients (mean age 60.7±14.2 years). Eighteen underwent the surgical step-up approach with CT-guided drainage, followed by LAPN in 11 cases (61.1%). Thirteen received the endoscopic step-up approach with transgastric drainage, followed by necrosectomy in 7 cases (53.8%). Major complications or death occurred in 54.5% of the surgical group and 57.1% of the endoscopic group within six months. The LAPN group reported one intraoperative and six postoperative complications. In the endoscopic group were one intraoperative and six postoperative complications. Four patients required LAPN after endoscopic necrosectomy due to insufficient clinical improvement.
Conclusion: Our findings indicate that both LAPN and endoscopic necrosectomy are effective in controlling the local and systemic infection. While outcome analysis suggests endoscopic treatment as the preferred first-line approach, the supporting evidence is limited. LAPN remains important for managing extensive infected necrosis, particularly when endoscopic methods cannot fully address the infection or when there is no direct contact between the infected area and the gastric wall.

Multimodal Machine Learning Models for Survival Prediction in Surgical Oncology

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Background: In medicine, machine learning (ML) has demonstrated superior performance for risk prediction compared to conventional statistics. To estimate efficiency of treatments, the prediction of survival is fundamental in surgical oncology. Although data from various sources is available, the prediction models are often limited by single modality input (e.g. medical imaging, text, etc.). While the added value of multimodal analysis remains to be demonstrated, increasing efforts are made to include multimodal data into prediction models.
Aims: This systematic review (SR) provides an overview on the use of ML for predicting long-term survival, focusing on multimodality of data.
Methods: A systematic literature search was conducted on MEDLINE, Embase, IEEE Xplore and Web of Science according to a prespecified search strategy. Studies using ML to predict overall survival in surgical oncology patients were included. If ML models were not predicting long-term overall survival (≥ 1year) or if performance metrics were not comparable, studies were excluded. Quality assessment was done in accordance with the PROBAST guideline. This SR was registered on PROSPERO (CRD42024529178).
Results: From initially 4159 results, 394 were selected for full text review and 134 studies were eventually included. This SR shows that ML for outcome prediction is becoming increasingly popular (Figure 1). Within our SR the organ systems are represented as follows: 38.5% abdominal (n=55), 18.2% CNS (n=26), 13.3% urogenital (n=19), 9.1% cardiothoracic and musculoskeletal (both n=13), 7% breast (n=7), 4.2% ENT (n=6) and 0.7% skin (n=1). Among the included studies, 73.9% used one (n=99) and 26.1% used two modalities (n=35). The modalities are displayed in Figure 2.
Conclusion: This SR showed that ML is increasingly used to predict survival in surgical oncology. Prediction models progressively rely on multimodal input and achieve improved performance. Future research must analyze the impact of improved prediction models on management and long-term survival of surgical oncology patients.

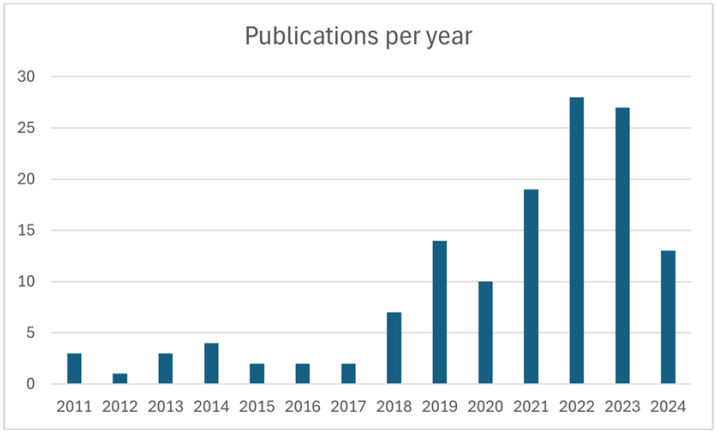

Figure 1. Publications using ML to predict outcome included in this systematic review, counted per year

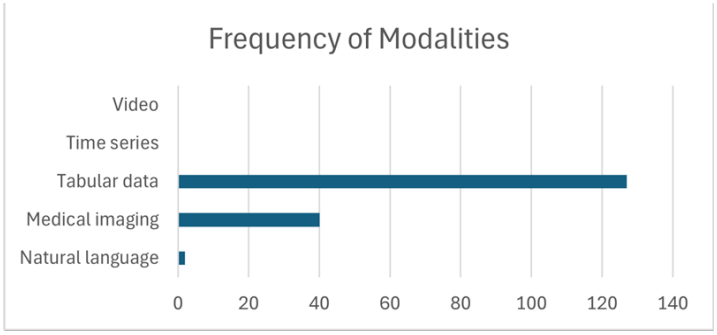

Figure 2. Frequency of modalities reported in the reviewed studies

Massive Ogilvie Syndrome With Cri-Dru-Chat Syndrome: A Rare Case of Gastrointestinal Dysregulation in Older Patient

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Background: Ogilvie syndrome, a rare condition of acute colonic pseudo-obstruction, poses significant risks of ischemia and perforation without mechanical blockage. Cri-du-Chat syndrome, caused by a deletion on chromosome 5p, is associated with intellectual disability and developmental delays but rarely with gastrointestinal issues. This report examines an unusual case of massive Ogilvie syndrome in a patient with Cri-du-Chat syndrome, suggesting potential neurological and physiological links.
Case Presentation: A 62-year-old female with Cri-du-Chat syndrome presented to the emergency department with severe abdominal distension and pain lasting two days. The caregiver reported no bowel movements in the previous 24 hours. Apart from a known allergy to doxycycline, no other medical history was available. Examination revealed a grotesquely distended, tympanic, and tender abdomen. Laboratory tests showed no infection or metabolic disturbances. CT imaging revealed significant sigmoid colon dilatation (23 cm), indicating Ogilvie syndrome with a risk of ischemia or perforation. Initial treatment included digital rectal evacuation and endoscopic decompression under anesthesia, which showed good bowel perfusion. Due to persistent severe distension and high risk of perforation, surgical intervention was required. A laparotomy with double-barrel transverse colostomy successfully decompressed the colon and ensured bowel viability.
Outcome:Postoperative recovery was uneventful, except for a transient right-sided pneumonia. The patient resumed dietary intake without complications, and the stoma exhibited good output.
Conclusion: This case emphasizes the need for prompt diagnosis and intervention in intellectually disabled patients to prevent life-threatening complications. The potential association between Cri-du-Chat syndrome and Ogilvie syndrome underscores the importance of individualized, multidisciplinary care for this unique patient population.

Figure 1. Ogilvie I

Figure 2. CT coronar

Figure 3. CT sag

Composite Adrenal Tumor With Coexisting Cortisol-Secreting Adenoma and Melanoma Metastasis: A Case Report and Literature Review

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Background: Adrenal incidentalomas (AIs) are asymptomatic adrenal masses often detected incidentally during imaging. While most AIs are benign, some require intervention due to malignancy or hormone secretion. Metastasis of melanoma to the adrenal gland is rare and not well documented. This report describes an unusual case of a composite adrenal tumor, featuring a cortisol-secreting adenoma with a melanoma metastasis.
Case Presentation: We report the case of a 77-year-old woman with a history of duodenal melanoma and low-grade B-cell lymphoma was found to have an adrenal incidentaloma, with suspicious FDG tracer accumulation on PET/CT corresponding to an 8 mm lesion without suspicious characteristics inside a 3 cm adrenal mass on MRI. Preoperative hormonal workup revealed ACTH-independent subclinical Cushing's syndrome, and the patient underwent adrenalectomy with perioperative cortisol replacement. The postoperative course was uneventful. Histological analysis identified a melanoma metastasis within an adenoma. Immunohistochemical staining confirmed melanoma markers (Melan-A, S100, PRAME). Follow-up imaging revealed no additional metastatic disease at three months.
Conclusion: This case highlights the complexity of managing composite adrenal tumors, combining hormone secretion and metastasis. While 10-12% of AIs secrete cortisol, metastatic involvement, especially from melanoma, is rare. Hormonal evaluation allowed for precise preoperative planning and guided perioperative management, emphasizing the importance of an evidence-based approach. This case serves as clinical example of managing rare adrenal pathologies with implications for advancing the treatment of composite adrenal tumors.
I declare that there are no conflicts of interest related to this abstract.

Coexistence of Adenomyomatosis in a Left-Sided Gallbladder: A Case Report

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Background: The coexistence of gallbladder (LSG) and adenomyomatosis (ADM) is extremely uncommon presenting a novel clinical dilemma that has not been previously documented. LSG refers to a anomaly where the gallbladder is situated to the left of the round ligament deviating from its usual position. This anomaly is rare, with reported occurrences ranging between 0.04% and 1.1%. Identifying LSG before surgery poses challenges. It is often discovered incidentally during procedures necessitating surgical expertise to safely manage anatomical variations.
Case Presentation: A patient in his 60s with untreated hepatitis C virus (HCV) and hepatocellular carcinoma (HCC) presented with acute epigastric pain, liver cirrhosis, and malignant thrombi in the IVC and portal vein. Physical exams and lab tests showed elevated WBC and CRP, with worsening condition after 48 hours. A CT scan confirmed a left-sided gallbladder and acute cholecystitis. Surgery was performed within 48 hours using modified port positions due to anatomical anomalies (Figure 1). Intraoperative findings revealed an abnormal Calot's triangle (Figure 2) and adenomyomatosis. The patient was discharged without complications but later readmitted due to unrelated liver function issues.
Conclusion: The combination of LSG and ADM in a setting poses an intricate challenge. Surgeons need to be ready to recognize and address these abnormalities effectively for the well being of the patient and favorable results. This particular case highlights the importance of staying alert and flexible during surgery when dealing with gallbladder variations.

Figure 1. Shows modified ports positions to accommodate patient special anomaly

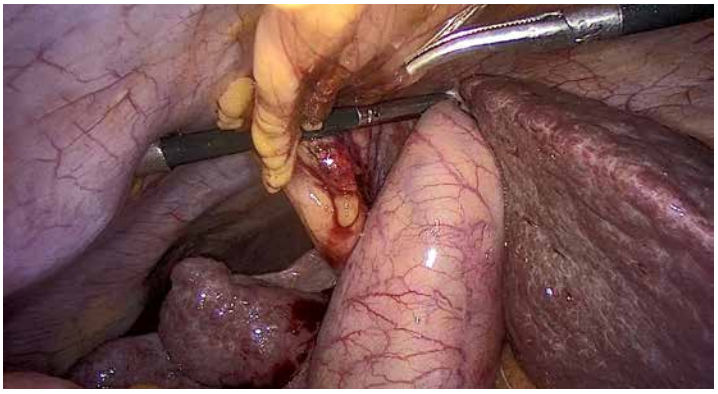

Figure 2. Calots triangle was incorrectly positioned, with the cystic artery amid the cystic duct and common bile duct

Massive Hypopharyngeal Dilatation and Cervical Lung Herniation in a Semi-Professional Wind Instrument Player

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Inselspital, Bern University Hospital, Bern

Background: Wind instrument playing requires high intrathoracic and pharyngeal pressures. Over time, this can lead to rare structural changes in the upper airway and surrounding areas. This case report describes a musician who developed massive hypopharyngeal dilatation and cervical lung herniation. The aim is to highlight the risks of these conditions and the importance of early diagnosis and treatment.
Case Presentation: A 46-year-old semi-professional wind instrument player reported sharp pain on the right side of his throat while playing. He had no difficulty speaking or breathing, but the pain occurred during performances. A detailed examination, including laryngostroboscopy and dynamic CT scans, was done. The tests showed significant dilatation of the hypopharynx and herniation of the lung apices into the neck, particularly on the right side. The size of the dilation increased with the amount of pressure required by the instrument being played. A multidisciplinary team recommended stopping wind instrument playing to avoid complications like pneumothorax.
Conclusion: This case highlights the dangers of sustained high-pressure activities like wind instrument playing. Early recognition of symptoms, use of imaging techniques, and proper management are key to preventing serious complications. Musicians and clinicians should be aware of these risks for timely diagnosis and intervention.

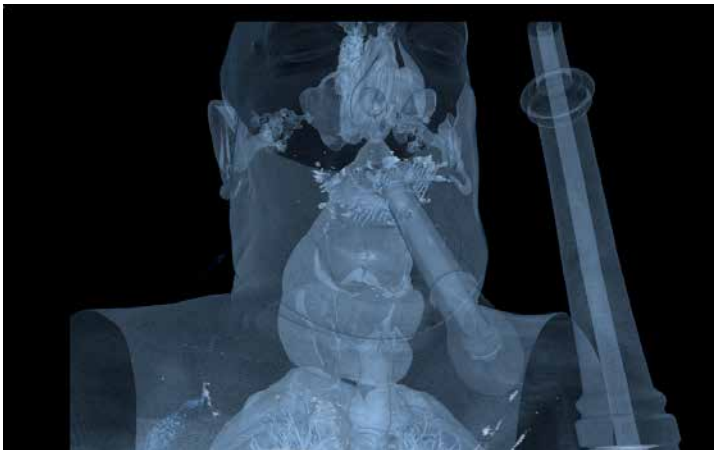

Figure 1

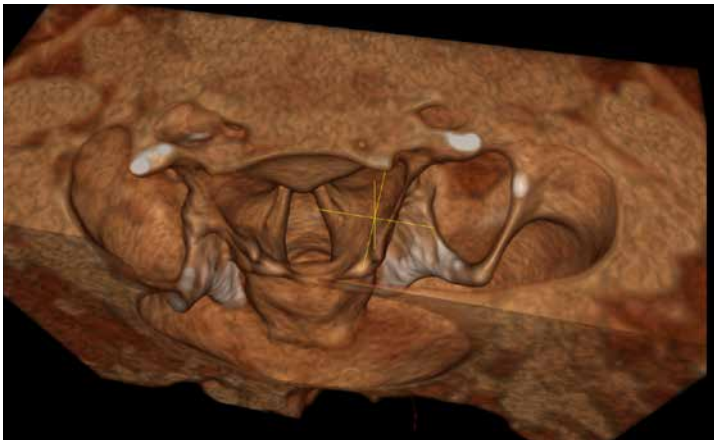

Figure 2. Massive Dilatation des Hypopharynx mit Hernierung der Membrana thyrohyoidea rechts mehr als links

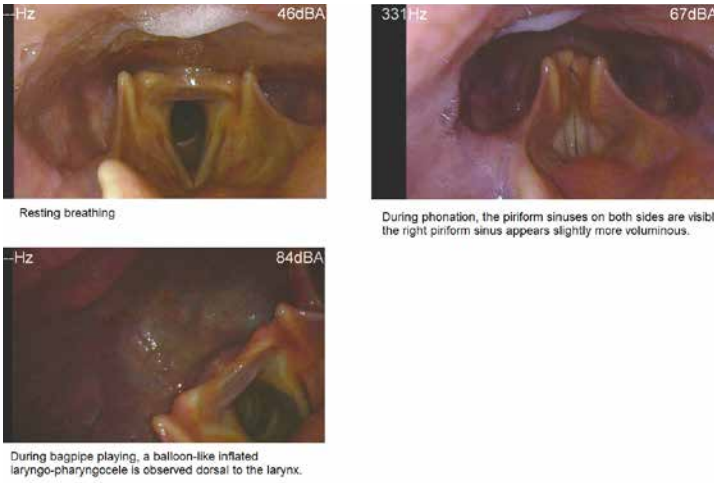

Figure 3

Acute Perforated Appendiceal Diverticulitis: A Case Report and Overview of the Literature

E. Brändle
Spital Bülach, Winterthur

Background: Diverticulum and diverticulitis of the appendix are rare and usually diagnosed retrospectively by the pathologist in patients with suspected acute appendicitis undergoing appendectomy.
Case Presentation: A 55-year-old patient presented to the emergency department with a 4-day history of abdominal pain, typical symptoms of appendicitis and elevated inflammatory markers. Computed tomography revealed signs of acute appendicitis. The patient underwent laparoscopic appendectomy and the histopathological examination revealed a perforated acute appendiceal diverticulitis.
Conclusion: Appendiceal diverticulitis is a rare finding in clinical practice. It is important to be aware of this entity since appendiceal diverticulitis is associated with a higher rate of complications as perforation and an increased risk of appendiceal neoplasm. We report a rare case of perforated appendiceal diverticulitis and a brief discussion about the histopathological features, clinical behavior, treatment and overview of the literature are presented.

Tailored Multimodal Management of Desmoplastic Small Round Cell Tumor: Optimizing Survival With Precision Surgery, Systemic Therapy and Coordinated Care

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[1]Department of Thoracic Surgery, University Hospital Zurich, USZ, Zurich; [2]Department of Oncology, University Hospital Zurich, USZ, Zurich

Background: Desmoplastic small round cell tumor (DSRCT) is a rare and aggressive malignancy primarily affecting young individuals. Characterized by a unique chromosomal translocation (EWSR1-WT1 fusion), it often presents with widespread metastases at diagnosis. Multimodal treatment, including chemotherapy, surgery, and radiotherapy, is essential for disease control, though prognosis remains poor.
Case Presentation: A 32-year-old male was diagnosed with DSRCT (UICC Stage IV) with tumor localizations including the right pleura, right hilum (Fig.1), mediastinum, right paratracheal lymph nodes, subpleural and paracardiac parenchymal masses (Fig.2), left supraclavicular masses, right portal lymph nodes and retroperitoneal lymph nodes. Initial treatment comprised two cycles of cisplatin and etoposide, followed by immunochemotherapy incorporating atezolizumab. After a revised diagnosis, treatment transitioned to the vincristine, doxorubicin and cyclophosphamide regimen combined with ifosfamide and etoposide (VDC/IE) for 11 cycles. Restaging indicated a metabolic and morphological tumor response. Multidisciplinary sarcoma

board discussions recommended stereotactic radiation therapy of abdominal and cervical lesions followed by surgery. The patient underwent a right pneumonectomy (Fig.3) with partial resections of the pericardium, diaphragm, and liver. Post-surgical PET-CT showed no evidence of recurrence or active metastases. Chemotherapy was resumed and completed with additional three cycles of VDC/IE. A follow-up PET-CT four months after surgery confirmed no disease progression. The patient remained clinically stable, reporting improved quality of life.

Conclusion: Managing DSRCT requires a personalized and multidisciplinary approach integrating systemic therapy, surgery, and radiotherapy to optimize survival outcomes. Complex surgical procedures, including multi-organ resections, are pivotal and should be performed in highly specialized centers. PET-CT imaging is essential throughout management, guiding decisions and monitoring response. Long-term follow-up and coordinated care are essential for early detection of recurrences and mantaining quality of life.

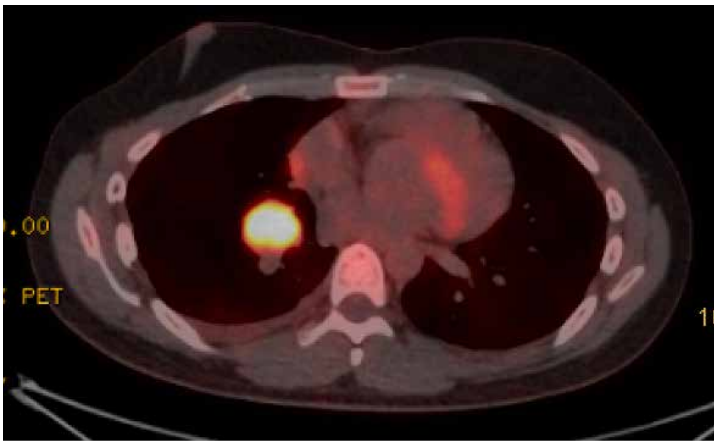

Figure 1

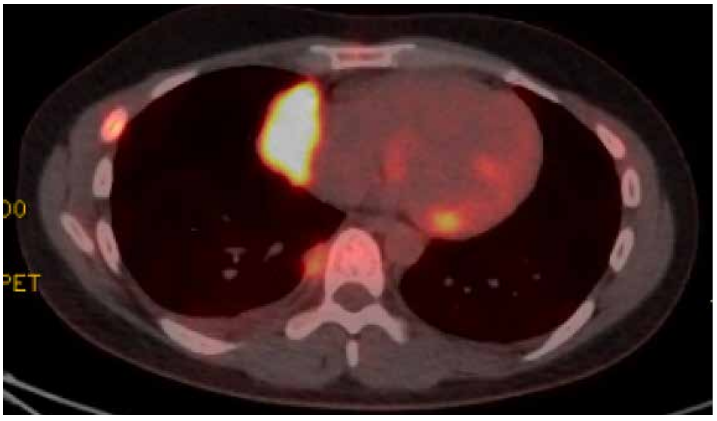

Figure 2

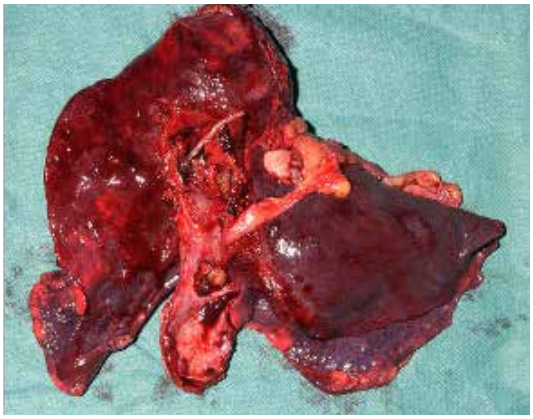

Figure 3

Rare differential Diagnosis of Symptomatic Pericarditis: Isolated Epithelioid Mesothelioma of the Pericardium

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Department of Thoracic Surgery, University Hospital Zurich, USZ, Zurich

Background: Isolated pericardial mesothelioma is an extremely rare malignancy, often presenting with nonspecific symptoms such as recurrent pericarditis or pericardial effusion. Due to its rarity and nonspecific presentation, it is frequently misdiagnosed or discovered only at advanced stages. Definitive treatment options are limited, and the prognosis remains poor. Multimodal imaging and histological analysis are critical for accurate diagnosis, and management typically focuses on palliative care.

Case Presentation: A 69-year-old female with a history of recurrent pericarditis first diagnosed in April 2024 was admitted in September 2024 with worsening dyspnea, fatigue, and a reduced general condition. Initial workup revealed an inflammatory response and a pericardial mass infiltrating left-sided cardiac structures and compressing the left atrium, superior pulmonary veins, and superior vena cava. Echocardiography showed a pericardial mass, while CT imaging suggested a primary pericardial mesothelioma with mediastinal lymph node involvement (Fig.1). Biopsy obtained via video-assisted thoracoscopic surgery (VATS, Fig.2) confirmed epithelioid mesothelioma six months after onset of symptoms, positive for WT1 and D2-40, and negative for Claudin-4, BerEP4, ALK, and PDL-1. The patient had no history of asbestos exposure. Given the advanced stage and tumor location, the multidisciplinary tumor board recommended systemic palliative therapy based on the MAPS trial protocol, consisting of Carboplatin, Pemetrexed and Bevacizumab. Symptom management included glucocorticoids, antiarrhythmic therapy with Amiodarone, and anticoagulation. The patient remained hemodynamically stable despite a moderate pericardial effusion. Radiotherapy was deferred due to the tumor's critical anatomical location.

Conclusion: Isolated pericardial mesothelioma is a rare condition often mimicking recurrent pericarditis. Diagnosis requires multimodal imaging, such as echocardiography and CT, with histological confirmation via biopsy. Immunohistochemical markers like WT1 and D2-40 help differentiate it from other malignancies. Treatment is primarily palliative, focusing on systemic chemotherapy, with radiotherapy considered in selected cases. Early multidisciplinary collaboration is essential for optimal care.

Figure 1

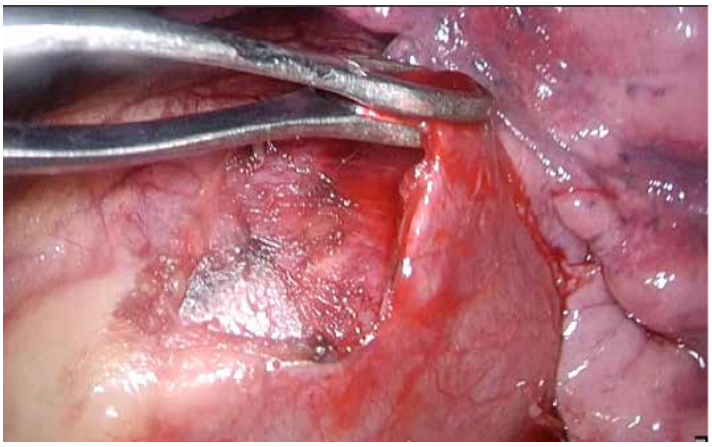

Figure 2

Dedifferentiated Liposarcoma of the Esophagus: A Case Report

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Background: Liposarcomas represent the most common soft tissue tumors, accounting for one in five mesenchymal malignancies. While these tumors are typically found in the retroperitoneum and extremities, gastrointestinal liposarcomas are exceedingly rare with an incidence from 0.1% to 5.8% at autopsy.

Case Presentation: This case report details a 73-year-old female patient who presented with a foreign body sensation, dysphagia, and an inability to sing, symptoms that had progressively worsened over the past year, culminating in an episode of airway obstruction. An initial investigation with a fiber-endoscopy yielded normal results, but a barium swallow suggested a possible Zenker's diverticulum. Subsequent gastroscopy revealed an obstructing subendothelial lesion in the proximal esophagus, leading to a differential diagnosis that included gastrointestinal stromal tumor (GIST), lipoma, and leiomyoma. Surgical intervention via cervicotomy and local excision in toto was performed, and histological analysis identified an ulcerated

mesenchymal neoplasia measuring 3.5 cm. Despite inconclusive initial molecular analyses, further testing revealed MDM2 FISH gene amplification and mitotic activity, indicating malignant potential. Ultimately, genome-wide DNA methylation analysis confirmed the diagnosis of dedifferentiated liposarcoma.

Conclusion: Our multidisciplinary tumorboard decided on a low risk scheme follow up with either gastroscopies or CT scans every six months in accordance with the S3 guidelines for adult soft tissue sarcomas, as the mass was graded a histopathological G1. Exact identification and appropriate management are crucial for improving patient outcomes, as exemplified by the timely surgical intervention and subsequent monitoring in this case.

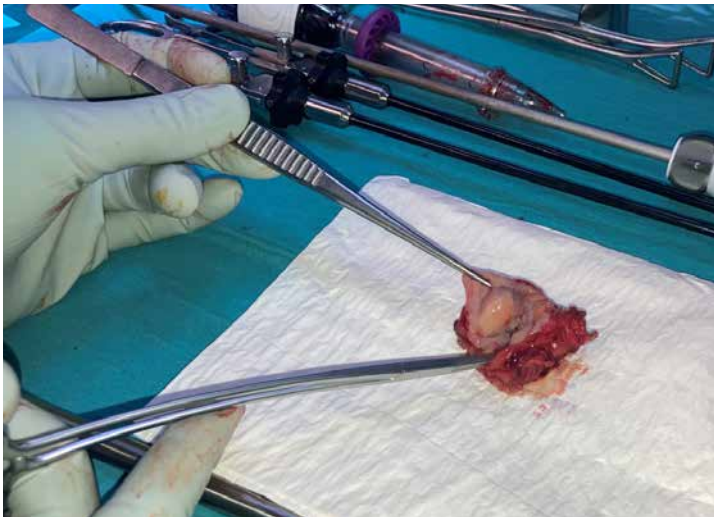

Figure 1. excised specimen

Figure 2. CT scan

Prolonged Antibiotic Prophylaxis Do Not Impact Perioperative Outcomes After Pancreatoduodenectomy in Patients With Biliary Stent: A Propensity Score and Mediation Analysis

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[1]General, Visceral, Endocrine and Transplant Surgery, Cantonal Hospital of St.Gallen, St.Gallen; [2]Surgery, Clarunis University Centre for Gastrointestinal and Hepatopancreatobiliary Diseases, Basel; [3]Swiss HPB & Transplant Center Zurich, University Hospital Zurich, USZ, Zurich

Background: Whether the use of prolonged antibiotic prophylaxis (PAP) enhances the outcomes of pancreaticoduodenectomy (PD) in patients with preoperative biliary drainage (PBD) remains a controversial subject.

Aims: This study aimed to determine whether the addition of PAP reduced infection-related complications following PD.

Methods: This study assessed patients who underwent PD with PBD at two centres. Patients in group 1 received a single dose of antibiotic prophylaxis (SDAP) prior to PD, while patients in group 2 received an additional dose of PAP. Postoperative complication rates were compared using bipartite propensity score matching and weighting (PSM), Cox regression and mediation analysis.

Results: Of the total participants, 57.5% (n=119) were female with a median age of 67.5 (IQR 11.6) years. Multivariable analysis rates showed that PAP did not result in a reduction of superficial SSI (OR 1.23, 95% CI: 0.77-1.96; P=0.393). There were no significant differences found between PAP and SDAP for deep incision SSI (4.3% vs. 4.3%; P=0.861), deep organ SSI (10.1% vs. 15.2%; P=0.358), and pneumonia (15.9% vs. 9.4%; P=0.163). The study found that PAP was linked to higher 30-day postoperative mortality (OR 2.42, 95% CI: 2.36-2.47; P<0.001) and 90-day readmission (OR 2.02, 95% CI: 1.19-3.44; P=0.009). Both groups had similar rates of POPF grade B (11.6 vs. 12.3%; P=0.096), POPF grade C (10.1 vs. 6.5%; P=0.096), PPH grade B (1.4 vs. 4.3%; P=0. 332), PPH grade C (10.1 vs. 7.2%; P=0.332), DGE (39 vs. 36.2%; P=0.438), bile leak (7.2 vs. 2.9%; P=0.158) and gastric anastomotic leak (2.9 vs. 0.7%; P=0.368). The duration of surgery, age, immunosuppression, and history of cholangitis did not significantly affect the relationship between PAP and SSI (P > 0.05).

Conclusion: Our analysis based on PSM and mediation suggests that SDAP may effectively prevent postoperative infectious complications in patients with PBD undergoing PD. As a consequence, we do not recommend PAP therapy as a routine for such patients.

Robotic-Assisted Thoracoscopic Surgery for Ectopic Mediastinal Thyroid: A Rare Presentation With Progressive Enlargement

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Department of Thoracic Surgery, University Hospital Zurich, USZ, Zurich

Background: Ectopic thyroid tissue is an uncommon developmental anomaly resulting from aberrant migration of thyroid precursor cells during embryogenesis. While ectopic thyroid tissue is most frequently located in the lingual region, mediastinal ectopic thyroid is a rare entity (<1%). Management includes distinguishing ectopic thyroid from other mediastinal masses, especially in cases of progressive enlargement, which raises concerns for malignancy or compressive symptoms.

Case Presentation: A 58-year-old female presented with a progressively enlarging mediastinal mass detected during follow-up imaging. The mass was initially identified four years prior, measuring approximately 3 cm, and diagnosed as benign (Thy 2) through endobronchial ultrasound-guided biopsy. The patient remained asymptomatic with no evidence of thyroid dysfunction. However, recent imaging revealed the lesion had increased to 4.8 cm and was now causing subtle compression of adjacent structures. Thoracic magnetic resonance imaging confirmed a well-circumscribed mass with no signs of infiltration to surrounding structures, and localized anterolateral to the trachea on the right side of the superior mediastinum (Fig.1). Given the increase in size and potential risk of developing malignancy and relevant tracheal compression, the patient was referred for surgical management. A robotic-assisted thoracoscopic surgery (RATS) was performed to achieve complete resection (Fig.2). The procedure was uneventful, and the patient experienced a smooth postoperative recovery. The patient was discharged on the second postoperative day. Histopathological analysis confirmed the mass as ectopic thyroid tissue without evidence of malignancy.

Conclusion: Progressive enlargement of ectopic thyroid tissue warrants surgical evaluation to exclude malignancy or manage compression-related complications. Cross-sectional imaging, combined with prior biopsy results, is valuable for monitoring and guiding management decisions. RATS is a minimally invasive and effective option for resecting mediastinal lesions, ensuring rapid recovery and precise outcomes. In conclusion, awareness of this rare entity can facilitate timely diagnosis and appropriate management, avoiding delays or overly aggressive interventions.

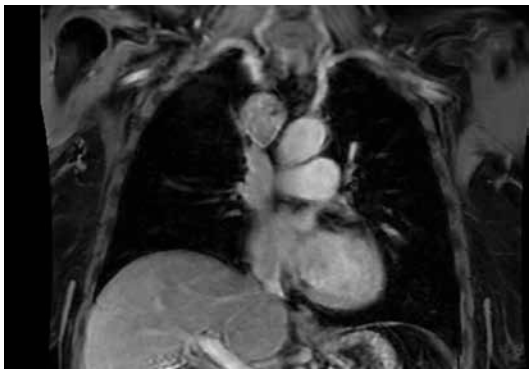

Figure 1

Figure 2

Spontaneous Thrombosis of the Pampiniform Plexus: A Report of Two Cases

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[1]Surgery, Cantonal Hospital Fribourg, HFR, Fribourg; [2]Radiology, Cantonal Hospital Fribourg, HFR, Fribourg; [3]Faculty of Science and Medicine, University of Fribourg, UNIFR, Fribourg

Background: Thrombosis of the pampiniform plexus is an extremely rare condition, with fewer than 50 documented cases since its first description by McGavin in 1935. It commonly manifests as acute scrotal pain and swelling, mimicking urological emergencies like testicular torsion or epididymo-orchitis. The left side is more frequently affected due to anatomical factors. Risk factors include hypercoagulable states, physical exertion, trauma, surgeries, and infections such as COVID-19, although some cases arise spontaneously without identifiable causes. There are no standardized treatment guidelines; however, anticoagulation therapy is widely used, while surgery is reserved for complications or diagnostic uncertainties.
Aims: To describe two cases of pampiniform plexus thrombosis, highlighting their presentation, treatment, and outcomes to enhance awareness in emergency care and contribute to existing literature.
Methods: Case 1: A 39-year-old healthy male presented with acute, progressive right testicular pain radiating to the pubic region. Examination revealed painful testicular palpation and a mass in the right spermatic cord without signs of infection. He had undergone a vasectomy six months earlier. Case 2: A 38-year-old healthy male experienced sudden left testicular pain following 12 days of intermittent low-grade fever. Examination revealed palpable tumefaction of the left pampiniform plexus. Neither patient had a history of coagulation disorders, familial thrombosis, or prior thrombotic events. Coagulation studies were normal in both cases. Both patients received rivaroxaban (20mg daily for six weeks), analgesics, and scrotal support.
Results: Both patients showed significant clinical improvement. Follow-up Doppler ultrasonography confirmed thrombus resolution in three weeks for Case 1 and four weeks for Case 2.
Conclusion: These cases emphasize the importance of considering pampiniform plexus thrombosis in patients with atypical acute scrotal pain. Conservative anticoagulant therapy proved effective for symptom resolution and thrombus clearance, supporting its use in uncomplicated cases. This report contributes valuable insights into diagnosing and managing this rare condition.

Crucial Multidisciplinary Management of Hemorrhagic Shock Due to Arteriodigestive Fistula

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Background: Arteriodigestive fistulas represent an uncommon but life-threatening complication of cancer treatment, often resulting from radiation-induced tissue damage, chronic inflammation, or iatrogenic trauma. Such conditions require timely recognition and a comprehensive, multidisciplinary approach for optimal management. This report describes a case of hemorrhagic shock due to an iliac-sigmoid fistula in a patient with a complex oncological and comorbid profile, highlighting the diagnostic challenges and therapeutic strategies involved in prompt recognition and management to prevent fatal outcomes.
Case Presentation: We herein report the case of a 77-year-old female with a history of FIGO stage IIIC2 serous endometrial adenocarcinoma treated with neoadjuvant chemotherapy, hysterectomy, and adjuvant radiotherapy, who presented with acute hematochezia and hemodynamic instability. Laboratory investigations revealed severe anemia (hemoglobin 70 g/L), while CT imaging identified a pseudoaneurysm of the left external iliac artery adjacent to the sigmoid colon, with findings consistent with an arteriodigestive fistula and associated retroperitoneal collection. Management involved an initial endovascular stenting of the left external iliac artery to control active bleeding, followed by a Hartmann's sigmoidectomy to address the fistula. Postoperative care included CT-guided drainage of the retroperitoneal abscess, microbiologically confirmed to contain multidrug-resistant Proteus vulgaris and Streptococcus anginosus. Antibiotic therapy was initiated with meropenem, followed by a six-week course of oral co-amoxicillin. Nutritional optimization was achieved with parenteral nutrition and progressively transitioned to oral intake supplemented by high-protein nutritional formulas. Follow-up imaging showed resolution of the collection and absence of active bleeding, enabling discharge with outpatient multidisciplinary follow-up.
Conclusion: This case underscores the importance of a multidisciplinary approach to managing complex post-radiotherapy complications such as arteriodigestive fistulas. Early diagnosis, timely surgical and radiological interventions, and tailored infection control were essential in achieving a favorable outcome. This case highlights the critical need for coordinated multidisciplinary care in patients with cancer-related complications to optimize recovery and prevent mortality.

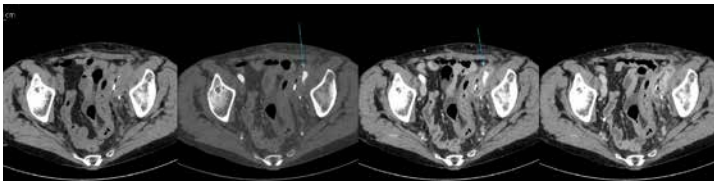

Figure 1. Abdominal CT-scan showing the iliac-sigmoid fistula

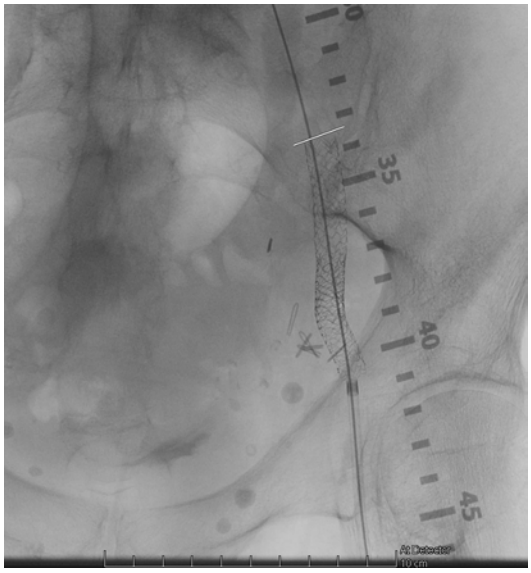

Figure 2. Endovascular covered stent placement in the left external iliac artery

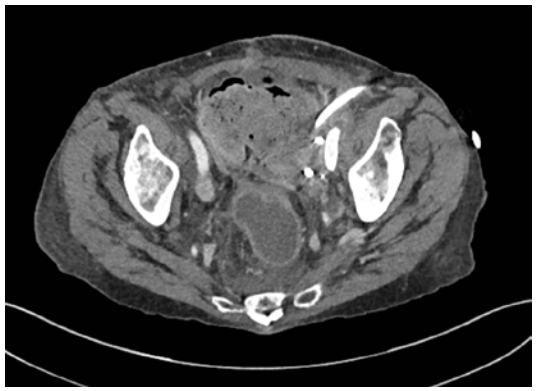

Figure 3. Follow up Abdominal CT-scan showing absence of fistula and decreased retroperitoneal collection

Internal Pudendal Artery Injury Following Pudendal Block: A Case Report

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Background: Literature shows significant advantages of pudendal nerve block (PNB) in reducing pain in coloproctology. Complications related to PNB include intravenous injection of the anesthetic, urinary retention, hematoma, and abscess formation. The pudendal nerve arises from the spinal rami S2-S4, exits the pelvis, and reenters the perineum to course through the ischiorectal fossa and Alcock's canal. Here, the internal pudendal artery and vein course near the pudendal nerve. In case a vascular injury is suspected, a computed tomography (CT) scan should be performed, and if active bleeding is found, an interventional radiology procedure is necessary.
Case Presentation: We report a case of internal pudendal artery injury following a pudendal block for posterior colporrhaphy in a 57-year-old woman with Hemophilia C. We performed a pudendal nerve block with an injection of 20 milliliters of ropivacaine 5 mg/ml after negative aspiration. On the second postoperative day, the patient reported sudden pain in the left buttock, associated with a painful hardening of the area (figure1). An abdomen-to-pelvis CT scan revealed a massive hematoma in the Alcock canal with contrast extravasation from the left internal pudendal artery (figure2). Angiography with transcatheter arterial embolization was performed (figure3). No blood transfusion or surgical evacuation was needed. The patient received three units of fresh frozen plasma and tranexamic acid 1.5 g intravenously every 8 hours for ten days, as per hematologists' recommendations. The patient was discharged eleven days after surgery, and the hematoma was followed up at an outpatient clinic with spontaneous resolution.
Conclusion: Pudendal artery injury is a rare but possible complication due to the close anatomical proximity of the artery and nerve. This must be considered in cases of perineal or gluteal hematoma after PNB. Quick diagnosis with CT scan is essential, and in some cases, embolization is necessary.

Figure 1

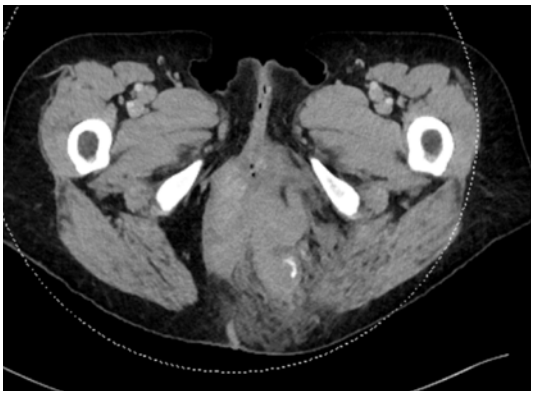

Figure 2

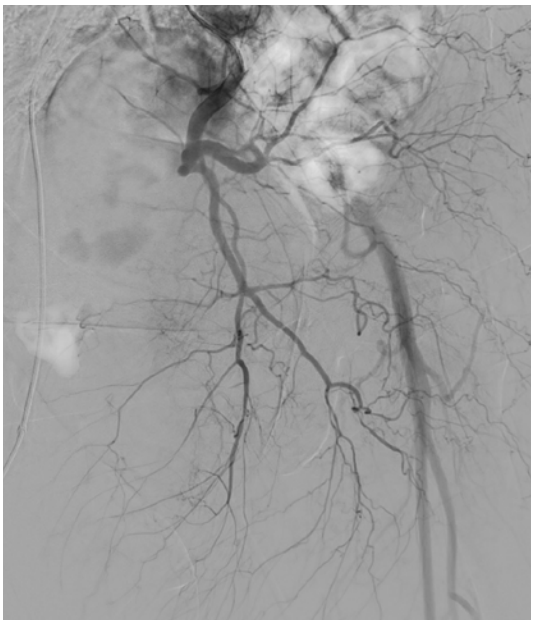

Figure 3

Terminal Ileitis With Perforation Due to Enterotoxigenic Escherichia Coli: Diagnostic Challenges and Surgical Management

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Background: Terminal ileitis can pose significant diagnostic challenges due to its association with various etiologies, including Crohn's disease, infectious diseases, ischemia, and NSAID-induced conditions. Accurate identification of the underlying cause is essential for appropriate management.
Case Presentation: A 32-year-old female with no previous symptoms or history of inflammatory bowel disease presented with acute lower abdominal pain and signs of systemic infection. A detailed travel anamnesis revealed several months spent in Africa. Emergency sonography and CT imaging demonstrated significant thickening of the terminal ileum and ascites (Fig. 1), indicative of potential bowel perforation, thereby necessitating immediate surgical intervention over diagnostic colonoscopy. During surgery, four-quadrant peritonitis and two ileal perforations approximately 10-15 cm proximal to the ileocecal valve were discovered. These findings led to an ileocecal resection with end-to-end ileoascendostomy. Histopathological analysis revealed deep ulcerations and transmural inflammation, without granulomas, consistent with an acute infectious process. Laboratory tests confirmed the presence of Enterotoxigenic Escherichia coli (ETEC), establishing it as the causative agent for the perforations. The patient's recovery was complicated by ileus and aspiration pneumonia, yet effectively managed with antibiotics and supportive care. Subsequent colonoscopy and follow-up evaluations confirmed the absence of chronic IBD.
Conclusion: This case highlights the diagnostic complexities in acute gastrointestinal presentations, particularly in differentiating between chronic inflammatory diseases and acute infectious causes. The presence of ETEC, identified through stool culture, underlines the importance of considering travel history and less common pathogens in the differential diagnosis. Comprehensive intraoperative assessments and detailed histological studies are pivotal in guiding effective treatment strategies, emphasizing the necessity for a broad differential diagnosis in acute cases of terminal ileitis.

Figure 1. Computer tomography abdomen – Terminal ileitis (coronal view)

Metastatic Intussusception: A rare Complication of Myxofibrosarcoma

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Background: Myxofibrosarcoma is a common subtype of soft tissue sarcoma that occurs mostly in elderly people and is characterized by its invasiveness as well as high recurrence rate. Its propensity for both distant metastasis and local recurrence complicates the treatment plan and outcomes, presenting significant challenges in patient management. Small bowel metastases are of unusual location, we describe a possible manifestation.
Case Presentation: Our case report involves an 86-year-old male diagnosed with high-grade myxofibrosarcoma of the right thigh. After undergoing surgical resection followed by adjuvant radiation therapy, the patient developed pulmonary and muscle metastases. Subsequently, the patient presented clinically with small bowel obstruction. A computed tomography (CT) scan of the abdomen confirmed intussusception (Figure 1). The patient was taken to the operating room, where reduction and resection of the affected small bowel were performed (Figure 2,3). Histopathological analysis confirmed metastasis of the known myxofibrosarcoma.
Conclusion: This case highlights the aggressive nature of high-grade myxofibrosarcoma (MFS) and its potential to metastasize to unusual sites, complicating diagnosis and management. Uncommon presentations, such as intussusception, should raise suspicion and prompt a multidisciplinary approach with close monitoring for optimal patient care. The occurrence of intussusception due to metastatic MFS in this patient is rare, underscoring the importance of considering unusual complications when managing high-grade MFS. This case also emphasizes the critical role of advanced imaging in guiding diagnosis and treatment, ultimately improving patient outcomes.

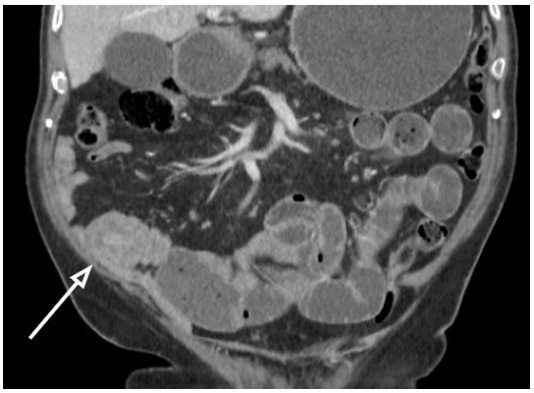

Figure 1. Abdominal CT revealing small bowel intussusception (arrow). The "target Abdominal CT revealing small bowel intussusception (arrow). The "target sign" is seen

Figure 2. Small bowel intussusception

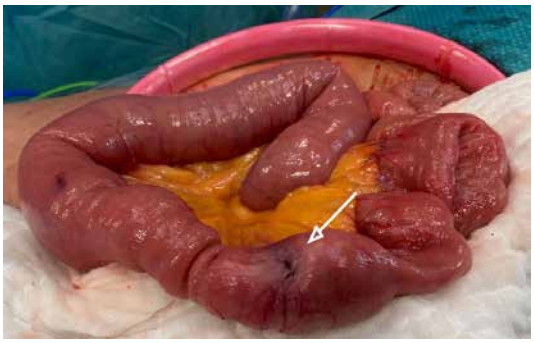

Figure 3. After reduction of the intussuscepted segment, palpation of an intraluminal non-mobile lesion, obstructing the lumen of the small intestine (arrow)

Gallbladder Duplication: A Case Report

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Hirslanden Clinic Beau-Site, Bern

Background:

- Duplicated gallbladder is a congenital unusual malformation of the biliary system, identified by the presence of two seperate gallbladders.
- The existence of duplicated gallbladder requires particular attention, as it is related to an increased risk for complications, including injuries to the biliary and arterial structures.
- Preoperative imaging is of utmost importance when dublicated gallblader is suspected.
- Laparoscopic cholecystectomy is the surgical treatment of choice if the anatomy of the biliary tree has been clarified preoperatively.

Case Presentation: We report the rare case of a double gallbladder type 1 according to Harlaftis in a 67-year-old male patient admitted with wall thickening of the gallenbladder and cholelithiasis, detected by endosonography during the work-up of recurrent pancreatits and suspected IPMN. Preoperative imaging with MRI Cholangiographie detected gallbladder duplication with cholelithiasis. The patient underwent laparoscopic cholecystectomy which revealed a double gallbladder with a single cystic duct and two cystic arteries, all divided between clips. Cholecystectomy was completed laparoscopically. Huge gallstones were revealed, but only in one of the two gallbladders. By pathology, a V-septated duplicated gallbladder according to Harlaftis type 1 with chronic cholecystitis was confirmed.

Conclusion: Duplication of the gallbladder is a rare congenital anomaly of the biliary system with the incidence of 1 in 3800, which requires special attention and emphasis to avoid surgical complications. The classification of Harlaftis dicriminates the types 1 to 4. Concomittant anomalies of the arterial blood supply are common. Laparoscopic cholecystectomy remains the preferred method of treatment after clarifying the biliary anatomy by endosonography and MRCP or ERCP.

Clinical Outcomes of Kidney Transplant in Obese Recipients: A Retrospective Study

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[1]Visceral Surgery, Lausanne University Hospital, CHUV, Lausanne; [2]Vascular Surgery, Lausanne University Hospital, CHUV, Lausanne; [3]Transplantation Center, Lausanne University Hospital, CHUV, Lausanne

Background: The prevalence of obesity worldwide has steadily increased in recent decades. The impact of recipient obesity on kidney transplant outcomes remains unclear.
Aims: The study aims were to determine the effect of recipient obesity on surgical and graft outcomes.
Methods: A single-institution retrospective study was performed on adult kidney transplant recipients from 01/2000 to 12/2023. Recipients were classified based on body mass index (BMI) at the time of transplantation: obese (BMI ≥ 30 kg/m^2) and nonobese recipients (BMI < 30 kg/m^2). The analysis included surgical complications, delayed graft function (DGF), and 1-year estimated glomerular filtration rate (eGFR).
Results: Overall, 941 recipients were studied, including 153 (16.3%) with BMI ≥ 30 kg/m^2. Mean age was 52 years, mean BMI was 24.9 kg/m^2, 627 (66.6%) were men, and 362 (38.5%) received a kidney from a living donor. Obese patients had comparable postoperative major complication (Clavien > 3a) rates (26.6 vs 33.3%, p=0.221) and mean comprehensive complication index (21.9 vs 20.2, p=0.092). DGF (20.0% vs 14.0%, p=0.082) and eGFR (52 vs 51 ml/min/1,73m^2, p=0.541) were not statistically different in obese and nonobese recipients.
Conclusion: Postoperative surgical outcomes and 1-year graft function were comparable between obese and nonobese recipients. Consequently, kidney transplantation should be considered in obese recipients.

Scirrhous Hepatocellular Carcinoma: Case Report of a Rare Subtype of Hepatocellular Carcinoma, A Challenge in Diagnosis and Treatment

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Background: About 90% of primary liver malignancies are Hepatocellular Carcinoma (HCC). Rare subtypes of HCC represent 20-30% of all HCCs. Scirrhous HCC is a rare subtype with a prevalence of 0.2 to 4.6% mainly arising in hepatitis- or cirrhosis-afflicted livers, recently recognized as a subtype of HCC in the WHO classification. It is characterized by cords of cancerous cells in a rich fibrous stroma often misdiagnosed as cholangiocarcinoma, metastasis or fibrolamellar HCC. Due to scarcity of publications there is conflictual data, mainly provided by Asian centers (45% of articles from Japanese Centers). However a recent systematic review and pooled data analysis reports a poorer overall survival and a worse prognosis.
Aims: To contribute to the literature by documenting a European case of a very rare subtype of HCC with conflictual data mainly provided by Asian centers.
Methods: We report a case of a patient with a scirrhous HCC developed in a non-cirrhotic liver but with a medical history of eradicated HCV infection and HIV infection under treatment.
Results: A 63-year-old female patient mainly known for a treated HIV infection (undetectable viremia), successfully eradicated HCV infection and diffuse interstitial pneumopathy due to tobacco smoking. A follow-up CT-scan for a solitary pulmonary nodule revealed an incidental finding of a unique liver lesion. Proper abdominal CT-scan and MRI showed a 4 cm segment IVB lesion with radiological features of cholangiocarcinoma (Figure 1). We performed a percutaneous biopsy of the lesion that revealed scirrhous-subtype HCC. We pursued with a transjugular liver biopsy with the gradient measurement (3 mmHg). The histological result was within normal limits. The patient had a segment IV resection by modified Makuuchi laparotomy.
Conclusion: An increase in scientific reports from different parts of the world regarding rare sybtypes of HCC could lead to a more comprehensive analysis of these rare malignancies often asociated with a worse prognosis.

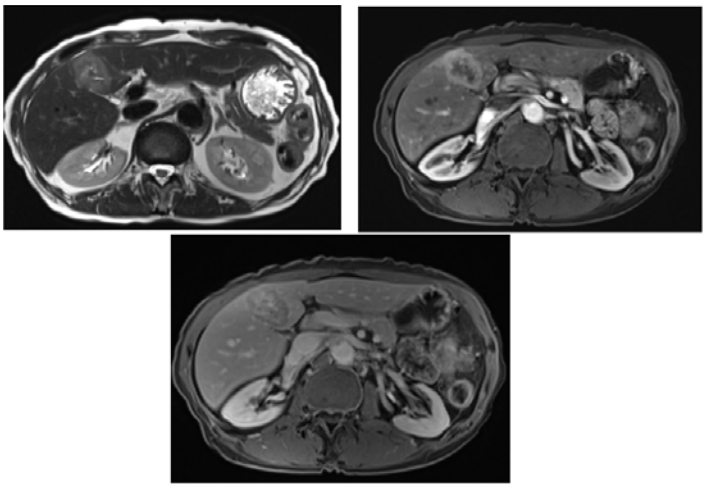

Figure 1

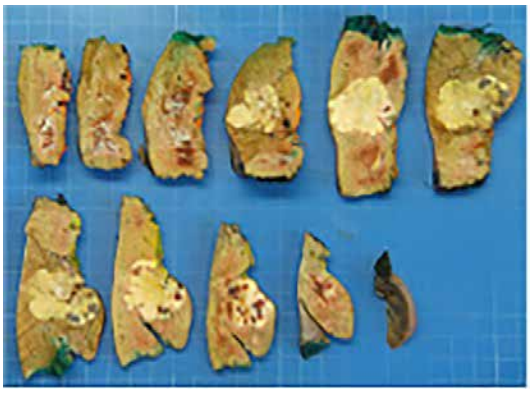

Figure 2

Atraumatic Splenic Rupture Due to Chronic Pancreatitis and Pancreatic Pseudocysts: A Rare Case of Conservative Management

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[1]Department of Surgery, Cantonal Hospital Fribourg, HFR, Fribourg; [2]Faculty of Science and Medicine, University of Fribourg, UNIFR, Fribourg

Background: Atraumatic splenic rupture (ASR), referring to splenic rupture occurring without any history of trauma, is a rare and potentially life-threatening condition that typically requires surgical intervention. It is commonly associated with infections, malignancies, or anticoagulant use, though rarer causes, such as pancreatic cysts or pancreatitis, have also been documented. This case describes ASR likely secondary to chronic pancreatitis and pancreatic pseudocysts (PP). This report highlights ASR as a possible complication of chronic pancreatitis and PP, emphasizing the diagnostic challenges of ASR and its successful conservative management.
Case Presentation: A 56-year-old man with chronic pancreatitis related to suspected intraductal papillary mucinous neoplasm (IPMN) and caudal pancreatic pseudocysts presented with acute abdominal pain, fever, and chills. Lab tests revealed elevated CRP and hemoglobin levels at 124 g/L. CT imaging showed mild splenomegaly with a hypodense lesion suggestive of splenic rupture, but no active bleeding, and a moderate amount of free fluid in the perisplenic region. Signs of chronic pancreatitis, including caudal PP, were also noted. The patient was hemodynamically stable and was managed conservatively with intravenous antibiotics and close monitoring. Serial ultrasounds showed no progression of free fluid. He was discharged in stable condition, and follow-up CT two months later confirmed regression of the hematoma. This case illustrates ASR as a rare complication of chronic pancreatitis and PP, potentially caused by inflammatory or enzymatic damage to the spleen. While splenectomy is currently the standard of care for ASR, conservative management is a viable option in stable patients without active bleeding.
Conclusion: ASR remains a diagnostic and therapeutic challenge. Early diagnosis and individualized care are essential to improving outcomes. This case underscores ASR as a rare yet potential complication of pancreatitis and PP. Further research is needed to clarify the mechanisms behind this association.

Figure 1. CT ASR n°1

Figure 2. CT ASR n°2

Retromuscular Prophylactic Mesh Reinforcement After Elective and Emergency Laparotomy: A Systematic Review and Meta-Analysis

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Background: Incisional hernias, occurring in 5–30% of laparotomies, cause substantial morbidity and healthcare costs. Current guidelines recommend prophylactic mesh reinforcement (PMR) in laparotomy closures for high-risk patients; no clear recommendations exist for emergency surgery. Mesh placement in the retromuscular plane is recognized as the most effective technique for preventing hernias and minimizing complications, but the evidence supporting its use, particularly in emergency laparotomies, remains inconsistent.
Aims: This systematic review and meta-analysis seeks to assess the effectiveness and safety of retromuscular PMR compared to primary suture closure in reducing incisional hernia rates following laparotomy. Subgroup analyses examine differences between elective and emergency settings.
Methods: This systematic review and meta-analysis was conducted according to the PRISMA guidelines and registered in PROSPERO. Relevant studies were identified through searches in Medline, Embase, and the Cochrane Library (Table 1). Utilizing the PICO framework, studies on elective or emergency laparotomies comparing retromuscular PMR with primary suture closure were included. The primary outcome measured was the incidence of incisional hernias. Data were pooled using the Mantel-Haenszel method (M-H) with a fixed-effects model and presented as odds ratios (ORs) with 95% confidence intervals (CIs). Meta-analysis results at 6, 12, and 24 months were shown in Figures 1-3.
Results: The analysis included six studies, with only one evaluating patients undergoing emergency laparotomy. Meta-analysis showed significant reductions in incisional hernia rates with retromuscular PMR compared to primary suture closure at 6 months (OR = 0.52, 95% CI: 0.27-1-01), 12 months (OR = 0.62, 95% CI: 0.4-0.95), and 24 months (OR = 0.49, 95% CI: 0.35-0.68).
Conclusion: Retromuscular PMR significantly reduces incisional hernia rates and improves surgical outcomes following laparotomy, particularly in elective settings. Further research is necessary to clarify its role in emergency laparotomies.

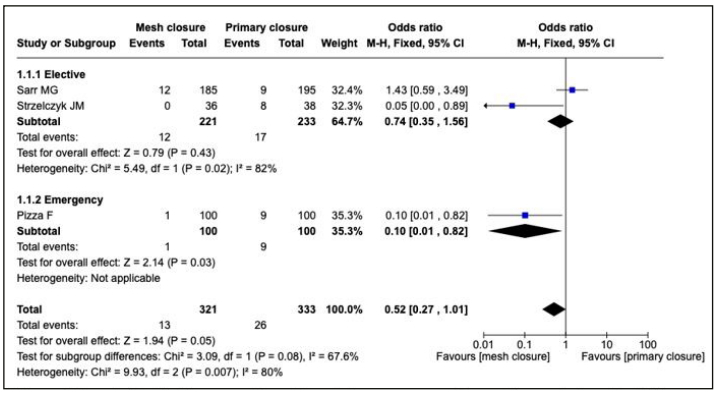

Figure 1. Forest plots for the comparison of mesh closure versus primary closure at 6 month follow-up with sub-groups analysis comparing elective with emergency laparotomies

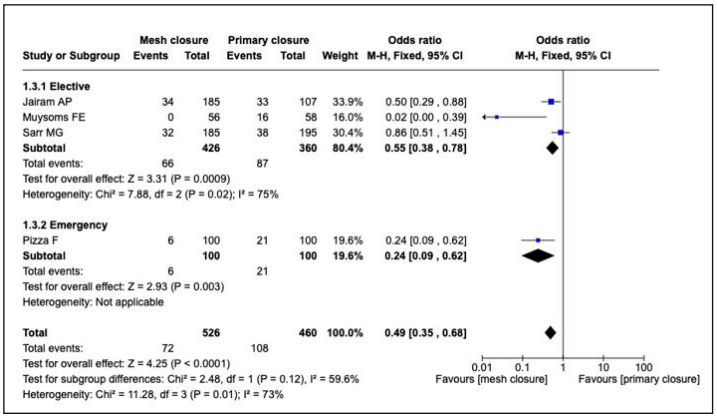

Figure 2. Forest plots for the comparison of mesh closure versus primary closure at 12 month follow-up with sub-groups analysis comparing elective with emergency laparotomies

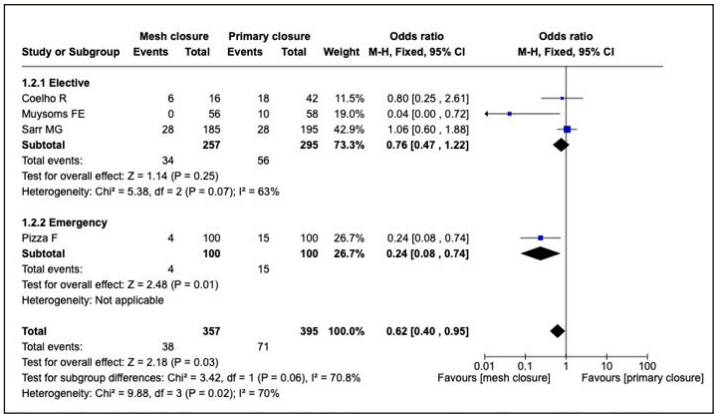

Figure 3. Forest plots for the comparison of mesh closure versus primary closure at 24 month follow-up with sub-groups analysis comparing elective with emergency laparotomies

Beyond the Scope: A Rare Case of Retroperitoneal Perforation Following Colonoscopy

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[1]Visceral Surgery, Groupement Hospitalier de l'Ouest Lémanique, GHOL Nyon, Nyon; [2]Gastroenterology Department, Groupement Hospitalier de l'Ouest Lémanique, GHOL Nyon, Nyon

Background: Iatrogenic colonic perforation occurs in up to 0.03 to 0.8% of colonoscopy procedures, with a mortality rate as high as 25%. The incidence is increased in therapeutic colonoscopies compared to diagnostic ones. The cecum is the second most common site of perforation. Pneumoperitoneum often signals perforation and requires urgent surgical intervention in case of peritonitis. Pneumoscrotum is a rare complication, and suggest retroperitoneal perforation. Pneumoscrotum generally has a benign outcome and is managed with observation and antibiotics. This case highlights the importance of prompt recognition and vigilant post-procedural monitoring.
Aims: A 77 y/o male patient underwent a screening colonoscopy, during which multiples cold snare polypectomies were performed. Notably, the resection of one 5 mm polyp (Paris 0-IIa / NICE I) of the ascending colon was complicated by a submucosal breach, without any hemorrhagic complications or post-procedural subcutaneous emphysema. The patient presented an isolated episode of fever of 38.5°C, without any others complains. Two day later, after discharge, he complained of a swelling of the genitals. Physical examination showed subcutaneous emphysema at the prepubic, scrotal, and penile levels.
Methods: Blood samples revealed mild leucocytosis (8.1 G/l) and an elevated C-reactive protein (97.6 mg/l). A subsequent abdominal CT scan showed a large retroperitoneum, extending from the mediastinum to the genital area, with an important pneumoscrotum and pneumopenis. Medical treatment was decided with IV antibiotic therapy (Piperacillin/Tazobactam 4.5 g three times daily).
Results: The patient was discharged on day 4. Antibiotic therapy was switched to Ciprofloxacin 500 mg twice daily and Metronidazole 500 mg three times daily during 7 days. Outpatient follow-up was uneventful.
Conclusion: Although rare, retroperitoneal perforation during operative colonoscopy may presents as a pneumoscrotum and pneumopenis. In stable patients, conservative treatment may be an appropriate strategy.

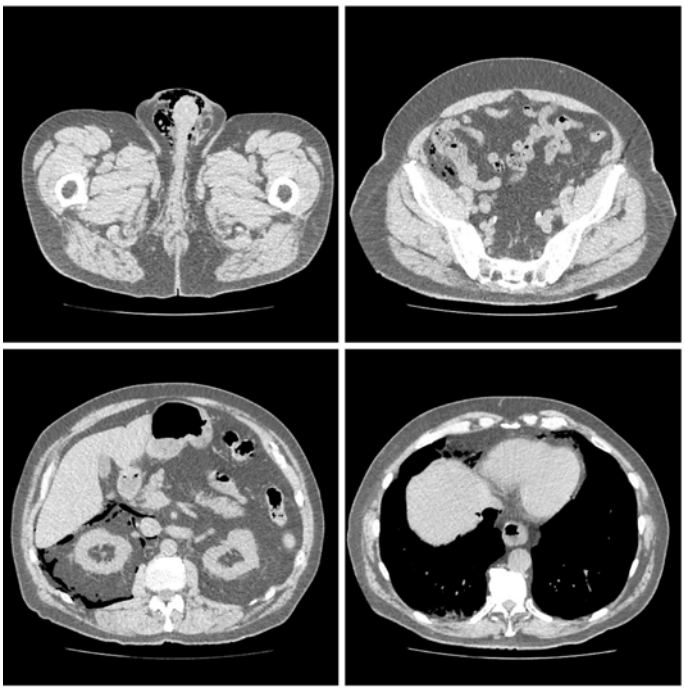

Figure 1. CT scan revealing a retroperitoneum extending from the anterior mediastinum to the scrotum

Figure 2. Colonoscopy showing mucosal tears in left image and transverse colon in right image

A Rare Presentation of Giant Cell Arteritis: Small Bowel Stenosis Leading to Intestinal Obstruction

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[1]Hospital Riviera-Chablais, HRC, Rennaz; [2]Lausanne University Hospital, CHUV, Lausanne

Background: Giant cell arteritis (GCA) primarily affects medium- and large-sized arteries, most commonly the temporal arteries, but also the carotid arteries, vertebral arteries, and the aorta. However, involvement of the gastrointestinal vasculature is rare, making diagnosis particularly challenging.
Case Presentation: We present the case of a 76-year-old woman with a history of atrial fibrillation, COPD, and Takotsubo syndrome who was hospitalized several months prior, with symptoms raising suspicion for GCA, however, diagnostic evaluations at that time were inconclusive. On this admission, she presented with worsening chronic abdominal pain over two weeks, associated with vomiting, and significant unintentional weight loss. She was hemodynamically stable and afebrile. Physical examination revealed epigastric tenderness without guarding. Laboratory findings showed mild leukocytosis and elevated C-reactive protein. Abdominal CT imaging indicated mechanical small bowel ileus without worrisome features. Gradual refeeding was initiated to optimize her nutritional status before surgery. On day 12, she underwent surgical exploration during which three areas of macroscopic stenosis were identified, leading to segmental resection of the distal jejunum and proximal ileum followed by anastomosis. Histopathological analysis identified few giant cells within a mesenteric artery wall, supporting a potential diagnosis of vasculitis. Postoperative recovery was successful with improvement of abdominal pain and early refeeding, and the patient was discharged on day 20. Two months later, a PET-CT showed multifocal large-vessel vasculitis suggestive of GCA, associated with polymyalgia rheumatica. Corticosteroid therapy was promptly initiated.
Conclusion: Extra-temporal manifestations of GCA, such as gastrointestinal vessel involvement, are rare and challenging to diagnose. Awareness of these atypical presentations is crucial for early systemic treatment and improved patient outcomes.

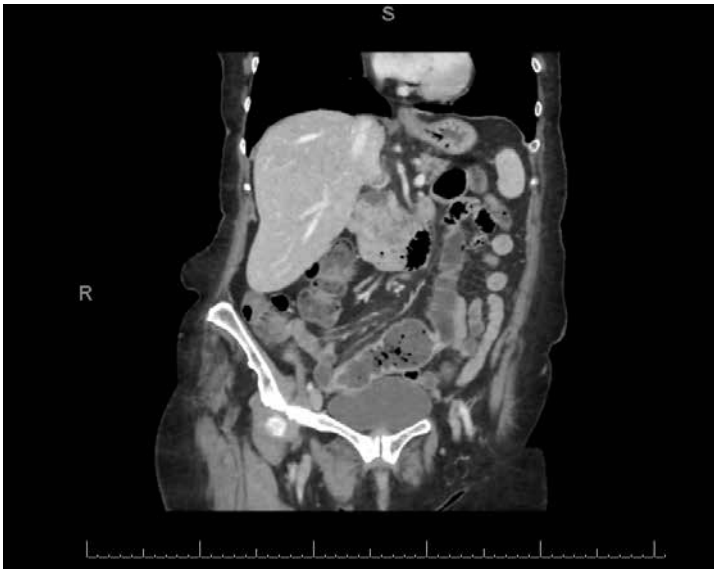

Figure 1. Inital CT scan

Extended Storage of Rat Lungs at 4°C and 10°C Exhibits Differential Effects on the Vascular Reactivity of Pulmonary Arteries and Veins

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Background: Cold storage at 4°C has been the gold standard for organ preservation, but recent studies suggest that storage at 10°C may offer superior protection by reducing cold-induced damage. However, the effects of these temperatures on pulmonary vascular reactivity are still underexplored.
Aims: To evaluate the impact of lung preservation at 4°C vs. 10°C on pulmonary vessel vascu-

lar reactivity in a rat model.
Methods: Lungs from male Sprague-Dawley rats (n=6-7) were stored at 4°C or 10°C in Perfadex® for 17 hours. Segments (n=2/vessel, 2 mm) of pulmonary artery (PA) and vein (PV) were mounted in organ chambers with oxygenated Krebs-Ringer solution. Isometric tension was measured using a strain gauge connected to an amplifier. Maximal tension to potassium (100 mM) was recorded, followed by concentration-response curves for PA (phenylephrine, U46619) and PV (U46619, serotonin). Endothelium-dependent (acetylcholine) and independent (diethylamine NONOate) relaxation responses were recorded in PA and PV precontracted with U46619. Data were compared between storage groups using analysis of variance, with control vessels (n=3) for control purposes. Statistical significance was set at 0.05.
Results: Prolonged storage at 4°C significantly reduced PA contractility to phenylephrine, whereas PA from the 10°C group showed better preservation of contractility. Veins from both groups showed similar reductions in contraction to all agents. Endothelium-dependent relaxation of PA was similar across all groups. Endothelium-independent relaxation of PV was higher in the 4°C group compared to controls and 10°C group.
Conclusion: Both 4°C and 10°C storage reduce pulmonary vessel contractility, with better preservation at 10°C for PA. Neither temperature affects endothelium-dependent relaxation. Further studies are needed to explore the underlying mechanisms and assess pulmonary vasoreactivity after transplantation following cold storage at 4°C or 10°C.

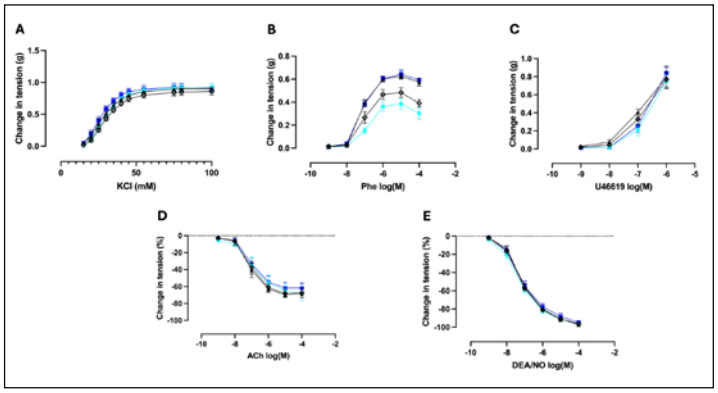

Figure 1. Response curves of rat pulmonary arteries to different vasoconstrictors (KCl, Phenylephrine, U46619), endothelium-dependent and -independent vasodilators (Acetylcholine, DEA/NO)

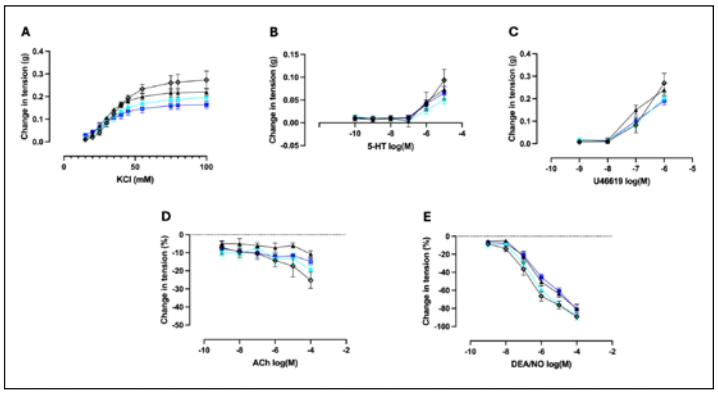

Figure 2. Response curves of rat pulmonary veins to different vasoconstrictors (KCl, 5-HT, U46619), endothelium-dependent and -independent vasodilators (Acetylcholine, DEA/NO)

Seeing Beyond the Biopsy: Diagnostic Challenges in a Colonic Malt Lymphoma

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Background: Non-Hodgkin lymphoma (NHL) exhibits extranodal involvement in about one-third of cases, with the gastrointestinal (GI) tract being a common site 1–5. While mucosa-associated lymphoid tissue (MALT) lymphoma most frequently arises in the stomach 6–11, colonic MALT lymphoma accounts for only about 2.5% of all MALT lymphomas 8,12,13. The pathogenesis in the colon is not well-defined, and no clear infectious trigger, similar to Helicobacter pylori in gastric MALT lymphoma, has been identified 1,7.
Case Presentation: We present the case of a 66-year-old female patient with a cecal mass detected during routine screening colonoscopy. Despite inconclusive biopsies, imaging findings raised suspicion of malignancy, prompting surgical resection. Histopathology revealed a colonic MALT lymphoma measuring up to 4 cm, with transmural infiltration and extension into the base of the appendix. Regional lymph nodes were tumor-free. Postoperatively, the patient recovered uneventfully.
Conclusion: This case underscores the rarity of colonic MALT lymphoma and highlights the importance of thorough endoscopic evaluation, imaging-based staging, and surgical resection in achieving favorable outcomes for patients with colonic MALT lymphoma. While guidelines for managing colonic MALT lymphoma remain less clearly defined than those for gastric MALT lymphoma, prompt detection and resection in localized disease appear critical to successful treatment 14–19. Further research is needed to elucidate possible etiologic factors and to optimize treatment strategies for this uncommon presentation.

Cholangiocarcinoma? Don't Skip the IgG4

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Background: Immunoglobulin G subclass 4 (IgG4)-related disease (IgG4-RD) is a rare immune-mediated fibroinflammatory disorder, with an estimated prevalence of 0.78–1.39 cases per 100,000 individuals. Initially identified in association with Type I autoimmune pancreatitis (AIP), IgG4-RD has since been recognized as a systemic condition potentially affecting nearly all organ systems, especially the biliary tree. Histologically, affected tissues typically demonstrate tumor-like lesions with dense lymphoplasmacytic infiltrates rich in IgG4-positive plasma cells, storiform fibrosis, obliterative phlebitis, and increased eosinophilic infiltration. IgG4-related sclerosing cholangitis (IgG4-SC) is the most frequent extrapancreatic manifestation of IgG4-RD, often occurring in conjunction with AIP. Clinically, it presents with features of obstructive jaundice, mimicking cholangiocarcinoma on imaging. Differentiating IgG4-SC from malignancies is essential, as treatment approaches dramatically differ. IgG4-SC responds well to glucocorticoid therapy, while resectable extra-hepatic cholangiocarcinomas typically require major liver resection or pancreaticoduodenectomy and possibly chemotherapy.
Case Presentation: We herein report the case of a 66-year-old male with progressive jaundice and weight loss, initially suspected of having perihilar cholangiocarcinoma. A multimodal diagnostic strategy was employed, integrating advanced imaging modalities, comprehensive laboratory investigations, cytological evaluations, and input from a multidisciplinary team of specialists. This approach enabled the identification of hallmarks of IgG4-SC, such as elevated serum IgG4 levels and imaging findings consistent with autoimmune pancreatitis, while ruling out malignancy through cytology and histopathological analysis. The collaborative multidisciplinary discussions were pivotal to establish a definitive diagnosis of IgG4-SC associated with type I autoimmune pancreatitis. The patient responded favorably to corticosteroid therapy, and immunosuppressive therpay.
Conclusion: This case underscores the importance of an interdisciplinary approach and the use of evidence-based medical interventions to navigate the diagnostic and therapeutic complexities associated with IgG4-SC. It further illustrates the importance of clinical awareness and precision in distinguishing IgG4-SC from malignancies, such as perihilar cholangiocarcinoma, to optimize patient outcomes and reduce the risk of unnecessary invasive procedures.

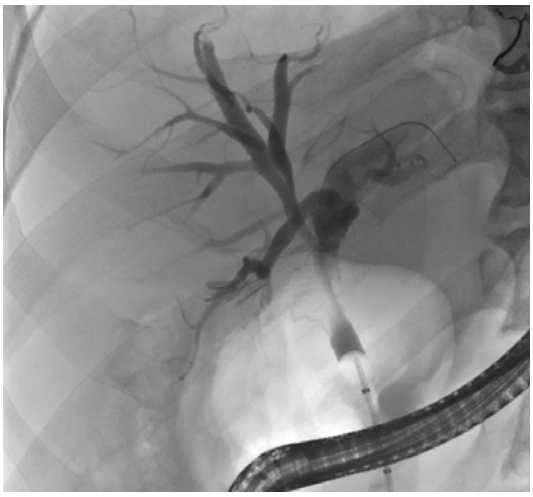

Figure 1. ERCP showing a perihilar narrowing of the bile system

Figure 2. MRI showing a perihilar narrowing of the bile system

Figure 3. Abdominal CT-scan showing a "sausage-like" morphology pancreas

Coccygeal Hernia: A Rare but Challenging Clinical Condition

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Background: Coccygeal hernia is a rare condition where tissues or organs, such as fat or intestines, protrude through a defect or weakness in the coccyx. It can result from congenital defects, trauma including the surgical removal of the coccyx, increased abdominal pressure or degenerative changes. Only few cases have been reported, leaving its optimal treatment largely unclear.

Case Presentation: A 47-year-old woman presented with progressive coccygodynia over the past three years. Pelvic MRI revealed signs of coccygitis. Conservative treatment with pain medications, physiotherapy and cortisone injections was attempted, but only resulted in temporary relief. Therefore, coccygectomy was performed through a longitudinal incision. One year after the procedure she complained of a small lump beneath her scar, increasing pain when sitting including defecation disorders. Clinical examination revealed a tender swelling at incision site. During Vasalva, the pelvic floor bulged through the incision site. A dynamic MRI confirmed pelvic floor descent with subsacral prolapse of the rectum. Surgery was planned. To ensure optimal stabilization, we opted for an open repair technique using a synthetic, non-absorbable mesh (Ultrapro DynaMesh®). Surgery was performed in Heidelberg position through a Kraske approach (Fig.1). The tailored mesh was placed in sublay technique, secured with Ethibond sutures (Fig. 2). The fascia, subcutaneous tissue, and skin were closed separately after placing a wound drain. Post-operative recovery was uneventful. The drain was removed on day 3 post-operatively and the patient was discharged the following day. At six-month follow-up, the defecation disorder fully resolved, although moderate coccygodynia persisted.

Conclusion: Various techniques such as primary herniorrhaphy, mesh repair, muscle transposition and repair with de-epithelialized musculocutaneous flaps via sacral, abdominal, or laparoscopic approaches have been described. We opted for an open sacral approach with synthetic mesh to ensure maximum stabilization of the pelvic floor and minimize risk of recurrence.

Figure 1

Figure 2

Loss of Domain Giant Incisional Hernia With Skin Tension Lesions: A Case Report

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Background: Giant hernias with loss of domain (LOD) are complex pathologies characterized by major intestinal prolapse in the hernia sac, only composed of the peritoneum and the skin. This may lead in the case of a voluminous and heavy hernia to tension lesions of the skin. Skin perforation needs in these cases often challenging operations with high mortality and morbidity.

Case Presentation: An 81-year-old female presented with a long-standing incisional hernia complicated by recent bleeding from a 2 cm² lesion at the lowest point of the hernia sac and the presence of a second, non-bleeding ulcer. CT imaging (Figure 1) revealed a large hernia sac containing most of the small intestine in the upright position. The overlying skin shows a skip lesion. The peritoneum cannot be identified, but there are no signs of peritonitis. Conservative management, including specialized care in a wound center and use of an abdominal belt, was initiated to support the skin of the hernia. The patient tolerated the abdominal belt well, which helped reduce the tension on the skin. At 1-month follow-up, the wounds showed granulation tissue, reduced size, and calm edges. The evolution was favorable (Figure 2) with complete closure of the cutaneous wounds at 3-month follow-up.

Conclusion: This case highlights the importance of managing cutaneous lesions in LOD hernias, where surgical intervention is not viable. A specially designed abdominal belt reduced skin tension and allowed, together with standard wound care, healing of the wounds. Despite the high-risk location of these declivous lesions, complete wound closure was achieved with specialized wound center care. It demonstrates the potential for conservative management to prevent severe complications in cases of LOD hernia where surgery is too risky.

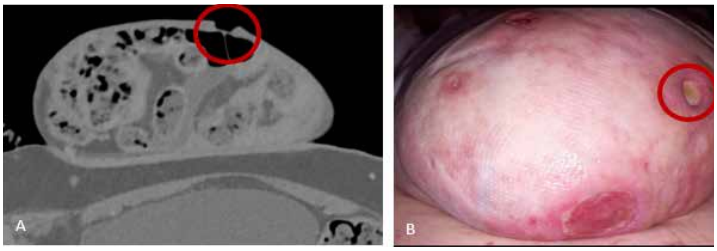

Figure 1. Initial presentation. A: CT scan showing the bleeding ulcer (circle). B: clinical image of the loss of domain hernia with the bleeding lesion (circle)

Figure 2. Clinical image at 2 months follow-up, showing a progressive closure of the ulcer

From Obesity to Oncology Resolution: Malt Lymphoma Healed Post-Bariatric Surgery

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Background: Non-Hodgkin lymphomas (NHL) account for 2-3% of all cancers, with mucosa-associated lymphoid tissue (MALT) lymphomas representing approximately 7-8% of NHL cases. Gastric MALT lymphoma is primarily linked to Helicobacter pylori infection, and it is typically managed with non-invasive therapies, including eradication, radiotherapy, and chemotherapy. As a result, surgery is not commonly recommended as a first-line treatment.
Case Presentation: We present a case of a 52-year-old male with stable stage I1E gastric MALT lymphoma in the mid and distal gastric corpus who underwent laparoscopic 4/5 gastrectomy with Roux-Y reconstruction as part of a bariatric procedure. The patient, who had a history of obesity (BMI 40 kg/m²) and gastroesophageal reflux disease, initially presented in September 2019 with melena and epigastric pain. Diagnostic gastroscopy and colonoscopy confirmed gastric MALT lymphoma. After successful eradication of H. pylori, follow-up endoscopies revealed persistent lesions without progression. The patient was managed with a watch-and-wait strategy over 4 years, avoiding systemic therapy or radiotherapy. In June 2023, the patient sought bariatric counseling, and a repeat gastroscopy confirmed persistent lymphoma. Given the tumor's location and potential complications of radio-chemotherapy on future bariatric surgery, we opted for a primary resection via a modified gastric bypass. The lesion was marked endoscopically, and laparoscopic 4/5 gastrectomy with confirmed tumor-free margins and Roux-Y reconstruction was performed. Postoperatively, the patient experienced successful weight loss with no recurrence of the lymphoma.
Conclusion: This case suggests that surgical resection may be considered for stable, localized gastric MALT lymphoma, particularly in younger patients, offering the advantage of avoiding lifelong follow-up. Additionally, gastric MALT lymphoma may not be a contraindication to bariatric surgery, depending on tumor location and stage. Further research is needed to evaluate the role of surgery in such cases.

Gastric Leiomyoma: A Case Report

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Background: Gastric leiomyoma is a benign submucosal tumor, accounting for 2.5% of gastric neoplasms. It is often asymptomatic but can cause bleeding due to mucosal ulceration. On imaging, it appears as a filling defect in the gastric wall, and endoscopy reveals it as a submucosal mass with tenting and loss of gastric folds, known as "Schindler's sign". The standard treatment is leiomyomectomy. This case report presents a gastric leiomyoma treated with laparoscopic gastrotomy and transgastric leiomyomectomy, guided by intraoperative endoscopy.
Case Presentation: An overweight 44-year-old male presented with symptoms of bloating and diffuse abdominal pain. A CT scan identified a 3 cm endoluminal mass in the posterior gastric wall near the cardia. Endoscopic examination revealed a 3 cm submucosal mass, with no gastric mucosa abnormalities (Figure 1). Histopathological analysis of endoscopic biopsies diagnosed a leiomyoma, with immunohistochemistry showing sparse expression of c-kit, DOG1, and CD34, consistent with a wild-type gastrointestinal stromal tumor (GIST). Elective laparoscopic gastrotomy and transgastric leiomyomectomy (Figure 2), guided by intraoperative gastroscopy (Figure 3) was performed. Surgical specimen histopathology confirmed the complete resection of a gastric leiomyoma. Expression of c-Kit, DOG1 and CD34 was diagnostic of interstitial Cajal cells. Recovery was uneventful, and the patient was discharged on postoperative day 5. At 6-week follow-up, he reported no pain and he tolerated normal diet well.
Conclusion: Gastric leiomyoma is a rare, paucisymptomatic tumor with GIST as the main differential diagnosis. Diagnosis requires radiological, endoscopic, and specialized pathological analyses. In our experience, endoscopic guided laparoscopic gastrotomy with transgastric leiomyomectomy provided excellent results.

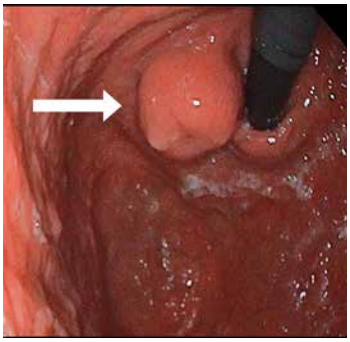

Figure 1. Endoscopic view showing submucosal mass with normal gastric mucosa (arrow)

Figure 2. Intraoperative view of laparoscopic gastrotomy with endoluminal gastric mass

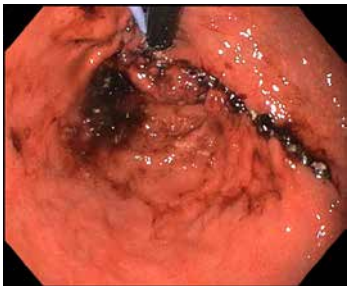

Figure 3. Intraoperative gastroscopy after complete resection

Composite Pheochromocytoma-Ganglioneuroma: A Case Report

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Background: Composite pheochromocytoma (CP) are rare neoplasms originating from neural crest cells, combining chromaffin cells (typically found in pheochromocytoma) with neuronal tumors such as ganglioneuroma (62%), ganglioneuroblastoma (16%), neuroblastoma (11%), or schwannoma (1%). Fewer than 100 CP cases have been reported, with 27% presenting a genetic syndrome, including neurofibromatosis 1 (19%), MEN 2A (4%), von Hippel Lindau syndrome (2%), and watery-diarrhea hypokalemia-achlorhydria (2%). This case report presents a CP, discussing its atypical presentation, surgical treatment, and histopathological findings.
Case Presentation: A 43-year-old woman with a family history of neurofibromatosis type 1 was admitted to our emergency department with acute coronary syndrome and Menard's triad (headaches, palpitations, and sweating). Coronarography suggested Tako-Tsubo syndrome. Subsequent ambulatory work-up revealed elevated urinary metanephrines and cortisol levels. Abdominal CT showed a heterogeneous right adrenal mass (52x45x52mm). 123I-meta-iodobenzylguanidine scintigraphy and 18-F DOPA PET-CT confirmed the lesion was compatible with pheochromocytoma, with no evidence of metastatic disease. Elective laparoscopic right adrenalectomy was marked by a hypertensive state before and hypotension immediately after resection, with a good response to IV infusions. Histopathology revealed a CP with ganglioneuroma (Figure 1). The pheochromocytoma component's immunohistochemistry was positive for chromogranin A and negative for neurofilament, while the ganglioneuroma component was positive for neurofilament and negative for chromogranin A. Both components exhibited low mitotic activity (1% Ki-67 index) and were negative for inhibin and MelanA (markers for the residual medulla and adrenal cortex, respectively). Blood cortisol levels normalized by day 2. The in-hospital follow-up was uneventful, and the patient was discharged on day 6. At a 6-week follow-up, she was asymptomatic. Given the metastatic risk despite complete resection, endocrinology follow-up was organized.
Conclusion: CP is a rare tumor, diagnosed through histopathology, that shares its treatment approach with typical pheochromocytomas. However, the rarity of cases leads to uncertainty in prognosis, emphasizing the need for lifelong clinical and biochemical follow-up.

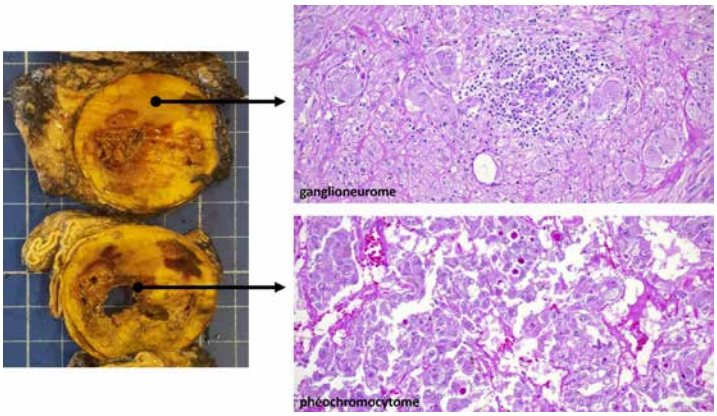

Figure 1. Macroscopic and microscopic aspects of the composite pheochromocytoma-ganglioneuroma

Low-Grade Fibromyxoid Sarcoma of the Ileocecal Region: A Rare and Challenging Diagnosis

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Background: Low-grade fibromyxoid sarcoma (LGFMS) is a rare, indolent soft tissue tumor with a significant risk of distant metastasis, despite its low-grade nature. The nonspecific clinical presentation and inconclusive biopsy results often delay diagnosis and management, emphasizing the need for awareness of this entity.
Case Presentation: A 78-year-old male presented with persistent left-sided pain localized to the Th11 region. Notably, the patient denied systemic symptoms such as weight loss, abdominal pain, or bowel habit changes. Imaging studies, including a CT scan, identified a progressive-

ly enlarging mass adjacent to the cecum and terminal ileum, raising suspicion of malignancy (Figures 1 and 29. Colonoscopy with multiple biopsies failed to yield a definitive diagnosis. A diagnostic laparoscopy was subsequently performed, during which the mass was successfully resected. Histopathological evaluation confirmed LGFMS, characterized by alternating fibrous and myxoid stroma, low mitotic activity and absence of significant necrosis. Immunohistochemical analysis showed diffuse positivity for MUC4, a hallmark feature of LGFMS, solidifying the diagnosis. The patient had an uneventful post-operative recovery and was discharged with plans for close, long-term surveillance given the tumor's potential for late metastatic spread. Despite its typically indolent behavior, LGFMS necessitates vigilant follow-up due to the documented risk of metastasis to distant sites such as the lungs.

Conclusion: This case underscores the importance of considering rare soft tissue sarcomas like LGFMS in the differential diagnosis of abdominal masses, especially when initial biopsies are inconclusive. Early identification, complete surgical resection, and meticulous histopathological evaluation, including immunohistochemistry are pivotal in achieving optimal outcomes. Long-term follow-up remains critical to monitor for recurrence or distant metastasis.

Figure 1. Abdominal angio-CT; Coronal view

Figure 2. Abdominal angio-CT; Axial view

Intraoperative Left Hepatic Branch Artery Aneurysm Rupture During Cholecystectomy: A Case Report of a Rare and Potentially Lethal Diagnosis

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Background: Hepatic artery aneurysm (HAA) is a rare (0.002%-0.4%) but life-threatening condition. HAA represents the second most frequent visceral aneurysm. The incidence is approximately 20%, with a reported rupture rate up to 44%. The literature describes some risk factors as atherosclerosis, trauma, infection, connective tissue disorders, or iatrogenic. The natural history remains unclear; from asymptomatic to abdominal pain, gastrointestinal symptoms, or obstruction of the biliary tract. Cross-sectional vascular imaging (CTA-MRI) is the imaging modality of choice. Management strategies lack consensus and are guided by symptoms, aneurysm size, and rupture status, ranging from observation to endovascular or surgical interventions. We report a case involving the incidental discovery of hemoperitoneum caused by a ruptured HAA during laparoscopic cholecystectomy.

Case Presentation: 82-year-old female presenting in the ER with a 10-day upper right quadrant pain, vomiting, and fever. Physical exam revealed a positive Murphy sign associated with increased inflammatory markers. CT scan confirmed acute calculous cholecystitis and laparoscopic cholecystectomy was indicated. Intraoperatively, perihepatic hemoperitoneum was observed with sclero-atrophic calculous cholecystitis. Removal of clots on the hepatic pedicle unraveled massive spontaneous arterial bleeding requiring artery clamping and laparotomy. At laparotomy, bleeding was found to arise from a ruptured aneurysm of the left branch of the hepatic artery. Repair of the artery was neither possible. The left branch of the hepatic artery was removed with the aneurysm, and cholecystectomy was performed. The postoperative course was uneventful. Whole-body CTA additional arterial malformations and a gastro-duodenal artery aneurysm. Fulll vascular work-up ongoing, the rupture aneurysm etiology remains unclear.

Conclusion: Identification of HAA is crucial due to its life-threatening complications. Our case illustrates the unpredictable nature of HAA, with an incidental intraoperative hemoperitoneum during laparoscopic cholecystectomy revealing HAA rupture. Bleeding control, conversion to open surgery, and artery removal are essential,while arterial repair should not be attempted unless it can be performed on macroscopically normal tissues.

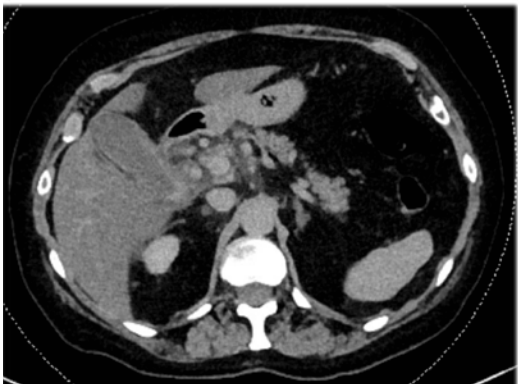

Figure 1. CT scan revealing acute calculous cholecystitis

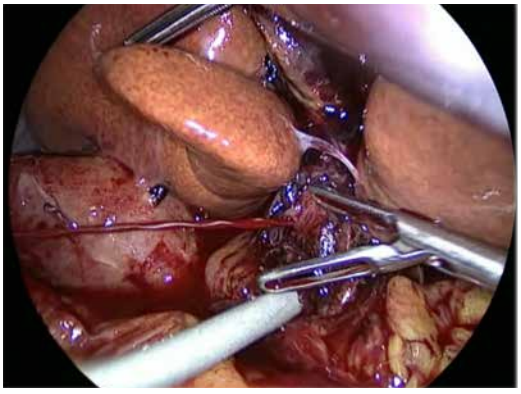

Figure 2. Intraoperative massive arterial bleeding during careful removal of clots

Jejunal Diverticulitis: A Case Series Report

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Background: The incidence of jejunal diverticula (JD) is up to 6%, highest prevalence in the elderly. These pseudodiverticula are typically located near to mesenteric fat and 10% to 30% may develop complications (diverticulitis, hemorrhage, obstruction or perforation). Clinical presentation of JD is often nonspecific (abdominal pain, nausea, vomiting, or acute abdomen). Due to its rarity there are no guidelines. This case series contributes to the limited literature on JD by detailing clinical presentation, diagnostics and management in three patients.

Case Presentation:

Case 1: An 82-year-old male presented with lower abdominal pain, peritonitis and elevated inflammatory markers. CT angiography revealed small bowel wall thickening, mesenteric air, and free fluid, suggesting perforation. Emergency laparotomy confirmed purulent peritonitis and jejunal diverticular perforation; segmental resection and anastomosis were performed, recovery was uneventful.

Case 2: An 83-year-old male presented with palpable abdominal mass but otherwise asymptomatic. CT revealed a suspicious jejunal lesion. Explorative laparotomy identified JD with chronic perforation, excluding malignancy; segmental resection with anastomosis was performed. Upper GI bleeding was managed with blood transfusions, discharge was on POD 6.

Case 3: An 82-year-old male with history of small and large bowel diverticulosis presented with peritonitis, vomiting, and fever. Imaging suggested diverticular perforation. Laparoscopy revealed jejunal perforation and peritonitis; open segmental resection and anastomosis were performed. The patient required ICU care for septic shock but recovered uneventfully and was discharged on POD 6.

Conclusion: Jejunal diverticulitis poses a diagnostic challenge due to nonspecific symptoms. We described three cases of complicated JD with varying presentations and management: Two required urgent surgery for perforation, while one underwent elective surgery for chronic inflammation. These cases highlight the need of suspicion of JD in acute or chronic abdominal symptoms, with prompt imaging and a tailored approach for optimal outcomes. Our findings contribute to the evidence that JD, though rare, should be considered in the differential diagnosis of abdominal pain.

The Impact of Spinal Anesthesia in Laparoscopic Colorectal Surgery on Bowel Function and Pain Relief – A Systematic Review and Meta-Analysis of Randomized Controlled Studies

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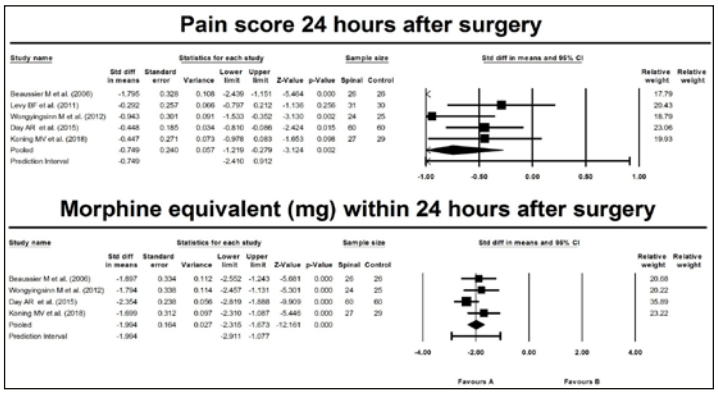
Background: Recently, the Enhanced Recovery After Surgery (ERAS) society recommended spinal anesthesia as a valuable adjunct to colorectal surgery with its primary advantages being enhanced pain control and reduced opioid use. Given that opioids can adversely affect bowel function, we hypothesized that spinal anesthesia may be associated with a reduction in postoperative ileus.
Aims: This systematic review aims to examine the existing literature on the effect of spinal anesthesia on postoperative bowel function following colorectal surgery.
Methods: Relevant articles were identified by searching central libraries from the time of inception to October 2023. Inclusion criteria were studies comparing outcomes of colorectal surgery with and without spinal anesthesia. Primary outcomes of interest were bowel function, pain management 24 hours after surgery. The quality of the included articles was assessed using the Cochrane risk-of-bias tool for randomized trials (RoB 2).
Results: Five randomized controlled trials were identified from a total of 790 published articles, encompassing 338 patients who underwent laparoscopic colorectal surgery under general anesthesia, with or without spinal anesthesia. Spinal anesthesia was administered to 168 patients. No significant demographic differences were noted between the control and intervention groups. Spinal anesthesia was associated with improved postoperative pain control and a significant reduction in opioid consumption (MD: -0.749; CI -1.219 to -0.279, p-value: 0.002 and MD: -1.994; CI -2.315 to -1.673, p-value: <0.001, respectively). However, no significant difference were observed between the groups in terms of postoperative bowel function: time to flatus MD: -0. 054; 95% CI -0.268 to 0.160; p-value: 0.62; time to stool MD: -0.254; CI -0.526 to 0.018, p-value: 0.07; or time to resumption of a normal diet MD: -0.230; CI -0.490 to 0.031, p-value: 0.08.
Conclusion: Spinal anesthesia in laparoscopic colorectal surgery significantly improves postoperative pain control and reduces opioids. However, it does modify postoperative bowel function.



Comparison of pain scores 24 hours (A) and postoperative opioid consumption within the first 24h after colorectal resection with (Spinal) and without spinal anesthesia (Control). A random-effects model was used for meta-analysis. Standardized difference in mea

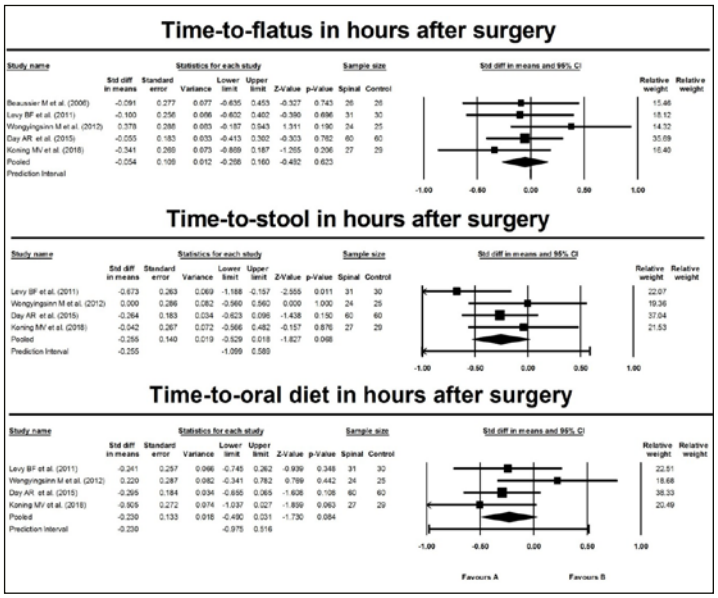


Figure 1. Comparison of postoperative time-to-flatus (A), time-to-stool (B) and time-to-oral diet (C) after colorectal resection with (Spinal) and without spinal anesthesia (Control). A random-effects model was used for meta-analysis. Standardized difference in mea

Minimally Invasive Lateral Cervical Approach for Retropharyngeal Lymph Node Metastasis in Differentiated Thyroid Carcinoma

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Background: Retropharyngeal lymph node metastases (RPLNs) are rare in differentiated thyroid carcinoma (DTC), occurring in 0.43–5% of cases, typically in recurrent or persistent disease. Surgical management of RPLNs is challenging due to their proximity to vital structures, and conventional approaches are associated with significant morbidity.
Aims: This case report highlights a minimally invasive lateral cervical approach for RPLN resection, focusing on its safety, efficacy, and functional outcomes.
Methods: A 22-year-old female with papillary thyroid carcinoma underwent total thyroidectomy and bilateral neck dissection for a tall cell variant of DTC. Following radioactive iodine (RAI) therapy, disease progression resulted in recurrent metastases in the left RPLN. Imaging confirmed intense fixation in the left RPLN and Level II–III nodes. Surgical resection was performed using a minimally invasive lateral cervical approach, carefully avoiding involvement with complex nearby structures. The metastatic RPLN was successfully removed. The patient experienced transient marginal mandibular nerve palsy, which resolved spontaneously and she did not develop dysphagia or any other neurological deficits. Postoperative pathology confirmed metastatic papillary carcinoma.
Results: This case demonstrates the feasibility and efficacy of a minimally invasive lateral cervical approach for RPLN metastases in DTC. Traditional approaches, such as transoral and transcervical techniques, are associated with high morbidity, including cranial nerve injuries and dysphagia. In contrast, the minimally invasive approach reduces dissection, minimizes complications, and provides effective oncologic control. The use of intraoperative nerve stimulation was critical in preserving neural function, with only transient complications observed.
Conclusion: The minimally invasive lateral cervical approach is a safe and effective alternative to traditional methods for retropharyngeal lymph node dissection. By reducing morbidity and preserving function, it offers a promising option for managing complex metastatic thyroid cancer cases, particularly in young patients requiring multiple interventions and prolonged follow-up.

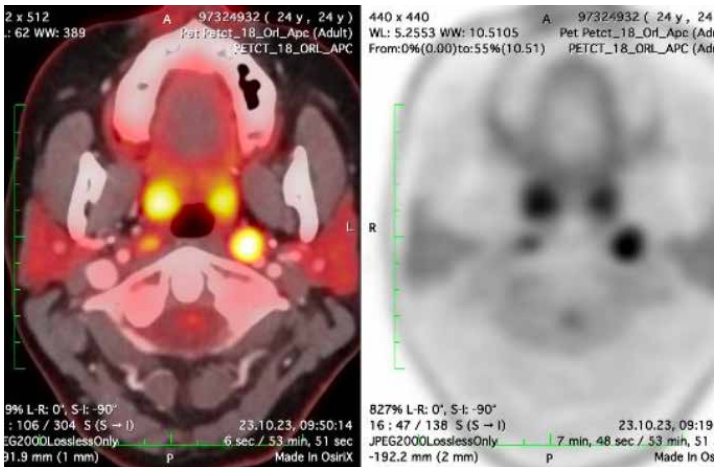

Figure 1. FDG PET showing hypermetabolic left retropharygeal lymphe node. SUVmax left 20.8, right 5.0

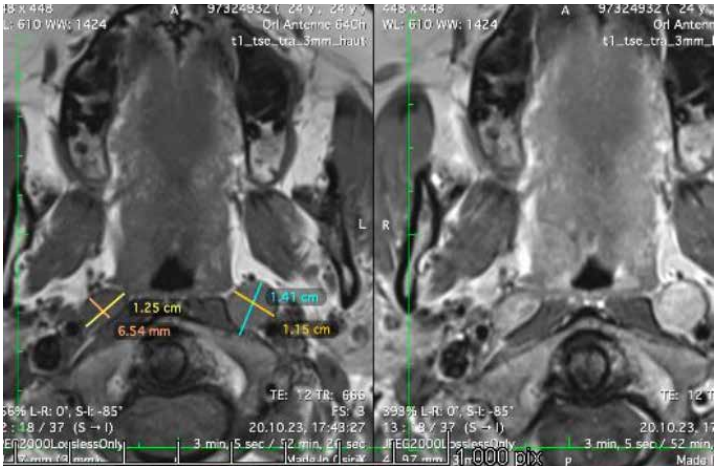

Figure 2. MRI showing two enlarged retropharyngeal lymphe node. Right 12x7x27 mm, left 14x12x20

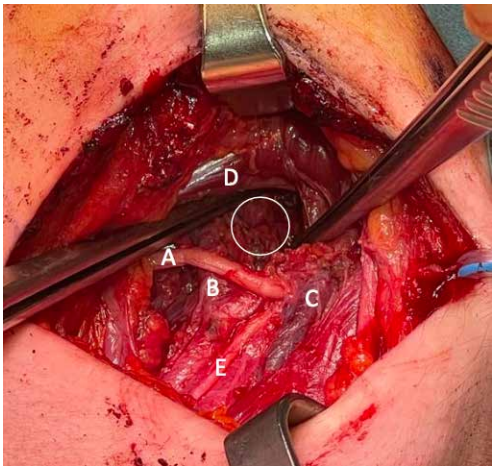

Figure 3. intraoperative situs. A: Hypoglossal nerve, B: Internal carotid, C: Internal jugular vein, D: Digastric muscle, E: Vagus nerve, The round retropharyngeal space is clearly delineated

Drug-Induced Cirrhosis Complicated by a Primary Liver Malt Lymphoma: Case Report of a Rare and Often Misdiagnosed Liver Malignancy

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[1]General Surgery, Hôpital de Sion, Centre Hospitalier du Valais Romand, CHVR, Sion; [2]Geneva University Hospitals, HUG, Geneva

Background: Primary hepatic lymphoma (PHL) represents 0.4% of extranodal non-Hodgkin lymphoma (NHL) and 0.016% of all NHLs. Primary liver MALT lymphoma represents 2.9% of all PHLs. To date, the literature reports six cases of primary liver MALT in the presence of cirrhosis. In such cases, it is often misdiagnosed as hepatocellular carcinoma (HCC). Due to the rarity of the lesion and the absence of specific radiological features, the clinical and radiological suspicion is seldom mentioned before the treatment, which in most cases leads to surgical resection.
Aims: To contribute to the literature by documenting a case of a rare primary liver malignancy, often misdiagnosed as HCC leading to surgical resection.
Methods: We report a case of a patient with a primary liver MALT in the presence of drug-induced cirrhosis.
Results: A 77-year-old female patient on Atorvastatin treatment in whom a chest CT scan revealed incidental findings suggestive of chronic liver disease. The patient was asymptomatic. The follow-up Ultrasound 8 months later showed a focal lesion in segment IV and the Fibroscan revealed Metavir F3 fibrosis. The MRI showed a 30 mm segment IV lesion with radiological characteristics of HCC (Figure 1). We performed a transjugular liver biopsy with the gradient measurement (16 mmHg). The histological result confirmed a Laennec 4B cirrhosis of toxic drug-induced origin "Atorvastatin" (Figure 2). Staging workup showed no further lesions. After discussion at HBP multidisciplinary concilium, the patient had a segment IV resection by laparotomy. Unexpectedly, the histological result revealed primary MALT lymphoma (Figure 3).
Conclusion: Radiotherapy and chemotherapy with Rituximab or Rituximab alone have shown promising results in the treatment of primary liver MALT, whereas after surgery, distant or local recurrence may occur. Making an accurate preoperative diagnosis of this disease is usually difficult, and percutaneous liver biopsy could be an appropriate avenue to improve the diagnostic accuracy and avoid surgical resection.

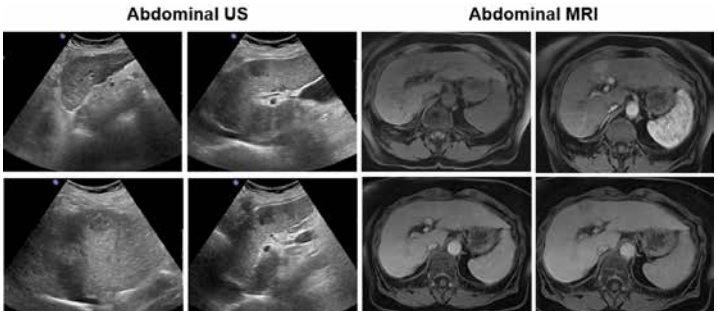

Figure 1. 30 mm lesion of segment IVa characterized by a moderate T2 hypersignal, arterial contrast enhancement, washout, diffusion restriction, hyposignal on the hepatobiliary phase

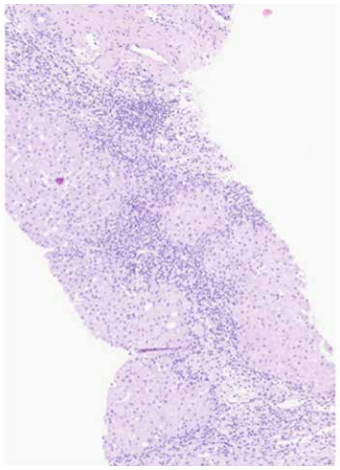

Figure 2. Histological finding of drug-induced cirrhosis after transjugular liver biopsy

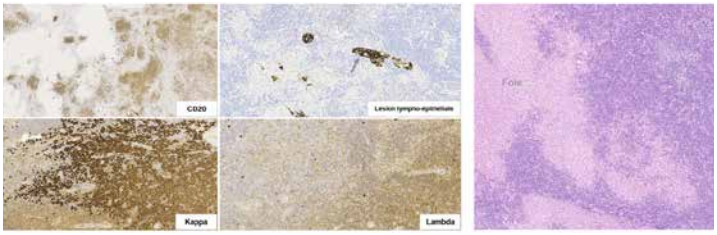

Figure 3. Histological findings of primary Liver MALT after segment IV resection

Importance of Surgical Management in Cystic Duct Remnant Syndrome

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[1]Asana Spital Leuggern, Leuggern; [2]Kantonsspital Baden, KSB, Baden

Background: A long cystic duct remnant with or without calculi after laparoscopic cholecystectomy may not be an uncommon occurrence. Residual stones overlooked during the index procedure or recurrent calculus formation within the remnant cystic duct can result in post-cholecystectomy syndrome, which refers to the persistence of gastrointestinal symptoms after cholecystectomy. After establishing the diagnosis, surgical treatment is needed.
Case Presentation: We report a case of long cystic duct remnant syndrome with stones in a 45-year-old male patient who experienced persistent preoperative symptoms (upper abdominal pain, dyspepsia) beginning in December 2024, after laparoscopic cholecystectomy performed in April 2023 for acute symptomatic calculous cholecystitis. The diagnosis was made based on transabdominal ultrasound (showing cystic formation in gallbladder fossa) and Magnetic Resonance Cholangiopancreatography (MRCP), supported by laboratory findings. MRCP revealed no evidence of intra- or extrahepatic cholestasis and showed enlarged cystic duct stump with inflammation and two small stones with one of which was distally impacted. Laparoscopic resection was performed without complications. Histopathological findings revealed a segment of the stump with an embedded calculi obstructing the cystic duct remnant. Postoperatively the patient has no symptoms
Conclusion: Long cystic duct remnant syndrome is not uncommon and is one of the common causes of persistent biliary symptoms after cholecystectomy. MRCP is considered the gold standard to make the diagnosis. Once diagnosed, laparoscopic removal of the stump by an expert surgeon is generally considered safe and is necessary to alleviate symptoms and prevent further complications.

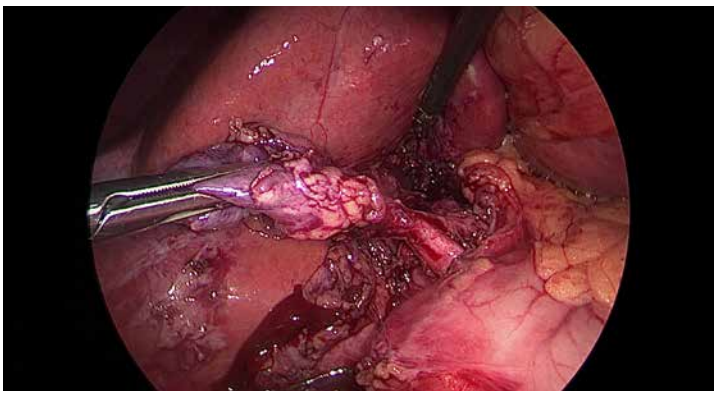

Figure 1. Intraoperative image showing dilated cystic duct remant

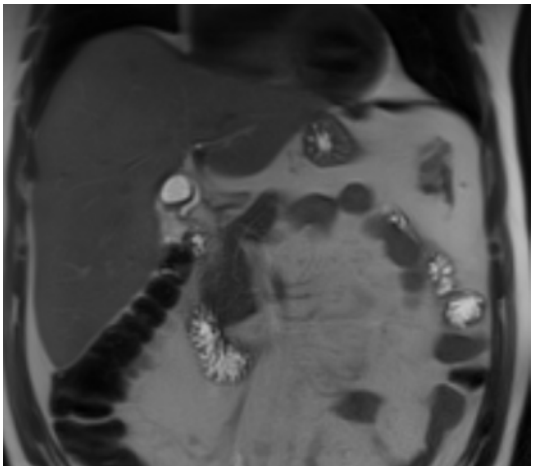

Figure 2. MRCP 1 – T2 HASTE showing dilated remnant cystic duct

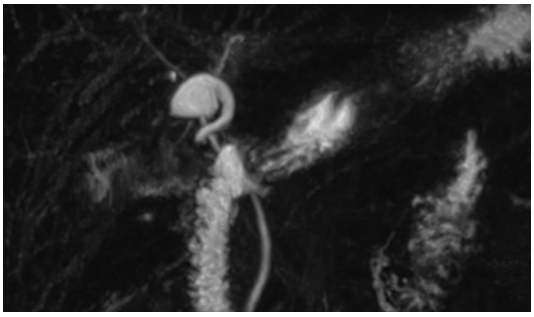

Figure 3. MRCP 2 – 3D MRCP showing dilated remnant cystic duct

A Rare Case of Campylobacter Fetus Abdominal Sepsis Due to Mesenteric Panniculitis Exacerbation

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[1]Visceral Surgery, Groupement Hospitalier de l'Ouest Lémanique, GHOL Nyon, Nyon; [2]Visceral Surgery, Lausanne University Hospital, CHUV, Lausanne; [3]Visceral Surgery (Head of Department), Groupement Hospitalier de l'Ouest Lémanique, GHOL Nyon, Nyon

Background: Mesenteric panniculitis (MP) is defined by chronic inflammation and fibrosis of the mesenteric adipose tissue, predominantly at the root of the small bowel. It is a non-neoplastic condition often detected incidentally on abdominal imaging and is asymptomatic in about 50% of patients. Clinical symptoms of mesenteric panniculitis are highly variable. In case of failure, immunosuppressive treatments can be introduced (azathioprine, anti-TNF agents), although with limited evidence of success.
Case Presentation: A 71-year-old man with known chronic MP initially presented with fever and abdominal pain with diffuse sensitivity on clinical examination. Initial blood tests showed marked inflammatory response with leucocytosis of 21G/L, CRP 190mg/L and PCT 1.71mcmol/L. Blood cultures were positive for Campylobacter fetus. Abdominal CT scan showed an acute crisis of the known MP with pseudotumoral appearance and peripheral nodes (Figure 1, Figure 2). Antibiotic treatment (imipenem) was administered for 2 weeks with significant clinical and biological improvement. A PET CT highlighted the described MP with multiple moderately hypermetabolic peripheral lymph nodes. Lymphoma was excluded with mesenteric biopsies confirming an inflammatory origin. The treatment administered was effective, leading to a good recovery after this episode and no further exacerbation was reported.
Conclusion: We reported a rare case of Campylobacter fetus sepsis on chronic MP. The cause and effect relationship is difficult to establish. This the first documented case of a Campylobacter fetus-specific infection being linked to an MP crisis in literature.

Figure 1. Abdominal CT sagittal section showing acute crisis of the known MP with pseudotumoral appearance and peripheral nodes

Figure 2. Abdominal CT Coronal section showing acute crisis of the known MP

Completion of Adjuvant Chemotherapy After Total Versus Partial Pancreaticoduodenectomy for Pancreatic Cancer – A Retrospective Analysis

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Background: Partial pancreaticoduodenectomy (PD) followed by adjuvant chemotherapy (AC) is the standard treatment for primarily resectable pancreatic ductal adenocarcinoma (PDAC) in the pancreatic head. Total pancreatectomy (TP) was historically reserved for selected cases due to the negative impact on quality of life (QoL) caused essentially by pancreatogenic diabetes. However, recent findings show similar outcomes including short-term morbidity, mortality and QoL, and have lowered the threshold for opting for TP over PD. By avoiding PD's most severe complication, pancreatic fistula, we hypothesize that TP will lead to similar AC completion rates as PD even in patients with a more complex disease.
Aims: The aim of our study was to investigate the initiation, timing, and completion rates of postoperative chemotherapy in patients who underwent TP for PDAC compared to those who underwent PD.
Methods: We performed retrospective analysis including all patients who underwent TP or PD for PDAC between 2014 and 2021 in our center. The rates, timing and degree of completion of AC were compared. Decision for TP vs PD was left to the discretion of the surgeon; however TP was performed for repetitive positive resection margin or tumor infiltration of the splenic vessels in most cases (59%).
Results: We included 263 patients of those 74 underwent TP and 189 PD. TP patients had more comorbidities (liver diseases 16.2 vs 5.8%, p=0.013, diabetes 40.5 vs 24.9%, p=0.016), longer surgeries (7.2 vs. 6h, p=0.001), more frequent vascular reconstructions (77 vs. 50.8%, p=0.001), and higher blood loss (1200 vs. 600ml, p=0.001), with comparable morbidity and mortality. Rates of AC initiation (66 vs 76%, p=0.156), completion (69.4 vs 74.1%, p=0.578), and timing (7 vs 7weeks, p=0.533) were comparable.

Conclusion: Despite higher complexity of the cases, completion of AC after TP was comparable with PD. Advances in medical management of diabetes now support TP as a valid surgical option in high-risk situations without compromising oncological care.

Common Bile Duct Duplication: A Rare Anatomical Anomaly on a 31-Year Old Filipino Female Patient

K. J. Flores
Fatima University Medical Center, Valenzuela Medical Center Consortium, Valenzuela City

Background: Anatomical anomalies in the biliary system are uncommon but have a profound clinical consequences. Common bile duct duplication, for example, is an extremely rare congenital variant with significant diagnostic and surgical implications. It results from failure of regression of the embryological double biliary system and can be classified into five distinct subtypes as proposed by Choi et al.
Case Presentation: A 31-year-old female, ECOG 1, sought consult at the out-patient department due to occasional abdominal pain associated with jaundice, significant weight loss, anorexia and vomiting. Past medical history showed no history of previous hospitalization or surgery. Family and Personal/Social History was also unremarkable. Focused physical examination revealed soft, not distended, non tender abdomen with no palpable mass and normoactive bowel sounds. An MRCP was requested which revealed: Non-distended gallbladder with cholelithiasis. The liver has homogenous pattern with no abnormal intensity signal changes. The intrahepatic ducts are not dilated. Non-dilated, double biliary drainage with extra-hepatic communicating channels are seen, which then bifurcates into two separate distal common bile ducts prior to entering the Ampulla of Vater. The cystic duct connects with the most lateral common bile duct, located just distal to the communicating channels (Modified Choi Classification Type IV). No evidence of hypointense signal seen. The pancreas is homogenous with no abnormal intensity signal changes. The pancreatic duct is not dilated. Spleen and visualized kidneys appear intact.
Conclusion: Common bile duct duplications as well as other congenital anatomic variants, though very rare, should nevertheless be a consideration pre-operatively when managing patients with obstructive jaundice. This highlights the importance of recognizing duplicated CBD both pre-operatively and intraoperatively, as an unrecognized aberrant biliary duct could be detrimential in the patient's overall survival and quality of life post-operatively. This article aims to aid in the local and international literature review since there are very few reported cases of DCBD and actual incidence is unknown.

Pancreatic Tuberculosis Masquerading Pancreatic Mucinous Neoplasm: A Case Report on an Immunocompetent Female Patient

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Fatima University Medical Center, Valenzuela Medical Center Consortium, Valenzuela City

Background: Pancreatic tuberculosis (TB) is an extremely rare form of extrapulmonary tuberculosis even in endemic areas that masquerades as a mass or inflammation because of lack of typical clinical manifestations and radiologic features and therefore usually misdiagnosed as a pancreatic malignancy or pancreatitis.
Case Presentation: A 43-year-old female, ECOG 0, sought consult at the out-patient department due to occasional abdominal pain, not associated with weight loss, anorexia, vomiting, fever, jaundice or changes in bowel habits. Past medical history showed controlled hypertension. A whole abdominal ultrasonography was done which noted an anechoic focus in the proximity of the pancreatic head measuring 2.1 x 1.7cm which prompted EUS-FNA of the pancreatic head mass to be done. The histopathology result was a Mucinous Neoplasm and the sampling specimen was also tested for Brown and Brenn which is negative for bacterial colonies, Periodic-Acid Schiff (PAS)which did not reveal presence of fungal elements, and tissue Acid Fast Bacilli (AFB) which is negative for tuberculosis. The preoperative CA 19-9 was within normal range. Patient underwent Classic Whipples procedure and Reconstruction was done with the following anastomosis: pancreatico-gastrostomy (dumping technique), hepatico-jejunostomy, gastro-jejunostomy, jeju-jejunostomy with an addition of feeding jejunostomy distally. Intraoperative findings were pancreatic head mass measuring 3 x 3 x 2.5cm abutting the portal vein and superior mesenteric vein. No gross liver metastasis, lymphadenopathy or suspicious peritoneal seedings noted. Final histopathologic result was consistent with pancreatic tuberculosis. Patient followed up and was already started on anti-Koch's medications.
Conclusion: Preoperative diagnosis of pancreatic tuberculosis remains a challenge in cases of pancreatic masses. Clinical and radiologic ancillaries can be nonspecific, creating a cautious area for surgeons to proceed with surgical resection. A high index of suspicion coupled with preoperative tissue diagnosis and cytology are emphasized.

The Lumbar Hernia

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Kantonsspital Graubünden, Chur

Background: The Lumbar Hernia is a rare entity, there are about 300 cases described in the literature. It seems to be a once in a lifetime opportunity for a surgeon to treat a lumbar hernia. The defect lays in the lumbar muscles below the 12th rib and above the iliac crest. There are two types described, the superior lumbar hernia (Grynfeltt-Lesshafthernia) which is more common and the inferior lumbar hernia (Petit hernia).
Case Presentation: A 71 year old lady presented with a pain and swelling in the right lumbal aerea for several months. The MRI which was ordered by her family doctor showed the clear immage of a superior lumbar hernia. We indicated an endocopic reapair for this hernia, which can be done laparoscopically (intraperitoneal IPOM or extreperitoneal TAPP, TEP) or retroperitoneally TEP repair (rTEP). We chose the rTEP, which is very well described in the articel by B.Li et al. "Retroperitoneal totally endoscopic prosthetic repair of a primary lumbar hernia" from 2020. (Videopresentation) No postoperative complications occurred.
Conclusion: Various surgical repair strategies have been recorded for the treatment of the umbar hernia, but there seems to be no currently unified standard. In our patient RTEP could be performed safe and effective. A simple non coated polypropylene mesh can be used.

Primary Stability of Nailing Versus Low Profile Dual Plating of Mid-Clavicular Fractures – A Biomechanical Study

F. Pretz[1], T. Pastor[1], B. van de Wall[1], I. Zderic[2], Y. Lecoultre[1], F. Beeres[1], R. Babst[3], P. Varga[2], B. C. Link[1], B. Gueorguiev[2]
[1]Department of Orthopedic and Trauma Surgery, Lucerne Cantonal Hospital, LUKS, Lucerne; [2]Biomedical Department, AO Research Institute Davos, Davos; [3]Department of Health Science and Medicine, University of Lucerne, Lucerne

Background: Low-profile dual plating techniques have gained popularity for diaphyseal fractures due to their potential to reduce soft tissue irritation, thus decreasing the likelihood of implant removal. However, it has not yet been biomechanically investigated whether 2x2.0mm dual plating achieves stabilization comparable to a titanium elastic nail for clavicle midshaft fracture fixation.
Aims: Therefore, the aim of the current study was to compare the biomechanical properties of 2x2.0mm low-profile matrix mandible plates with a 2.5mm TEN (Titanium Elastic Nail) in a human cadaver model to evaluate the biomechanical stability of these two methods.
Methods: Twelve paired human cadaveric clavicles with simulated unstable diaphyseal shaft fractures (AO 15.2C) were stabilized with either an intramedullary nail (Group 1) or a combination of a superior and an anterior 2.0mm matrix mandible plate (Group 2). Specimens underwent initial quasistatic pure bending in superior-inferior and anterior-posterior direction, followed by cyclic superior-inferior load to failure. Interfragmentary movements were monitored by optical motion tracking.
Results: Dual plating demonstrated significantly higher initial construct stiffness in all bending directions and a reduced neutral zone compared to TEN nailing. In addition, fracture displacement amplitudes over all cycles were significantly higher in Group 1 versus Group 2 ($p = 0.002$). The number of cycles to reach the test endpoint did not differ significantly between the groups ($p = 0.16$), with Group 1 averaging 24,420 cycles (SD ±3,614.65) and Group 2 averaging 28,232 cycles (SD ±5,417.13).
Conclusion: In selected patients with simpler unstable midshaft clavicle fractures, 2x2.0mm dual plating may offer effective biomechanical stability. However, large-gap C-type fractures remain too unstable for these methods, emphasizing the need for further research to refine indications and assess long-term outcomes.

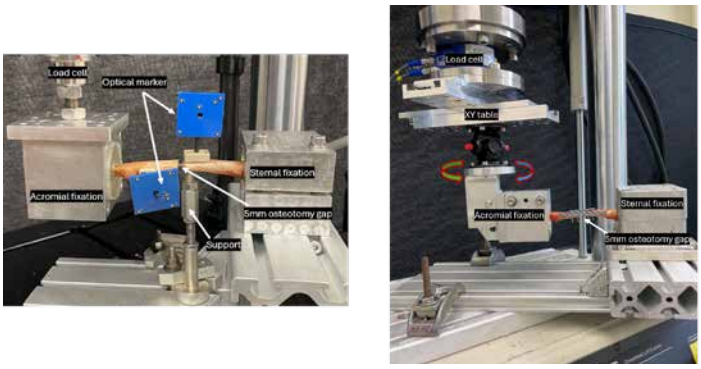

Figure 1. Testsetup SGC

Biomechanical Comparison of Augmented Mipo Versus Orif Locking Plate Fixation in Proximal Humerus Fractures With Low Bone Mineral Density

F. Pretz[1], T. Pastor[1], F. Beeres[1], I. Zderic[2], B. van de Wall[1], Y. Lecoultre[1], R. Babst[3], P. Varga[2], B. Gueorguiev[2], B. C. Link[1]
[1]Department of Orthopedic and Trauma Surgery, Lucerne Cantonal Hospital, LUKS, Lucerne; [2]Biomedical Department, AO Research Institute Davos, Davos; [3]Department of Health Science and Medicine, University of Lucerne, Lucerne

Background: Proximal humerus fractures are common in patients with low bone mineral density. Locking plate osteosynthesis using either MIPO or ORIF technique is widely performed.
Aims: Comparison of biomechanical stability between four cemented humeral head screws in PHILOS plates (MIPO) and six non-cemented head screws with two additional calcar screws (ORIF). Hypothesis: Screw tip augmentation offsets MIPO's reduced stability, resulting in no group differences.
Methods: Fourteen paired human cadaveric humeri with simulated unstable three-part proximal humerus fractures (AO 21 11-B1) were stabilized using PHILOS plates with four proximal head screws in both groups (row A and B). In the ORIF group, two additional calcar screws were used (row E) while in the MIPO group, the four screw tips were augmented with bone cement. Cyclic axial loading tests were conducted until failure and interfragmentary movements were monitored.

Results: Initial axial construct stiffness and cycles to failure showed no significant differences between groups (p=0.171, 27 p=0.397). Under increasing cyclic loading, the ORIF group exhibited a significant increase in varus deformation (p=0.029), head displacement (p=0.038), and screw bending in row A (p=0.003), whereas no significant increase in these parameters was observed in the MIPO group. Although the overall values were higher in the MIPO group, there was no significant difference in absolute values between the groups (p=0.071).
Conclusion: From a biomechanical perspective PHILOS plates with four augmented screws as used in the MIPO technique demonstrated comparable initial construct stability and cycles to failure as compared to the commonly used PHILOS plates with additional calcar screws as used in the ORIF technique. Moreover, the ORIF group exhibited significantly greater increases in varus deformation and humeral head displacement under cyclic loading, while the MIPO group, despite higher overall values, showed no significant increase. This suggests that the MIPO technique may be a valid alternative to the ORIF technique, particularly in the context of low bone mineral density.

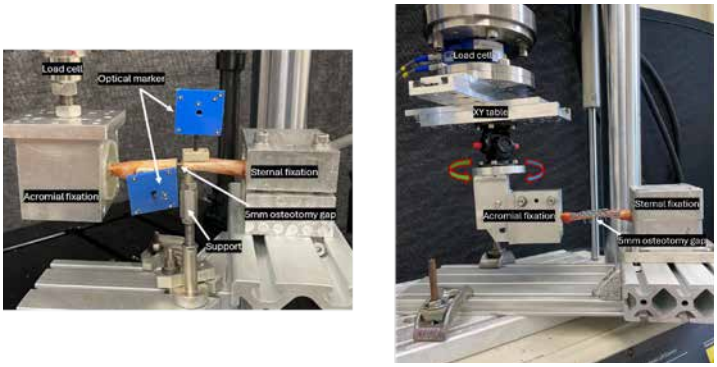

Figure 1. Testsetup SGC

Evaluating the Biomechanical Efficacy of 2.5+2.0 Double Plating Against 3.5 Single Plating in Ulna Shaft Fracture Fixation: A Cadaveric Study

M. Kraus[1,2], L. van Rossenberg[2], L. Puls[2], T. Pastor[3], I. Zderic[2], B. Gueorguiev[2], G. Richards[2], H. C. Pape[1], T. Pastor[4]
[1]Department of Traumatology, University Hospital Zurich, USZ, Zurich; [2]Biomedical Development, AO Research Institute, Davos; [3]Department of Orthopaedics and Traumatology, Bürgerspital Solothurn, Solothurn; [4]Department of Orthopaedic and Trauma Surgery, Lucerne Cantonal Hospital, LUKS, Lucerne

Background: The main complications after ulna shaft fracture fixation are non-union and implant irritation. Standard 3.5-mm locking compression plates can cause soft tissue irritation, often requiring implant removal. Using two smaller orthogonal plates has been proposed as an alternative to address these issues.
Aims: The aim of this study is to compare the biomechanical properties of a single 3.5-mm locking compression plate versus double-plating using one 2.5-mm and one 2.0-mm matrix mandible plate in a human ulna shaft fracture model.
Methods: Eight pairs human ulnar specimens with a standardized 10 mm comminuted fracture gap were pairwise assigned for instrumentation with either double plating using a 2.5-mm and a 2.0-mm mandible plate placed posteriorly under the flexor muscles and laterally under the extensor muscles, or with a single 3.5-mm plate placed posteriorly. All constructs underwent biomechanical testing for axial, torsional, and bending stiffness, which was followed by cyclic torsional loading to failure. Interfragmentary movements were monitored by means of optical motion tracking.
Results: There were no significant differences between double-plating and single-plating techniques in axial stiffness (464.6±424.0 N/mm vs. 754.2±575.2 N/mm; p=0.335), torsional stiffness in supination (0.330±0.072 Nm/° vs. 0.403±0.066 Nm/°; p=0.462) or pronation (0.330±0.071 Nm/° vs. 0.406±0.068 Nm/°; p=0.307), medio-lateral bending stiffness (1.40±0.61 Nm/° vs. 0.97±0.45 Nm/°; p=0.522), and antero-posterior bending stiffness (0.80±0.01 Nm/° vs. 0.85±0.18 Nm/°; p=0.143). Double-plating showed a higher angular displacement rate during cyclic torsional loading (p=0.03), but no significant difference in shear displacement across the fracture gap (p=0.324). Cycles until failure (5° angular deformation) were 1366±685 for double-plating and 2024±958 for single plating. Both constructs failed due to bone breakage at the most distal screw.
Conclusion: The double-plate construct provides comparable fixation to single plating, with similar stiffness and shear displacement. Clinical trials are needed to confirm if thinner implants reduce irritation and removal rates.

Clinical Equipoise as Inclusion Criterion to Control for Confounding in Natural Experiments

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Background: Observational studies are increasingly recognized as a valuable complement to RCTs in orthopedic trauma surgery. However, the absence of randomization in observational studies can lead to a lack of comparability between treatment groups, resulting in confounding bias. A potential solution is the use of natural experiments, where treatment allocation is determined by factors beyond the investigators' control, resembling experimental randomization. To further reduce confounding, "clinical equipoise" can be used as an inclusion criterion, restricting the study population to patients for whom surgeons disagree on the preferred treatment, thereby improving group comparability.
Aims: The aim of this study is to assess how the degree of disagreement among surgeons influences the comparability of treatment groups in a natural experiment using clinical equipoise.
Methods: This retrospective analysis is based on the LADON Humerus study, a multicenter, prospective study comparing operative versus non-operative treatment for acute displaced proximal humerus fractures. Patients from the Netherlands and Switzerland were assessed by independent panels of surgeons from the other country, blinded to actual treatments. Inclusion was limited to cases with significant disagreement between the treatment received and surgeons' recommendations, enabling classification into four levels of disagreement. Standardized differences were calculated to evaluate the distribution of baseline characteristics (age, gender, AO classification, ASA score) between groups, with results visualized using love plots.
Results: Increasing levels of disagreement were associated with decreasing standardized differences, leading to improved baseline balance across most characteristics, particularly gender, age, and ASA score.
Conclusion: Natural experiments using clinical equipoise offer a promising approach to mitigate confounding bias in observational studies. This study demonstrates that leveraging disagreement among surgeons enhances comparability between treatment groups, supporting further exploration of this method in future research.

Tables: Baseline Characteristics Comparability

Age and Gender

	Group D			Group C			Group B			Group A		
Characteristic	Operative	Non-operative	Standardized difference	Operative	Non-operative	Standardized difference	Operative	Non-operative	Standardized difference	Operative	Non-operative	Standardized difference
N	51	49		28	48		36	39		50	50	
Mean age	60.4	70.3	0.74	57.1	60.1	0.23	59.8	67.4	0.58	66.7	66.3	0.03
Female Sex (%)	70.6	85.7	0.52	60.7	77.1	0.50	58.3	82.1	0.74	70.0	72.0	0.06
Male Sex (%)	29.4	14.3	0.52	39.3	22.9	0.50	41.7	17.9	0.74	30.0	28.0	0.06

ASA-score

	Group D			Group C			Group B			Group A		
Characteristic	Operative	Non-operative	Standardized difference	Operative	Non-operative	Standardized difference	Operative	Non-operative	Standardized difference	Operative	Non-operative	Standardized difference
N	51	49		28	48		36	39		50	50	
ASA I (%)	25.5	16.3	0.32	21.4	52.1	0.90	16.7	20.5	0.14	16.0	16	0.00
ASA II (%)	58.9	38.8	0.51	46.4	29.2	0.50	63.9	61.5	0.07	60.0	60.0	0.00
ASA III (%)	17.6	44.9	0.83	32.1	18.8	0.43	19.4	17.9	0.05	24.0	24.0	0.00

AO-classification

	Group D			Group C			Group B			Group A		
Characteristic	Operative	Non-operative	Standardized difference	Operative	Non-operative	Standardized difference	Operative	Non-operative	Standardized difference	Operative	Non-operative	Standardized difference
N	51	49		28	48		36	39		50	50	
11A (%)	21.6	30.6	0.20	25	31.3	0.20	36.1	25.6	0.32	26.0	32.0	0.19
11B (%)	9.8	51.0	1.27	17.9	50.0	0.98	19.4	38.5	0.60	40.0	20.0	0.62
11C (%)	68.6	18.4	1.43	57.1	18.8	1.12	44.4	35.9	0.25	34.0	48.0	0.4

Table 1. Tables Results baseline characteristics comparability

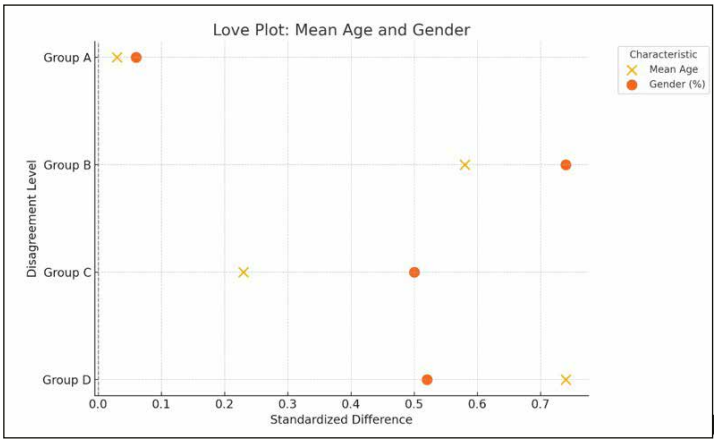

Figure 1. Love plot Age and gender

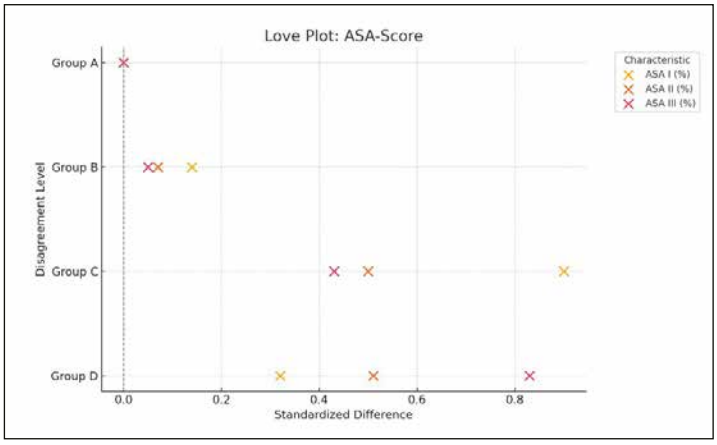

Figure 2. Love plot ASA score

Operatively Treated High-Energy Blunt Pelvic Ring Injuries and Surgical Site Infections – A Retrospective Assessment Based on a Prospective Registry

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Background: High-energy pelvic ring injuries (PRI) are severe, life-threatening trauma conditions which might require complex surgical management. One of the major complications associated with these injuries is the development of surgical site infections (SSI) which significantly impact patient outcomes.
Aims: This study aimed to evaluate the rate of SSI in patients undergoing surgical fixation of high-energy blunt PRI and identify the key predisposing factors.
Methods: A retrospective review of patients treated for high-energy blunt PRI was conducted using the prospectively filled institutional Severely Injured Patients' Registry, focusing on the rate of SSI following surgical fixation. The multifactorial nature of infection risk was analyzed, with particular attention to the type of injury, surgical technique, external fixation devices' usage and the germs encountered.
Results: A SSI rate of 10,5% (12 out of 114 patients) was encountered among the study population. The primary SSI risk factor was PRI complexity; 83.3% of patients with SSI had an AO/OTA type C fracture and 16.7% a type B fracture, while 43.1% of patients without SSI had a type C fracture and 56.9% a type B fracture (p=0.008). Additionally, SSI patients had a trend to have higher extremities/pelvis AIS and higher ISS, and to have been more often treated with a transient pelvic fixation device including supra-acetabular external fixator.
Conclusion: These findings emphasize the need for a comprehensive infection prevention strategy in high-energy PRI patients, especially in complex cases. A multidisciplinary approach is of outmost importance and should include surgical techniques with meticulous soft tissue handling, proper implant selection and aggressive post-operative wound care. Despite external fixation devices being related to certain cases of SSI, their life-saving potential during the initial management phase should be carefully weighed against this risk.

Increased Use of Whole-Body-Computed-Tomography in "Non-Emergency-Resuscitation-Room" Patients After Trauma: Indications, Findings and Therapeutic Consequences

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Background: The Whole-Body-Computed-Tomography (WBCT) is an essential adjunct in diagnosing and treating polytrauma patients and has been shown to improve survival prognosis. Since its introduction in the emergency department the use of it exponential increased over the years, while lacking on well-defined indication-protocols for "Non-Emergency-Resuscitation-Room" patients.
Aims: The aim of the present study was to analyze the role of WBCT in trauma patients in a "Non-Emergency-Resuscitation-Room" setting.
Methods: Retrospective analysis of all patients admitted to our emergency department between 01/2019 and 12/2021 who received WBCT in a "Non-Emergency-Resuscitation-Room" setting. Indications for WBCTs, specific injuries and therapeutic consequences were investigated.
Results: During the three-year study period, a total of 504 WBCTs were performed in "Non-Emergency-Resuscitation-Room" patients. The number of WBCTs increased significantly (p<0.001) over the years as follows: 2019: n=78 (2.5% of all emergency room patients); 2020: n=91 (3.2%); 2021: n=335 (11.3%). The most common indications for WBCTs were high-energy trauma (n=228, 45.2%) and suspected multiple injuries on clinical examination (n=190, 37.7%). Overall, one or more injuries were detected in 56.7% of WBCT scans (n=286). The injuries detected included thoracic trauma (n=155, 30.8%), head injuries (n=111, 22.0%), spinal fractures (n=95, 18.8%), intra-abdominal organ injuries (n=63, 12.5%), pelvic fractures (n=27, 5.4%), vascular injuries (n=24, 4.8%) and extremity fractures (n=12, 2.4%). Based on the results of the WBCTs, surgical or interventional radiologic procedures were required in 15.3% of cases (n=77), which mainly included spinal injuries (n=16) and thoracic injuries (n=8).
Conclusion: The use of WBCTs has increased significantly and has become an integral part of our diagnostic algorithm for traumatology patients even in "Non-Emergency-Resuscitation-Room" settings. However, clear indication-protocols or -algorithms are required to avoid unnecessary radiation exposure.

The Role of Surgical Stabilization of Rib Fractures (SSRF) in Patients With Clinically Relevant Flail Chest After Mechanical Resuscitation: a Case Report

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Background: Flail chest is a serious traumatic injury characterized by the fracture of multiple ribs, resulting in a paradoxical movement of a chest segment during respiration. This condition leads to impaired ventilation, respiratory distress, and often requires intensive medical intervention. Flail chest commonly occurs in high-impact trauma, such as accidents, falls or in cases of mechanical chest compression. Timely diagnosis and management are crucial to prevent complications such as respiratory failure and prolonged recovery. Treatment may include mechanical ventilation, pain control, and surgical stabilization in severe cases.
Case Presentation: We present a 56-year-old patient after emergency department trauma activation due to an out-of-hospital cardiac arrest, with successful ROSC following bolus aspiration. CT imaging revealed a right-sided hemothorax as well as several displaced rib fractures bilaterally. A chest drain was inserted, and the patient was monitored in the surgical intensive care unit. The residual bolus (broccoli) was successfully removed bronchoscopically. During the ICU stay, the patient developed a progressive severe respiratory acidosis with paradoxical breathing suggestive of a flail chest, thereafter a protective intubation was performed. Due to the lack of respiratory compensation and the inability to extubate, a decision was made to proceed with SSRF due to a clinically relevant flail chest. Subsequently, there was a rapid improvement in the patient's symptoms, and the patient was extubated in a timely manner. The course of recovery was uneventful, and the patient was discharged for rehabilitation.
Conclusion: The clinical picture of flail chest due to rib fractures is a common occurrence following high-energy trauma or mechanical resuscitation. The role of rib fracture osteosynthesis has been increasingly emphasized in recent studies. The main benefits include a significant reduction in the cumulative time spent in the intensive care unit, markedly reduced respiratory fatigue, intubation times, and a significant improvement in pain management.

Pelvic Ring Fracture and Erectile Dysfunction (PERFECD) – 3 Year Follow-up Cross Sectional Study

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Background: Pelvic ring fractures are associated with complications that may involve adjacent organs, often presenting in a delayed manner.
Aims: This study evaluates the quality of life (QoL) and erectile dysfunction (ED) in patients with pelvic ring fractures at least three years post-injury.
Methods: Between January 2016 and December 2020, male patients (≥18 years) with pelvic ring injuries were included. Fractures were classified using the Young & Burgess system, and pelvic contusions served as a control group. Data were collected through a questionnaire assessing QoL via the Short Form 12 (SF-12) and ED using the International Index of Erectile Function 5 (IIEF-5). ED was categorized as no ED (21-25 points), mild (16-21), moderate (9-15), or severe (5-7). Comorbidities such as vasculopathy, diabetes, and smoking were also considered.
Results: A total of 182 patients participated, with a mean injury age of 53.5 years and an average age of 57.8 at the time of the survey. Patient distribution was: APC (n = 20, 11.1%), LC (n = 94, 52.2%), CMVS (n = 6, 3.3%), and Control (n = 60, 33.3%). The mean Injury Severity Score (ISS) was 24.6. ED was reported in 82.6% of patients, with 47.8% experiencing severe ED. Patients with CMVS fractures had significantly lower QoL scores, especially in physical function. APC injuries were an independent risk factor for ED (OR -4.5, p = 0.02), similar to risk factors such as diabetes (OR -5.3, p = 0.012) and smoking (OR -2.6, p = 0.05).
Conclusion: Vertical shear fractures result in lower QoL three years post-injury. APC fractures were a significant risk factor for ED, highlighting the need for early screening and intervention in these patients.

Metabolomics After Polytrauma – A Biobank Analysis of 97 Patients Over the Time Course of 10 Days

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Background: Severe injury is known to have systemic effects at multiple levels, with the inflammatory response being a major focus of research in recent years. However, little is known about the perturbation of metabolic pathways after polytrauma.
Aims: To investigate metabolite dynamics and injury specific pattern, we performed a metabolomic analysis of patients from our in-hospital polytrauma biobank, which contains up to ten days of samples from each patient.

Methods: Patients from the in-house polytrauma biobank with signed ethical consent were utilized. Sample time points were baseline (hospital admission), 8h, 24h, 48h, 5d and 10 days post trauma. Untargeted mass spectrometry was performed, while metabolites reliably identified using the KEGG/HMDB database were subset-analyzed in a semitargeted approach. Metabolic changes were identified using MetaboAnalyst 6.0 to detect pathways that were particularly affected and presented using enrichment ratios. Additionally, cluster analyses were performed and metabolite dynamics over time were assessed.
Results: 97 severely injured patients (79.4% male / 20.6% female) were included in the study. The median ISS of this cohort was 29 (IQR=19). 46 metabolites were reliably identified. The immediate response (0-8h) shows increased activation of hemostasis and inflammation along with excessive corticosteroid production. In the 8-24h period, there is an excessive catabolic state with energy mobilization from fatty and amino acids. At 24-48 hours, detoxification, immune regulation and metabolic adjustments are primarily active. In the 5-10 day period, energy requirements are still elevated but reduced compared to the previous time points.
Conclusion: Severe trauma causes a major disruption in the metabolism. Immediately after trauma, the body activates life-saving pathways and begins to mobilize excessive energy resources by breaking down fats and amino acids for ATP production. Initial treatment and intensive care should take this excessive energy demand into account and assess the extent to which organ-protective treatment (e.g. liver) may be beneficial to the patient.

Comparative Analysis of Pretension Maintenance in Suture Tape Cerclage and the Influence of Intense Cyclic Loading

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Background: Fiber tapes have largely replaced steel wire cerclages in treating periprosthetic humerus fractures due to reduced soft tissue injury. However, their ability to maintain initial pre-tension under dynamic loading is insufficiently studied.
Aims: This study compares the pre-tension retention of DYNATape (DT) and SutureTape (ST) and evaluates their biomechanical performance in stabilizing humeral shaft fractures.
Methods: Cortical bone shells from human humeri were stabilized with fiber tape cerclages (Group 1: DT; Group 2: ST) and subjected to standardized biomechanical testing. Tapes were wrapped twice around the bone and secured with a modified Nice-Knot at 30 N pre-tension. The setup was submerged in a 36°C saline bath. The protocol included two 8-hour rest phases (R1, R2), cyclic loading from 30 N to 400 N over 10,000 cycles at 3 Hz (B1), and cyclic loading to failure up to 700 N (B2). Load, displacement, and cycles to failure were recorded, and failure modes analyzed.
Results: Both groups showed comparable initial pre-tension (DT: 35.5 ± 4.2 N; ST: 28.4 ± 6.2 N; $p = 0.06$). DT had significantly higher maximum pre-tension after R1 (52 ± 8 N vs. 29 ± 6 N; $p < 0.001$) and R2 (29 ± 8 N vs. 14 ± 7 N; $p = 0.008$). Retained pre-tension after B1 was higher for DT (20 ± 7 N vs. 9 ± 6 N; $p = 0.012$). Failure occurred consistently due to tape rupture near the knot, with no differences in displacement or cycles to failure ($p > 0.3$).
Conclusion: DYNATape demonstrated superior pre-tension retention and post-loading retensioning compared to SutureTape, potentially improving stability and fracture compression. Both tapes exhibited similar failure modes. Further studies should explore the clinical implications of these findings.

Operative vs. Nonoperative Treatment in Mason Type II Fractures: A Meta-Analysis

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Background: It is unclear whether patients benefit from operative treatment in Mason type II radial head fractures.
Aims: This meta-analysis aims to compare the two treatment modalities regarding functional outcomes, complications, and quality of life.
Methods: A systematic search of PubMed, Embase, and the Cochrane Central Register of Controlled Trials was conducted for randomized controlled trials and observational studies comparing operative and nonoperative treatment for Mason type II fractures. Effect estimates were pooled using random effects models. The primary outcome was elbow function, assessed by the Mayo Elbow Performance Score (MEPS). Secondary outcomes included range of motion, complications, reinterventions and quality of life.
Results: Four studies, including three observational studies and one randomized controlled trial, with a total of 181 patients were included. No significant difference in the MEPS was observed between the operative and nonoperative group (MD 2.67, 95% CI -4.48, 9.83, I^2 82%). Range of motion of elbow flexion, extension, pronation, and supination showed no significant difference. The nonoperative group showed no increased risk for overall complications at 9.2% versus 23.4% (OR 2.66, 95%CI 0.83, 8.49, I2 25%) or reinterventions at 5.7% versus 11.7% (OR 1.29, 95%CI 0.13, 12.30, I2 57%).
Conclusion: This meta-analysis could not demonstrate a clear advantage of operative treatment for Mason type II fractures in terms of function or complications. However, the long-term effect of surgery in preventing osteoarthritis remains uncertain and should be considered in the treatment decision as well as the degree of fracture displacement, even within the Mason type II spectrum. Further research focusing on long-term follow-up is needed to make a definitive statement in this regard.

Screw Fixation Versus Plate Fixation for Radial Head Fractures: Meta-Analysis

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Background: Radial head fractures are often treated with screw or plate fixation, but the optimal method is uncertain. This meta-analysis compares functional outcomes, complication rates, and patient-reported measures (MEPS and DASH) between these methods.
Aims: The aim is to determine the comparative effectiveness of screw fixation versus plate fixation for radial head fractures by analyzing functional outcomes, complication rates, and patient-reported measures (MEPS and DASH).
Methods: A PubMed search identified 13 studies (1 RCT, 12 observational). Outcomes included range of motion (flexion, extension, supination, pronation), MEPS, DASH scores, and complication rates. Heterogeneity was assessed with I^2, and analyses were visualized using RevMan forest plots.
Results: Screw fixation showed better outcomes in supination (MD: -6.55°, 95% CI: -10.29 to -2.81, $p = 0.0006$, $I^2 = 63\%$) and pronation (MD: -7.15°, 95% CI: -10.61 to -3.69, $p < 0.0001$, $I^2 = 54\%$). Flexion (MD: -1.01°, 95% CI: -2.65 to 0.63, $p = 0.23$, $I^2 = 0\%$) and extension (MD: 2.98°, 95% CI: -2.64 to 8.60, $p = 0.30$, $I^2 = 93\%$) showed no significant differences. MEPS (MD: -2.91, 95% CI: -7.96 to 2.15, $p = 0.26$, $I^2 = 87\%$) and DASH (MD: 1.48, 95% CI: -0.89 to 3.85, $p = 0.22$, $I^2 = 0\%$) were also similar. Plate fixation had significantly higher complication rates (OR: 5.49, 95% CI: 2.92 to 10.34, $p < 0.00001$, $I^2 = 16\%$).
Conclusion: Screw fixation results in better supination, pronation, and fewer complications than plate fixation for radial head fractures. While screw fixation appears preferable, high heterogeneity in some outcomes underscores the need for further research.

Validation of the Aospine-Dgou Osteoporotic Fracture Classification – Effect of Surgical Experience, Surgical Specialty, Work-Setting and Trauma Center Level on Reliability and Reproducibility

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Background: Osteoporotic vertebral fractures (OVFs) are of increasing concern as they may result in a major morbidity and a potential risk factor for mortality.
Aims: The aim of this international validation study was to assess the reliability of the new AO Spine-DGOU Osteoporotic Fracture Classification (OF classification) stratified by surgical specialty, work-setting, work-experience, and trauma center level.
Methods: 320 spine surgeons participated in this online-webinar based validation process and were asked to rate 27 cases according to the OF classification at two time points, four weeks apart (assessment 1 and 2). The Cohen´s Kappa (κ) statistic was calculated to assess the inter-observer reliability and the intra-rater reproducibility.
Results: Amongst all participants, the global interrater reliability was moderate in both, first and second assessment (κ=0.57; κ=0.58). Participants with a work-experience of more than 20 years showed the highest inter-rater agreement amongst all participations in both assessments globally (κ=0.65; κ=0.67). Neurosurgeons had the best global inter-rater agreement in the first assessment (κ=0.59) whereas orthopaedic spine surgeons showed a higher agreement in assessment two (κ =0.60). Participants from a level-1 trauma center showed the highest agreement (κ=0.58), whereas participants working at a tertiary trauma center showed higher grade of agreement in the second assessment (κ=0.66). Participants working in academia showed the highest agreement in the second assessment (κ=0.6). Surgeons with academic background and surgeons employed by a hospital showed substantial intra-rater agreement in the second assessment. Amongst all participants, the median intra-rater reproducibility was substantial (κ=0.71).
Conclusion: Overall, the AO Spine-DGOU Osteoporotic Fracture Classification showed moderate to substantial inter-rater agreement as well as intra-rater reproducibility regardless of work-setting, surgical experience, level of trauma center and surgical specialty. Non-spine colleagues´ ratings were inferior to the ratings of spine surgeons, which suggests that training for non-spine disciplines should be educated towards this classification.

Infected Intralobar Pulmonary Sequestration – A Case Report

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Background: Bronchopulmonary sequestration is a rare congenital lung anomaly characterized by the presence of non-functioning lung tissue that does not communicate with the bronchial tree and receives its blood supply from the systemic circulation. The arterial blood supply

derives mostly directly from the thoracic or abdominal aorta. Bronchopulmonary sequestrations are divided into intralobar and extralobar sequestrations, whereby intralobar sequestrations have the same pleura visceralis as the rest of the lung whereas extralobar have their own pleura visceralis. They are often asymptomatic but can lead to recurrent pulmonary infections and haemoptysis in children or young adults.

Case Presentation: We aim to present the case of an infected intralobar pulmonary sequestration of a 23-year-old male. The patient was diagnosed with an infected intralobar pulmonary sequestration after investigations for persistent respiratory symptoms. There was no increased susceptibility to pulmonary infections in the patient`s history. CT-scan revealed a 10,5 cm consolidation in the left lower lobe with an aberrant systemic arterial supply trough the celiac trunk. After initial antibiotic treatment and improvement of the patient`s clinical condition, uniportal-VATS left lower lobe resection was performed. Intraoperatively, the aberrant artery was identified next to the pulmonary ligament and dissected separately. The postoperative course was uneventful, and the patient experienced complete resolution of symptoms. Chest tube was removed on day two and the patient discharged on the third postoperative day.

Conclusion: This case report highlights the importance of early recognition and accurate treatment of bronchopulmonary sequestrations by performing lobar or sublobar thoracoscopic resection.

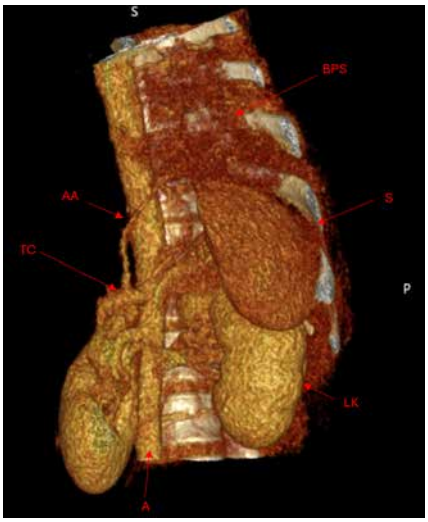

Figure 1. 3D-Reconstruction CT-Thorax CM; AA = aberrant artery, TC = celiac trunk, A = abdominal aorta, BPS = bronchopulmonary sequestration, S = spleen, LK = left kidney

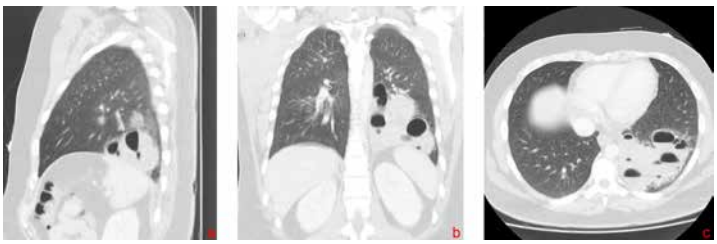

Figure 2. CT-Thorax CM, lung window – saggital (a), coronal (b) and axial (c)

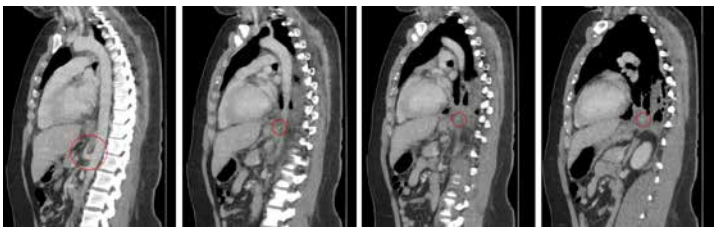

Figure 3. CT-Thorax CM, mediastinal window - aberrant artery originating from the celiac trunk

Figure 4. Histological specimen – left lower lobe (19,8 x 17,7 x 11,8 cm)

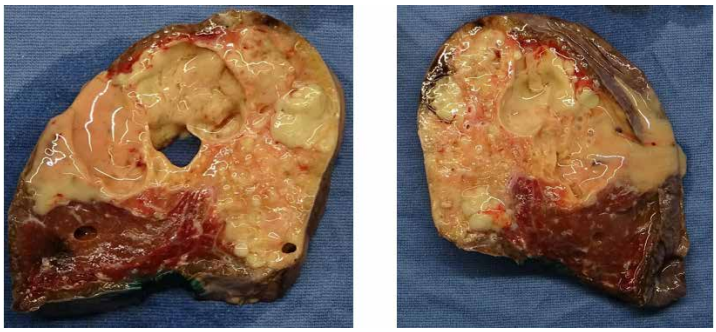

Figure 5. Histological section of the lower lobe – sequestration with a diameter of 11,8 cm

Cavitary Pulmonary Lesion With Bronchopleral Fistula Covered With a Pericardial Patch and Pedicled Latissimus Dorsi Muscle Flap – A Case Report

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Background: Not only primary lung cancers, but also metastasis can lead to cavitations, with squamous cell carcinomas being the most commonly associated with this phenomenon.
The aim of this presentation is to underline the versatility of local and regional, thoracal and abdominal muscle flaps for covering cavitary pulmonary lesions.

Case Presentation: A 63-year-old male patient with COPD was diagnosed with central hilar squamous cell carcinoma (cT4 cN3 cM0, UICC Stadium IIIC) in the right upper lobe. (Figure 1) He underwent chemo-, radio- and immunotherapy. He was admitted to our department eleven months subsequent to the tumor diagnosis, following recurrent infections and a persistent cavern in the posterior right upper lobe. The bronchoscopies showed no tumor and confirmed an infection with Haemophilus influenzae for which he underwent a longterm therapy with Clindamycin. As paliative surgical sanitation, we performed a partial resection of the 5th and 6th ribs, removed the abscess and identified a relatively large defect – bronchopleural fistula. (Figure 1) It was not viable for primary suture closure or resection. In order to achieve an airtight seal over the bronchial fistula, a bovine pericardial flap was utilized to cover the defect. In scope of transfering the Latissimus dorsi to the cavity, we chose an infrascapular route. (Figure 2) Postoperatively the patient developed a seroma that was resolved at one month after the surgery, otherwise the clinical course was progressively better with lower infection parameters and a satisfactory thorax-CT control. (Figure 3)

Conclusion: A pedicled latissimus dorsi muscle flap that is highly vascularized is a highly efficient option for tissue coverage in cavitary lesions, not only due to its bulky size but also due to its ability to combat infection.

Figure 1

Figure 2

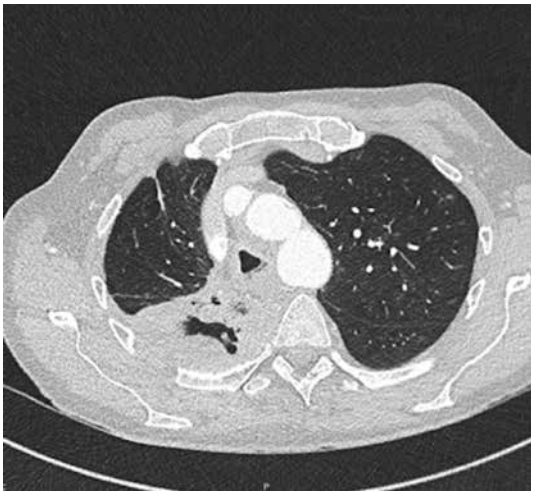

Figure 3

Comparative Biomechanical Analysis of Radial Neck Plate Versus Tripod Fixation in Complex Mason Type III Radial Head Fractures

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Background: Proximal radius fractures, particularly Mason Type III, pose significant challenges in elbow surgery due to their complexity and impact on joint function. While the radial neck plate is a reliable option, it may cause soft tissue irritation and restrict range of motion. The tripod fixation method, using headless compression screws (HCS), aims to address these complications.
Aims: This study compares the biomechanical properties of two fixation techniques: the radial neck plate and an advanced tripod fixation approach.
Methods: Proximal radius fractures, particularly Mason Type III, pose significant challenges in elbow surgery due to their complexity and impact on joint function. This study compares the biomechanical properties of two fixation techniques: the radial neck plate and an advanced tripod fixation approach. While the radial neck plate is a reliable option, it may cause soft tissue irritation and restrict range of motion. The tripod fixation method, using headless compression screws (HCS), aims to address these complications.
Results: In both fracture models, tripod fixation demonstrated superior biomechanical performance compared to the radial neck plate, particularly in AP bending and axial compression. In the three-part fracture model, tripod fixation exhibited significantly higher stiffness in AP bending (197 ± 56 N/mm vs. 51 ± 31 N/mm, $p < 0.001$) and axial compression (794 ± 263 N/mm vs. 327 ± 122 N/mm, $p = 0.005$). In the four-part fracture model, tripod fixation also showed greater stiffness in AP bending (110 ± 67 N/mm vs. 46 ± 60 N/mm, $p = 0.14$) and axial compression (647 ± 243 N/mm vs. 326 ± 194 N/mm, $p = 0.038$). No significant differences were observed in mediolateral bending, pronation, or supination.
Conclusion: Tripod fixation provides superior stiffness in AP bending and axial compression while minimizing soft tissue irritation and preserving range of motion. These findings highlight its potential clinical benefits, warranting further randomized trials.

Rats Sleeve Left Lower Lobe Lobectomy and Mediastinal Lymphadenectomy in a Carcinoid Tumor Case

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Background: Robot-assisted thoracic surgery (RATS) has gained popularity and advanced techniques are more often used including complex procedures such as the present case of a left lower lobe (LLL) sleeve lobectomy.
Aims: The aim was to show how RATS can be considered as an alternative approach when facing lung tumors in challenging locations such as the present case of a left lower lobe sleeve lobectomy.
Methods: We present the case of a 57-year-old male smoker (30 pack-years) diagnosed with a carcinoid tumor in the left lower lobe (UICC-Stage IA2) via bronchoscopy. A FDG-PET/CT scan confirmed a proximal endobronchial lesion at the level of the carina between the upper and lower lobe measuring 11mm, with no other metabolically active lesions. Pulmonary function tests showed FEV1 of 3.21L (87) and DLCO of 8.0 mmol/kPa/min (81%). Based on these findings and the challenging location of the tumor, a robot-assisted sleeve resection of the lower left lobe and mediastinal lymph node dissection was performed.
Results: The postoperative course was uncomplicated. The patient received intravenous antibiotics (Co-Amoxicillin) for 72 hours. A bronchoscopy performed 3 days post-surgery showed excellent anastomotic healings and the patient could be discharged on the 4th postoperative day. Histopathological examination revealed a complete and R0 resection of the tumor with tumor-free lymph nodes.
Conclusion: Robot-assisted thoracic surgery offers promising outcomes, with a smooth postoperative course and early recovery. This case highlights the feasibility and effectiveness of RATS in managing lung carcinoid tumors located at anatomically challenging sites, such as the carina between the upper and the lower lobe bronchi. The robotic approach allowed for precise resection and reconstruction, effectively avoiding the need for open surgery.

Robotic-Assisted Full-Thickness Gastric Wall Resection for Gist Using Adjuvant Imaging Technologies – A Robotic Center Experience

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Background: Robotic-assisted surgery has expanded the scope of minimally invasive techniques in general surgery. This study evaluates the feasibility and safety of robotic-assisted gastric GIST resections, integrating intraoperative diagnostic adjuncts such as endoscopy, laparoscopic ultrasound, and near-infrared fluorescence imaging (NIFI).
Aims: To assess the feasibility and safety of robotic-assisted gastric GIST resections performed in our robotic center with advanced imaging technologies.
Methods: Between November 2018 and January 2023, ten patients underwent robotic-assisted surgery for gastric GISTs using the da Vinci Xi system. Procedures incorporated real-time imaging technologies: intraoperative endoscopy, laparoscopic ultrasound, and NIFI via the Firefly system. Patient demographics, perioperative parameters, and clinical outcomes were descriptive analysed.
Results: The median patient age was 64 years (range: 36–84). Eight patients underwent full-thickness resections, and two had wedge resections. Intraoperative adjuncts were utilised in all cases to localize tumours and ensure vascularised anastomoses. The median operative time was 132.5 minutes, and the median hospital stay was 6 days. Complications included three cases of postoperative bleeding (Clavier-Dindo I-II), with no anastomotic leaks or intra-abdominal infections. Final pathology confirmed R0 resection in 70%, and no recurrences were observed during a median follow-up of 27.5 months.
Conclusion: Robotic-assisted gastric GIST resection with intraoperative imaging technologies is safe and effective, offering precise tumor localisation, enhanced visualisation. These findings support the integration of robotic platforms with advanced diagnostics for complex minimally invasive surgeries.

BJS Session

First International Benchmark Values for Robotic Right Hepatectomy: A New Standard of Care?

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Background: Robotic liver surgery is rapidly emerging as the preferred surgical approach to the liver. Novel benchmark values in robotic surgery are urgently needed to enable conclusive comparisons with the standard open or laparoscopic approaches as well as with robotic surgery among different centers.
Aims: Therefore, this first multicenter study aimed to identify benchmark values for robotic right hepatectomies (RRH) based on a low-risk cohort treated at expert centers.
Methods: This multicenter study analyzed outcomes from consecutive patients undergoing RRH for malignant or benign lesions from 16 international expert centers from 2018 to 2024. Fifteen benchmark values were identified and compared to a published multi-national cohort series of laparoscopic and open right hepatectomy (RH). Benchmark patients were without significant comorbidities including portal hypertension, Child B cirrhosis, obesity (BMI >35kg/m^2) cardiac disease, chronic pulmonary disease and renal failure.
Results: Of 352 patients, 192 (54.5%) qualified as benchmark cohort. The proportion of benchmark patients varied between 24%-100% per center. All benchmark values are disclosed in Figure 1. Benchmark values were defined for operative time (<480min), conversion rate (<0%), bile leak (<5.6%), CCI at 90-days (<20.9), hospital stay (<10 days) and readmission rate (<0%). Benchmark cut-offs showed a significant rate for 3-month overall complications (≤62.9%), but low rate of major complications (≤29.8%). RRH compared favorably to a multinational cohort series of laparoscopic RH with lower conversion- (≤0% vs ≤13%) and R1 rates (≤0% vs ≤18%). Compared to the open approach, the benchmark cutoff for operation time was longer (≤480min vs ≤370min), however RRH showed lower values for major complications (≤45.5% vs ≤29.8%) and length of stay (≤9d vs ≤12d) (Figure 1).
Conclusion: This first benchmark analysis sets novel reference values for RRH, indicating several favorable outcomes as compared to open RH. These references values may serve for quality control of surgery in centers embarking in RRH, and RRH may be expected to become the approach of choice in minimally invasive RH.

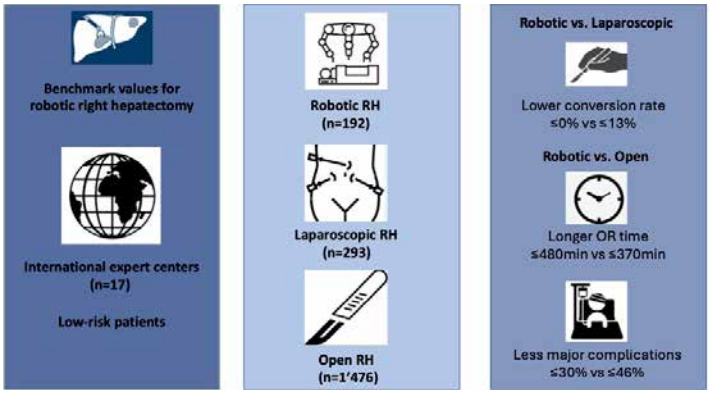

Figure 1

Lung Volume Reduction Surgery Reduces Pulmonary Hypertension in Selected Patients With Emphysema

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Background: Lung volume reduction surgery (LVRS) provides benefit in survival, lung function, gas exchange and quality of life in patients with emphysema. Pulmonary hypertension (PH) is a late and serious complication in patients suffering from emphysema. Given the high-risk profile, LVRS remains controversial in this patient subgroup.
Aims: We aim to present our institutional experience in performing LVRS in emphysema patients with PH.
Methods: Data was retrospectively collected from October 2002 until September 2024. We included patients with pre-and postoperative transthoracic echocardiogram (TTE) and/or right heart catheterization (RHC). We defined pulmonary hypertension (PH) as sPAP >35mmHg (TTE), mPAP ≥20mmHg (RHC) or other signs of pulmonary hypertension in TTE. We compared pre-and postoperative sPAP and forced expiratory volume in 1 second (FEV1) and analyzed the outcome.
Results: 158 patients with COPD and PH underwent LVRS from October 2002–September 2024. Our cohort consists of 68 (43%) female patients with a median age of 67 [IQR 62-73]. 50 (32%) patients had homogeneous, 104 (66%) heterogeneous and 4 (2%) intermediately heterogeneous patterns of emphysema. 72 (46%) patients had an estimated sPAP >35mmHg in the preoperative TTE, 46 (29%) patients presented with mPAP ≥20mmHg during RHC, 40 (25%) patients showed signs of PH in the TTE. The sPAP (TTE) decreased significantly from 43.5mmHg [IQR 39-50] preoperatively to 39.5mmHg [IQR 35-44.25, p=0.0138] postoperatively, independent of emphysema type. These patients also had an improvement in FEV1 from 710ml [IQR 560-860ml] preoperatively to 845ml [IQR 687.5-1160ml, p<0.0001] postoperatively. The 30-day mortality was 2 (1%), and the median overall survival was 37.44 months [IQR 17.49-64.89].
Conclusion: LVRS can lead to significant reduction of PH and improvement in lung function for patients with all emphysema types. Therefore, PH should not be an exclusion criterion per se and patients being equally assessed in a specialized institution.

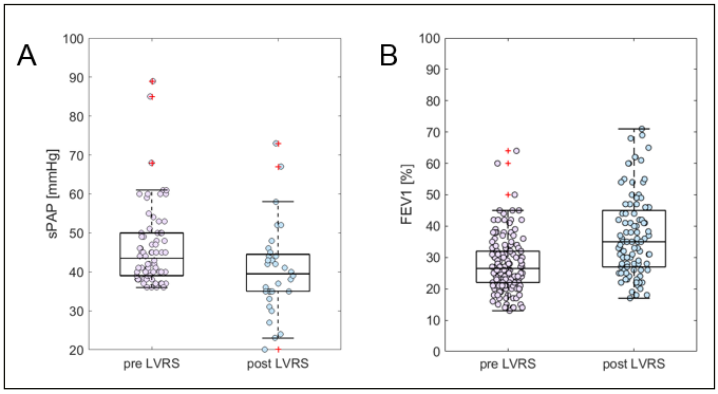

Figure 1. Pre-and postoperative sPAP (TTE) (p=0.0138) (A) and FEV1 in % (p<0.0001) (B) in patients with PH undergoing LVRS

Pilot Open Randomized Controlled Trial Comparing Patients Undergoing Robotic Gastric Bypass with or without Concomitant Cholecystectomy

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Background: Patients experiencing rapid weight loss after bariatric surgery are at high risk of developing gallstones. However, the necessity of performing a concomitant cholecystectomy along with Roux-en-Y Gastric Bypass (RYGB) remains debated. Concerns over higher complication rates lead many surgeons to avoid performing concomitant cholecystectomy, particularly in patients without gallbladder pathology.
Aims: To compare outcomes between patients without cholelithiasis undergoing RYGB with and without concomitant cholecystectomy.
Methods: We conducted a pilot prospective open randomized study from 2018 to 2023 involving patients without gallstones who underwent RYGB either without concomitant cholecystectomy (control group) or with concomitant cholecystectomy (study group). Follow-up occurred during hospitalization and at 1, 3, 6, 12, and 18 months. The primary composite outcome was intraoperative adverse events (iAEs) and postoperative complications (Clavien-Dindo classification). Secondary endpoints included detailed iAEs and postoperative complications, biliary outcomes, operation duration, length of hospital stay, and quality of life (QoL).
Results: A total of 95 patients were included in the study. Demographics were similar between groups. There was no statistically significant difference in the composite outcome of intra- and postoperative complications between the control and study group (24.4% vs. 42%, p = 0.083). Detailed iAEs, postoperative complications according to Clavien-Dindo, length of hospital stay, operation duration, and QoL at 1 and 12 months were similar, while the study group showed a higher early comprehensive complication index (mean CCI of 2.10 vs. 6.09, p = 0.047). The incidence of biliary complications during follow-up was 6.8% in the control group and 2.0% in the study group, with 4.5% of patients receiving biliary interventions in the control group.
Conclusion: While overall intra- and postoperative complications did not significantly differ, patients experiencing concomitant cholecystectomy showed a higher early complication index. The incidence of subsequent biliary interventions was low in this patient cohort without preexisting cholelithiasis.

Return to Intended Oncologic Treatment (RIOT) After Surgical Resection of Oligometastatic Non-Small Cell Lung Cancer

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Background: In oligometastatic Non-Small Cell Lung Cancer (NSCLC) combining systemic and local ablative treatments, including lung resection or radiotherapy, has been shown to improve survival. Maintaining continuity in systemic therapy is crucial in metastatic disease, making the time to Return to Intended Oncologic Treatment (RIOT) after surgery a promising oncologic outcome parameter, which has not yet been investigated in oligometastatic NSCLC.
Aims: We aimed to assess whether an early RIOT after anatomical lung resection is associated with improved survival.
Methods: We retrospectively analyzed patients with synchronous oligometastatic NSCLC (≤5 metastases in ≤3 organs) diagnosed between 2004 and 2024 who underwent anatomical resection of the primary tumor and were planned for adjuvant oncologic treatment. RIOT was defined as the interval between surgery and the first dose of adjuvant treatment. Predictors of overall survival (OS) and recurrence-free survival (RFS) were assessed by multivariate Cox regression.
Results: Thirty-six patients were analyzed; 58% were female and the median age was 60.0 [53.0–67.0] years. Despite stage IV disease, 61% of lung resections were performed minimally invasive (42% VATS, 19% RATS). Median RIOT was 36.0 [27.0–56.3] days and ROC analysis identified 41.5 days as the cut-off to discriminate recurrence. Patients returning to oncologic treatment within 42 days had significantly improved RFS compared to those with delayed RIOT (44.0 [18.0–101.0] vs. 14.0 [5.0–31.0] months, p=0.012) (Figure 1). In the multivariate Cox regression model, RIOT was identified as an independent predictor of RFS (HR 2.55, 95% CI 1.04–6.27, p=0.042).
Conclusion: RIOT appears to be a valuable predictor for RFS in patients with synchronous oligometastatic NSCLC who undergo anatomical lung resection as part of the multimodality treatment approach. These findings emphasize the importance of minimally invasive surgery and the implementation of enhanced recovery after thoracic surgery (ERATS) protocols to facilitate a timely RIOT in this patient population.

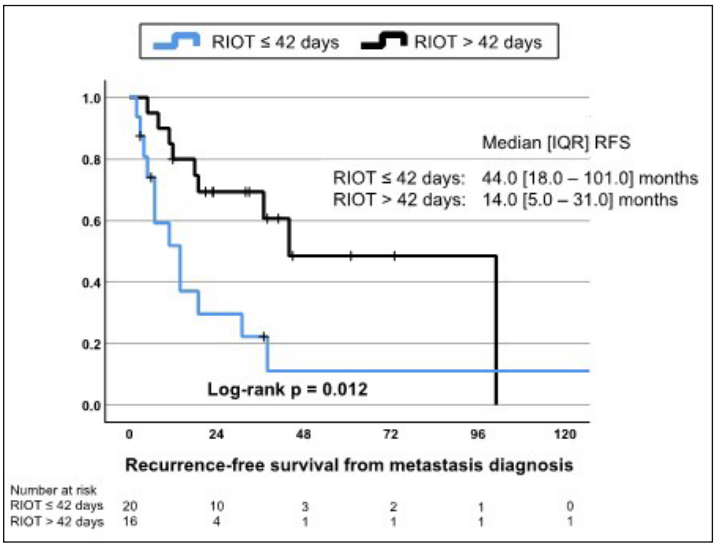

Figure 1. Kaplan-Meier for RFS: RIOT ≤ 42 vs. >42 days

Trends and Perioperative Outcomes in Gastric Cancer Surgery in Switzerland: A National Inpatient Database Analysis (1998–2021)

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Background: Volume–outcome relationships have driven the implementation of minimum case volume regulations for various surgical procedures under the framework of Highly Specialised Medicine (HSM) in Switzerland. However, the regulation of gastric oncological resections remains a subject of debate.
Aims: To analyse volume–outcome relationships for oncological resections in gastric cancer patients in Switzerland.
Methods: A nationwide analysis of an inpatient database (Medical Statistics of Hospitals) from the Swiss Federal Statistical Office was conducted. Diagnoses and related health problems were coded according to the International Classification of Diseases, 10th Revision (ICD-10), and diagnostic and surgical procedures using the Swiss Classification of Operations (CHOP). Patients with gastric cancer undergoing surgical or endoscopic resection from 1998 to 2021 were identified. Data were stratified by annual surgical caseload (quartiles), hospital typology, and annual inpatient volume. Outcomes included in-hospital mortality, postoperative complications, and failure-to-rescue (FTR) rates.
Results: A total of 8708 cases from over 30 million hospitalisations were included. Yearly caseload increased over time (2000: 255; 2010: 383; 2020: 432). Overall mortality was 3.8%. Higher surgical caseload was associated with lower mortality (2.2% for centres with >20 annual gastric cancer surgeries vs. 2.6–4.5% for lower quartiles, $p = 0.001$), as were annual inpatient volume (2.3% vs. 4.1–5.0% with a threshold of 30,000 annual inpatient cases, $p < 0.001$), and hospital typology (1.9% for university hospitals vs. 4.2–4.1% for centrum/other hospitals, $p < 0.001$). While hospitals with higher caseload reported relatively more complications, including anastomotic leaks and peritonitis, the associated FTR rates were lower (10.8% vs. 12.3–25.0% with 20 annual gastric resections as the cut-off, $p < 0.001$).
Conclusion: The results indicate that patients who underwent gastric cancer surgery in hospitals with higher case volumes – both surgical and inpatient – experienced lower in-hospital mortality and reduced failure-to-rescue rates.

Repeated Anatomical Pulmonary Resection for Second Primary Non-Small Cell Lung Cancer: Safety, Feasibility and Short-Term Outcomes

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Background: Advances in non-small cell lung cancer (NSCLC) management have extended survival rates, contributing to a higher incidence of second primary NSCLC (2-20%). Repeated anatomical pulmonary resection in these cases poses significant technical challenges and functional limitations due to previous surgery.
Aims: This study evaluates the feasibility and short-term outcomes of repeated anatomical pulmonary resections for second primary NSCLC.
Methods: We retrospectively reviewed all consecutive cases of repeated anatomical pulmonary resections for second primary NSCLC performed in our institution from January 2014 to December 2023. Clinical-pathological characteristics, postoperative complications, and oncological outcomes were analyzed.
Results: A total of 55 patients (median age 68 years [IQR: 61.5-72]) underwent repeated anatomical pulmonary resections for second primary NSCLC (figure 1). Adenocarcinoma predominated in both primary (78.2%) and secondary (76.4%) cases. Video-Assisted Thoracoscopy (VATS) approach was used in 94.5% and 96.4% after first and repeated resection, respectively ($p=0.647$). The extent of pulmonary resection differed between first and second resection, with a predominance of lobectomy during first resection (56.4%) and segmentectomy during second resection (85.5%, $p<0.001$). We did not observe any significant difference in postoperative overall morbidity after first and second resection (23.6% vs. 40%, $p=0.065$). However, there was a significant increased incidence of cardiac complications (16.4% vs. 0%, $p=0.007$) and prolonged air leak (>5 days) after second resection (14.5% vs. 0%, $p=0.014$). The median length of hospital stay was similar after first and repeated resection (5 vs. 5 days, $p=0.089$) and the duration of chest drainage was marginally increased after the second surgery (2 vs. 1 day, $p=0.065$). Three-year overall survival after primary resection was 89%. Recurrence was documented in one patient (1.8%) after first resection and two patients (3.6%) after second resection ($p=0.558$).
Conclusion: Our series demonstrated that second primary NSCLC can be safely managed by VATS segmentectomy, yielding favorable short-term survival and low recurrence rate.