Organized by:

Institute of Vascular Diseases, (I.V.D.), Greece

In collaboration:

Hellenic Society of Vascular and Endovascular Surgery

Stony Brook University Medical Center, New York, USA

2024 LIVE Leading Innovative Vascular Education

May 16-18, 2024 | Rhodes, **Greece**

#LIVE2024

BOOK OF ABSTRACTS

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Institute of Vascular Diseases, (I.V.D.), Greece

Abstract Book

May 16-18, 2024 LIVE 2024 - Leading Innovative Vascular Education

Organization

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Joint Sessions:

European Society for Vascular Surgery (ESVS)

European Society of CardioVascular Surgery (ESCVS)

Egyptian Vascular and Endovascular Society (EVES)

International Symposium on Endovascular Therapeutics (SITE)

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Oral Presentations

OP01

EFFICACY AND SAFETY OF URGENT CAROTID ENDARTERECTOMY FOR CRESCENDO TRANSIENT ISCHEMIC ATTACK

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Aim: The aim of this study was to evaluate the efficacy and safety of urgent carotid endarterectomy (UCEA) compared with elective carotid endarterectomy (ECEA) in the treatment of crescendo transient ischemic attack (cTIA), a rare syndrome characterized by recurrent progressive neurological symptoms.

Methods: We conducted a retrospective analysis of 87 patients who underwent UCEA within 6 hours of the onset of cTIA symptoms and compared their results with 8168 patients who underwent ECEA during the same period. Patients were followed for an average of 94 months (early period <30 days, late period >30 days). Outcomes were defined as total mortality, stroke, myocardial infarction (MI), as well as the presence of significant restenosis (>50%).

Results: In the early postoperative period, all patients in the UCEA group had an excellent recovery without fatal outcomes. During the late follow-up period, 1.1% in this group had stroke and 2.3% had significant restenosis, for an overall mortality of 3.5%. In the ECEA group, 30-day mortality was 1.3%. At late follow-up, a mortality rate of 2.1% was recorded, as was 4.3% of patients with significant restenosis. No significant differences were found in the characteristics of early and late postoperative complications, neurological and total mortality between the two groups. In patients with cTIA, ulcerated plaque was significantly more common compared to patients in the ECEA group (p=0.001). The ABCD2 score in cTIA patients was found to be 6.7±0.7, indicating a high two-day risk of stroke requiring urgent treatment. Perioperative complications in the form of hematoma, peripheral nerve damage, or wound infection were not significantly different between the two groups.

Conclusion: UCEA may be a safe and effective treatment for patients with cTIA. The early and long-term outcomes of patients who underwent UCEA for cTIA were comparable to those who underwent ECEA.

OP02

ROBOTIC VASCULAR SURGERY

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Background - Aim: Laparoscopic, robotic and endovascular technique represent latest technological procedures in vascular surgery. The aim of this retrospective study was to describe and evaluate our single center experience with robotic aortic and non-aortic vascular surgery to treat mostly occlusive disease and aneurysms.

Methods: From November 2005 to August 2023, 615 robot assisted vascular operations were performed. 389 patients were prospectively evaluated for occlusive disease, 163 patients for abdominal aortic aneurysm (AAA), 8 for a common iliac artery aneurysm, 11 for a splenic artery aneurysm, 1 for a internal mammary artery aneurysm, 22 patients for median arcuate ligament release, 15 for endoleak II treatment post endovascular aneurysm repair (EVAR), 2 for renal artery reconstruction, 1 paraaortic biopsia and 3 cases were inoperable. 6 hybrid procedures in study were performed. 4 patients underwent combined robotic incisional hernia prosthetic mesh repair with robotic vascular procedure and 1 patient with type B dissection and heavy stenosis of the renal artery was treated by robotic ilio-renal bypass and thoracic stent graft implantation.

Results: 590 cases (96%) were successfully completed robotically, 3 patient's surgery (0,5%) was discontinued due to heavy aortic calcification and severe peri-aortitis respectively. In 22 patients (3,5%) conversion was necessary. The thirty-day mortality rate was 0,3% (2 patients), and prothesis infection were observed in 2 patients (0,3%).

Conclusions: Our experience with robot-assisted laparoscopic surgery has demonstrated the feasibility of this technique for occlusive diseases, aneurysms, endoleak II treatment post EVAR, for median arcuate ligament release and hybrid procedures. The robotic system provides a real opportunity for minimally invasive surgery in the field of vascular surgery and offers true mini-invasive surgical vascular interventions with all its advantages. Robotic AAA treatment and aorto-femoral represent the standard operations in vascular surgery, and they are not only possible but also safe and successful.

OP03

EXPERIENCE IN ENDOVASCULAR TREATMENT OF ATHEROSCLEROTIC LESIONS OF THE CAROTID ARTERIES OF HIGH-RISK SURGICAL PATIENTS

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Aim: To improve the results of treatment of symptomatic patients with hemodynamically significant carotid artery lesions at high surgical risk and to evaluate the effectiveness of carotid stenting.

Materials and Methods: Endovascular stenting of 25 carotid arteries was performed in 22 high-risk surgical patients. That included 11 patients with stenosis on one side and occlusion on the contralateral side; 7 patients with bilateral critical stenosis; 4 patients with critical carotid artery stenosis and low ejection fraction; and 1 patient with sub-occlusion with a free-floating thrombus in the ICA. The average age of the patients was 67.5 ± 3.4 years, and all of them had suffered a transient ischemic attack or ischemic stroke in the period from 2 weeks to 1 year. All the patients had comorbidities: 18 - arterial hypertension, 14 - coronary heart disease, of which 4 had an ejection fraction of less than 40%, 3 - diabetes mellitus, 6 - obliterative peripheral vascular disease, 1 - cancer. All surgical repairs were conducted under local anesthesia via femoral artery access. Systemic heparinization with a preoperative loading dose of 300 mg of Clopidogrel was administered. In 21 cases, distal protection was used, and in one - proximal. Open-cell self-expanding stents were chosen together with balloon dilatation catheters (diameter 6 mm) to stretch the areas open.

Results: Technical success was achieved in 100% of cases, the average operation time was 75 minutes, in 3 cases there were symptoms of hyperperfusion which were corrected conservatively within 2-3 days. In one case, a hemorrhagic stroke resulted in death during the reporting period.

Conclusions: Endovascular stenting of the carotid arteries is a minimally traumatic, effective technique with good early and long-term results in symptomatic patients who are at high surgical risk.

OP04

EARLY MULTICENTRIC OUTCOMES OF THE ON-LABEL AND CE-MARKED COMBINATION OF THE ENDURANT WITH THE RADIANT CHIMNEY GRAFT FOR THE CHIMNEY ENDOVASCULAR AORTIC REPAIR (ENCHEVAR): THE LAMUR REGISTRY

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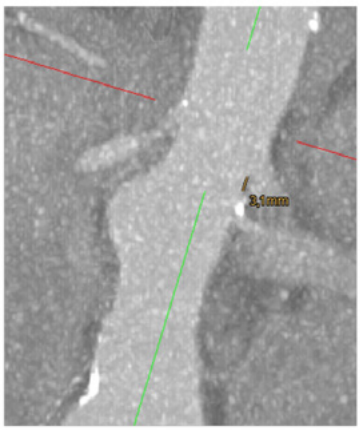
Background: To evaluate the early results of the CE-marked standardized device combination consisting of Endurant and the Radiant chimney graft (En-ChEVAR) for the treatment of juxtarenal aortic aneurysms.

Methods: Multicentric non-industry sponsored case series evaluating the EnChEVAR technique for patients treated between December 2022 and February 2024. Clinical, perioperative procedure-related and radiological data were collected. The primary outcome measure was the freedom of a type Ia gutter-related endoleak at postoperative computed tomography angiography (CTA). Secondary outcome measures included early type Ia endoleak-related reinterventions, target vessel complications including dissection or loss of target vessel, major adverse events, and mortality. Continuous variables were presented as median (interquartile Range-IQR) and categorical variables as count and percentage.

Results: Ten patients were included in the present study. 8(80%) were male, in nine cases a single chimney was implanted, and the other one was a double chimney graft placement. The treated aneurysms had an infrarenal neck length of 3.4(1.2) mm. The rate of main body oversizing was 30%. The new neck length after chimney graft placement was 18 (3) mm. The median procedural time was 130(17) mm, contrast medium use was 109(26) ml, radiation time was 45 (12) min.

The technical success was 100%. No type Ia endoleak was detected at the postoperative CTA. There were no target vessel issues. No major adverse events or death were observed.

Conclusion: First reported cohort of patients treated with EnChEVAR demonstrated reproducible clinical and procedural outcomes within the 3 vascular centers with total exclusion of the aneurysms, patent renal arteries, and no evidence of gutter-related type IA endoleak. Further evidence with larger sample size of treated patients and longer follow-up are needed.



OP05

LONG-TERM OUTCOMES OF COMPLEX ABDOMINAL AORTIC ANEURYSMS TREATED USING THE CHIMNEY TECHNIQUE

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Introduction: The chimney endovascular aortic repair (ChEVAR) technique is an established endovascular option for complex AAA treatment. We present the long-term outcomes of the ChEVAR technique for the treatment of complex AAA in a single tertiary center.

Methods: This is a retrospective analysis of prospectively collected data. All patients undergoing ChEVAR for juxta-, para-, and supra-renal AAA in a single-tertiary center during an 8-year time-period (March 2016-March 2024) were included. Primary outcomes were overall survival, primary patency of TV and freedom from type Ia endoleak (EL Ia) and were reported using Kaplan-Meier life tables.

Results: A total of 74 patients (males: 95.9%, mean age: 72 ± 6.8 years old) underwent single (24.3% -18/74), double (37.8% - 28/74) or triple (35.1% - 26/74) ChEVAR were included. Aneurysm type included 29 juxtarenal (39.1%), 39 pararenal (52.7%), and six suprarenal (8.1%) AAA, while mean aneurysm diameter was 7.1 ± 2cm. A total of 153 TV were implemented, including 60 (39.2%) right renal arteries, 65 (42.4%) left renal arteries, and 28 (18.3%) superior mesenteric arteries. Mean follow-up was 32 months (1-84 months). Overall survival rates at 1, 2, 3 and 5 years was 76.3%, 73.3%, 69.3%, and 47.7%, respectively. Primary TV patency rates at 2 and 5 years was 98.7%, and 92.5%, respectively. Freedom from EL Ia rates at 1 and 4 years was 96.7%, and 87.5%, respectively. A total of six aneurysm-related reinterventions were carried out: one case of a custom-made device deployment for EL Ia treatment, three cases of limb extension for EL Ib, and two cases of TV relining.

Conclusion: ChEVAR technique offers good mid- and long-term outcomes in terms of TV patency and freedom from endoleak type Ia. ChEVAR seems to be effective and durable during the long-term period, while survival rate of those patients might highlight the need for patients' selection.

OP06

SHOCKWAVE INTRAVASCULAR LITHOTRIPSY IN THE MANAGEMENT OF HOSTILE ILIAC ACCESS DURING ENDOVACULAR AORTIC REPAIR

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Background: The application of endovascular therapies in the treatment of aortic pathologies is gaining increasing popularity. However, a major limitation of current endovascular devices are large bore sheaths in combination with calcified access vessels. Although iliac artery calcification may not always result in stenosis, calcification can contribute to the loss of elasticity and compliance. In contrast to conventional angioplasty, Shockwave intravascular lithotripsy (IVL; Shockwave Medical) uses ultrasonic waves to induce micro-fracturing in calcified plaque. IVL allows for enhanced vessel compliance by fracturing calcifications of both intimal and medial layers without injuring the vessel.

Aim: To report the use of Shockwave Intravascular Lithotripsy (IVL) in the management of hostile iliac access during endovacular aortic repair.

Methods: All patients who underwent endovascular aortic repair for infrarenal, pararenal or thoracoabdominal aneurysm with hostile access vessels (circumferential calcifications extended to more than 50% of the vessel length, hemodynamic stenosis, or occlusions) were included in the present study. Pre-, intra-, and postoperative data were collected and retrospectively analyzed. Technical success, early complications, reinterventions and mortality were recorded.

Results: From January 2023 to March 2024, 233 patients underwent endovascular aneurysm aortic repair at our department. Thirteen patients (5.6%) had hostile iliac access, where IVL was used. Technical success was achieved in all cases; there were no cases of dissection, peripheral embolization or vessel rupture. During the follow-up period, no case of restenosis or limb occlusion was recorded.

Conclusions: Our experience shows that IVL in hostile iliac access during endovacular aneurysm aortic repair is safe and effective. The IVL system is an additional tool in the vascular surgeon's armamentarium to obtain large-bore access in hostile access vessels. Further studies are needed to better assess the clinical effectiveness of the IVL system.

OP07

DURABILITY OF A SECOND-GENERATION BALLOON-EXPANDABLE COVERED STENTGRAFT IN PATIENTS TREATED WITH FENESTRATED, BRANCHED AND CHIMNEY ENDOVASCULAR AORTIC ANEURYSM REPAIR

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Background - Aim: Covered stent-grafts constitute an essential component of fenestrated (fEVAR), branched (bEVAR) and chimney (chEVAR) endovascular repair. Target vessel (TV) instability events may lead to technical and clinical failure. We present the mid-term outcomes of the second generation of BeGraft (Bentley InnoMed, Hechingen, Germany) balloon-expandable covered stentgraft (BXCS) as an "off-the-shelf" platform used in complex endovascular repair.

Methods: This is a retrospective analysis of prospectively collected data from a single-tertiary center. All consecutive patients treated for juxtarenal, pararenal and thoracoabdominal (TAAA) aortic aneurysms during a 7-year time period (May 2016 - May 2023) either by fEVAR, bEVAR or chEVAR in whom BeGraft BXCS were implanted, were included. Outcomes were defined as primary patency rates for each TV at maximum follow-up and were reported using Kaplan-Meier life tables.

Results: Begraft stentgrafts were deployed in 111 patients (males: 95%, age: 70.9 ± 6.1 years old) who underwent complex endovascular repair [chEVAR: 53 (47.7%), fEVAR: 22 (19.8%), bEVAR: 35 (31.5%), f/bEVAR combination: 1 (0.9%)]. Aneurysm type included 36 (32.4%) juxtarenal, 44 (39.6%) pararenal, 16 (14.4%) type IV TAAA, six (5.4%) type III TAAA and nine (8.1%) type II TAAA. Mean maximum aneurysm diameter was 6.7 ± 1.8cm. A total of 307 BeGrafts were deployed [Celiac Trunk (CT): 47 (15.3%), Superior Mesenteric Artery (SMA): 70 (22.8%), Right Renal Artery (RRA): 95 (30.9%), Left Renal Artery (LRA): 95 (30.9%)] for the revascularization of 286 TV. Mean follow-up was 12.7 ± 12.2 months. The primary patency rate of RRA was 96% (SE: 2.1%), 94% (SE: 2.9%) and 90% (SE:4.7%) at 6,12 and 24 months, respectively. The primary patency rate of CT was 96% (SE: 3.6%), 86% (SE: 10%) at 6 and 24 months, respectively.

Conclusions: Second generation BeGraft platform seems to be an effective and durable device for the revascularization of TV during complex endovascular repair.

OP08

USE OF DEDICATED INTERNAL ILIAC COMPONENTS FOR THE ENDOVASCULAR TREATMENT OF AORTOILIAC ANEURYSMS INVOLVING THE ILIAC BIFURCATION WITH CO-EXISTING HYPOGASTRIC ANEURYSMS BY THE ILIAC BRANCH ENDOPROSTHESIS IMPROVES THE OUTCOMES (THE HYPROTECT STUDY)

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Objective: Co-existence of hypogastic aneurysms (HA) in endovascular repair of iliac aneurysms worsen the outcomes. Aim of the present study was to evaluate the mid-term outcomes of the Gore Excluder Iliac Branch Endoprosthesis (IBE) and dedicated bridging devices in patients with HA in a large contemporary multicentric European experience.

Methods: The study included all consecutive patients treated at participating institutions with Gore IBE device who received a covered stent (i.e. stent-graft) from the same manufacturer, including the the Gore VBX balloon-expandable covered stent, and the Gore Excluder IBE internal iliac component or any combination thereof. Outcomes that were assessed during follow-up included overall survival, primary and secondary HA patency, freedom from HA branch instability (composite cumulative endpoint of any HA branch-related complications leading to aneurysm rupture, death, occlusion or stenosis/kink, disconnection, type 1 or 3 endoleak (EL), or reintervention to maintain branch patency or to treat a separation or EL), and failure of sac regression>5mm.

Results: A total of 446 patients were included for analysis from 22 European vascular surgery centers. Patients were categorized into two subgroups: subgroup A if they did not have concomitant hypogastric aneurysms (n=269), otherwise they were categorized into subgroup B (n=168). The mean age was 74 (SD:11) years. No significant differences regarding demographics and age were observed between the 2 groups (p=.34). There were significant differences in the selection of bridging stents between study groups, with a lower percentage of those in subgroup A receiving a balloon expandable stent-graft than those in subgroup B (6% vs 22%, p<.001). Cumulative survival rates for the two study groups at two years were 96% and 92% respectively (p=.532). The two-year estimates for freedom of iliac branch instability was higher for patients in group A as compared with patients in group B (94% vs 90%, p=.045). However, the cumulative failure to regress at two years was similar between study groups (3% vs 6%, p=.904). At univariate regression, the number of stent-grafts used was associated with higher risk of iliac branch instability but not of IBE-related reinterventions.

Conclusions: This large contemporary European multicentric experience with the use of the Gore IBE and dedicated bridging devices in patients with or without associated HA aneurysms shows comparably satisfactory mid-term outcomes.

OP09

SINGLE-CENTER EXPERIENCE IN THE SURGICAL TREATMENT OF MYCOTIC ANEURYSMS

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Methods: From January 2010 to February 2024, 8 patients (all males, median age 71.37±8.78 years) underwent open surgery for the treatment of mycotic aortic aneurysm. In all cases, the mycotic aneurysm was documented by a combination of clinical findings, laboratory tests, imaging, and microbiologic tests.

Results: A total of 7 patients presented with abdominal, while one patient with IV thoracoabdominal aortic aneurysm. Among all patients, 3 were presented with aneurysm rupture, while 5 patients were presented with fever, septicemia and abdominal or lumbar pain. Pathogens involved were methicillin-susceptible Staphylococcus aureus (MSSA; 1 patient), Staphylococcus hominis (1 patient), Klebsiella spp. (2 patients), Mycobacterium tuberculosis (1 patient), Mycobacterium bovis (1 patient) and in 2 patients the pathogen was not isolated. Regarding treatment, 4 patients were treated using bovine pericardium, 3 had Neoaortoiliac System (NAIS) operation, while one patient was treated with endovascular aortic repair (EVAR) and drainage of the aortic sac. A transabdominal approach was used in 6 and retroperitoneal in two patients. In-hospital mortality was 25% (2/8). All patients received long-term antibiotic therapy. During follow-up, 2 patients developed recurrence of infection with gastrointestinal bleeding with aorto-enteric fistula and died after 4 and 10 months.

Conclusion: Bovine pericardium and autologous veins may be a valuable option for the treatment of mycotic aneurysm repair.

Carotids and Peripheral arterial disease - Case presentations

TRUE ANEURYSM OF DORSALIS PEDIS ARTERY: CASE REPORT AND REVIEW OF LITERATURE

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Objectives: Aneurysm of the pedal arteries is uncommon. I present a case of non-traumatic fusiform true aneurysm of the dorsalis pedis artery in an otherwise well 45-year-old man. Color flow duplex imaging revealed aneurysmal dilation, involving all layers of the artery wall, measuring 16.5 * 10 mm with irregular intraluminal thrombus across a 6.33-mm segment. Due to concerns over embolization, our patient underwent successful ligation of the dorsalis pedis artery. He had an uneventful post-operative recovery.

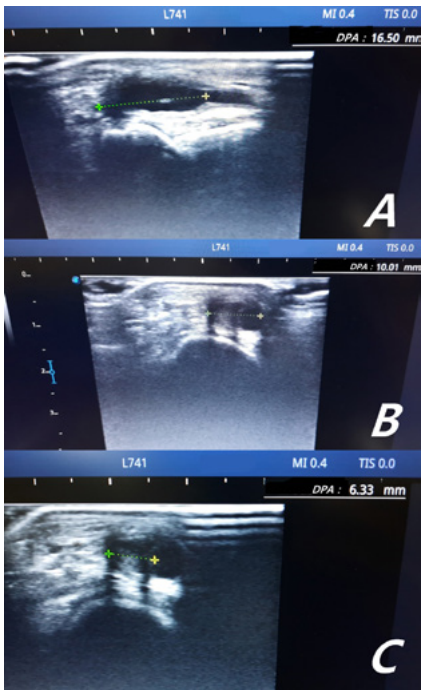
Methods: Case report

Results: No postoperative complication or signs of ischemia

Conclusions: Treatment of asymptomatic dorsalis pedis artery aneurysm may be of value to prevent risk of thromboembolic complications, foot ischemia, or rupture without warning signs. Patency of the pedal arch is important to avoid foot

ischemia in case of dorsalis pedis artery ligation.

Keywords: Dorsalis pedis aneurysms, pedal artery aneurysm, true peripheral aneurysm, infra-popliteal artery aneurysm



INTERNAL CAROTID ARTERY TRAVERSING POSTERIORLY TO THE CRICOTHYROID CARTILAGE TREATED WITH CAS

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Background-Aim : Carotid artery atherosclerosis is an important clinical entity, accounting for one-third of ischemic strokes in the population. In patients with carotid artery disease and indication for surgical repair, open carotid endarterectomy (CEA) is the first-line treatment. However, in patients who are unfit for CEA, carotid artery stenting (CAS) is a possible alternative. Anatomic variations of the extracranial ICA, like high carotid bifurcation or abnormal ICA trunk, are contraindications to open repair. About 30% of all ICAs have anatomic abnormalities, however they rarely affect the preoperative planning.

Methods : A patient with symptomatic carotid stenosis was planned for surgery. In the preoperative CTA the ICA is located posterior to the cricothyroid cartilage up to it's entrance to the carotid canal.

Results : This patient was treated with CAS, which was uneventful. He had normal postoperative course and he was discharged on the third postoperative day. During CAS a 0.18 Nitrex guide-wire, a 5mm Spider cerebral protection device and 2 self expandable stents Protrege 8-6x40mm were deployed, followed by post-dilation with the use of a 5x20mm balloon. To the best of our knowledge, this particular anatomy has not been previously described.

Conclusion : Despite CEA being the first-line surgical treatment for carotid stenosis, the anatomy of the carotid artery should always been taken in account during pre-operatively planning. CAS should be indicated for treating of ICA traversing posteriorly to the cricothyroid cartilage.

A CASE OF SURGICAL RESECTION WITH DOUBLE EXTRAANATOMICAL BYPASS FOR A GIANT NEUROFIBROMA INVOLVING SUPERIOR MESENTERIC ARTERY

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Background-Aim: We have experienced more than 70 challenging cases with tumor invading surrounding vascular or other vital organs as a multidepartment operation team. We report one of our cases with a giant neurofibroma surrounding superior mesenteric artery (SMA).

Methods: A 31-year-old woman was diagnosed with a 6 cm solid tumor around root of SMA in 2016. She had dropped out her follow-up until 2022. By then, the tumor had enlarged up to 10 cm and was diagnosed as a neurofibroma through a needle biopsy. When symptoms of bowel obstruction appeared, the surgical intervention was concerned.

Results: In the surgery, the tumor was found to be involving SMA as its core, jejunum veins, inferior mesenteric vein, SMV and portal vein as a single mass. Therefore, vascular resection for tumor excision was mandatory. All branches of SMA including ileocolic artery (ICA) were secured, and right colic artery was dissected. In order to maintain blood flow for small intestine, double bypasses, right common iliac artery (CIA) to second jejunal artery and right CIA to ICA, were performed using a right great saphenous vein graft. While the main trunk of the SMV is resected and the arterial reconstruction is completed, venous drainage was maintained by connecting peripheral SMV and right ovarian vein using a bio-pump. The tumor was finally resected en bloc with the SMA/V. The resected SMV was approximately 10 cm long, which was reconstructed with a left femoral vein graft. After the tumor resection, there was no sign of intestinal ischemia, and the entire small intestine was preserved. The patient was discharged without any complications on postoperative day 21.

Conclusions: We experienced a case of an intraperitoneal tumor that needed wide resection of SMA/V. Constructing double bypass to avoid bowel resection and maintain its function was successful and meaningful.

ATHEROSCLEROTIC PLAQUE MORPHOLOGY AND PRIMAL CARDIOVASCULAR EVENTS AFTER CAROTID ENDARTERECTOMY PERFORMED SIMULTANEOUSLY WITH CABG

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Background and aim of the study: The incidence of stroke after on-pump cardiac surgery during the perioperative period can affect up to 4% of patients with significant unilateral carotid artery stenosis of 80-99. Between 3% to 10% of individuals who undergo coronary artery bypass grafting (CABG) display notable narrowing of the carotid arteries, which can be improved by either simultaneous or staged carotid endarterectomy and CABG. The aim of the study was to determine the association between the degree of plaque vascularization detected with contrast-enhanced ultrasound and postoperative complications.

Methods and materials: A single center retrospective study of 62 patients was performed from 2019 to 2022 who underwent simultaneous CABG/CEA. Exclusion criteria: staged carotid endarterectomy and CABG procedures, off-pump CABG, urgent cases. The focus of our study was on patients who underwent elective CABG. These individuals were diagnosed with coronary artery disease (CAD) and exhibited either asymptomatic internal carotid artery stenosis greater than 70% or symptomatic ipsilateral carotid stenosis exceeding 50%. Before the procedure each patient underwent contrast enhanced ultrasound, the atherosclerotic lesions were classified based on Nakamura et al. classification.

Results: Postoperative complications were analyzed within 30 days after surgery and type of plaque morphology detected by contrast-enhanced ultrasound, a statistically significant correlation was found between the presence of a higher grade plaque vascularization and ischemic stroke ($r=0.329$, $p=0.008$). Monte Carlo calculations of Chi-square test showed that higher grade of plaque vascularization was significantly associated with peripheral artery disease ($\chi 2=15.175$, lls=2 , $p=0.003$).

Conclusions: Ischemic stroke after carotid endarterectomy following CABG within 30 days after surgery has a significant correlation with the presence of a higher grade of plaque vascularization detected by contrast-enhanced ultrasound.

HYBRID NOVEL APPROACH: SURGICAL AND ANGIOJET™ ASPIRATIONAL THROMBECTOMY IN CONTRALATERAL LIMB GRAFT OCCLUSION POST-FEVAR AND ePTFE BYPASS GRAFT OCCLUSION: TWO CASE REPORTS

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Background & Aim: Acute limb ischemia with LGO following EVAR is a critical complication. Concurrently, acute ischemia in bypass occlusion poses limb survival risks, warranting prompt intervention. Current treatments include surgery, thrombolysis, angioplasty & stenting to prevent further occlusion. A hybrid approach with Fogarty thrombectomy combined with aspirational thrombectomy in the treatment of Limb-Graft-Occlusion after FEVAR, as well as treating occlusion of iliopopliteal bypass & the run-off vessels, has not been reported to date. In this paper, we present the outcomes of two cases wherein successful recanalization of the grafts using the AngioJet™ Ultra Aspirational Thrombectomy System.

Methods: Case I: 69 y male, post-FEVAR, presented with acute limb ischemia due to LGO. Case II:70 y male, post-multiple vascular surgeries, developed acute bypass graft occlusion post-iliopopliteal bypass. Initial Fogarty thrombectomy failed in both cases, necessitating adjuvant AngioJet™ Aspirational Thrombectomy along with CDT & adjunctive interventions, achieved successful revascularization.

Results: Successful recanalization of iliac limb graft in Case I resulted in immediate symptom regression and palpable pulses, while Case II showed successful tibial vessel perfusion, improved ulcer healing and sonographic biphasic perfusion in the graft and popliteal artery with mono-biphasic perfusion in tibial vessels. Both cases experienced transient hemoglobinuria, with graft patency maintained for three weeks at the time of writing the article. Long-term success awaits further follow-up.

Conclusions: The AngioJet™ Ultra Thrombectomy System offers versatile pharmacomechanical thrombectomy options for different vessels, including different catheters. Studies demonstrate its efficacy in native tibial vessels. Rotational MT like Rotarex also shows success in conduits. Traditional methods like the Fogarty catheter and Vollmar ring stripper pose risks, requiring additional bypasses in case of failure. Hybrid procedures combining surgical thrombectomy with the AngioJet™ Ultra Thrombectomy System in iliac limb grafts and synthetic bypass grafts proved successful postoperatively, aiding limb salvage & reducing procedural time in ASA III & IV patients. Early wound response was positive. Both patients were postoperatively advised to continue anticoagulation therapy with SAPT plus low-dose DOAC for at least 6 months. Upon further controlled duplex sonographic examination & assessment of the flow and intimal growth pattern of the vessels at regular intervals, we would reevaluate the anticoagulation after 6 months.

TRANSIENT GLOBAL CEREBRAL ISCHEMIA DUE TO SEVERE ATHEROSCLEROTIC OCCLUSIVE DISEASE OF ALL SUPRA-AORTIC VESSELS

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Background: Stenosis or occlusion of the brachiocephalic artery represents an uncommon cause of cerebrovascular insufficiency. The combination of brachiocephalic artery stenosis and carotid disease can cause hemodynamic alterations and subsequent cerebral hypoperfusion.

Aim: To report a rare case of transient global cerebral ischemia, due to severe innominate stenosis, bilateral subclavian artery occlusion and left common carorid artery occlusion.

Methods: An 74-year-old female with a medical history of hypertension, hyperlipidemia and previous right carotid endarterectomy was referred to our department due dizziness, fatigue and increasing syncopal episodes. Both carotid arteries and both brachial arteries were not pulsatile during clinical examination.

Results: Dupplex ultrasonography demonstrated occlusion of left common carotid artery and reduced flow velocity in the right common carotid artery. The computed tomography angiography revealed high grade stenosis of the brachiocephalic artery, and bilateral occlusion of subclavian arteries, along with occlusion of left carotid artery. The patient underwent hybrid repair, with transcarotid brachiocephalic artery senting (BeGraft 9x57mm, Bentley) and left carotid-subclavian bypass with 7mm Dacron graft. The patient presented uneventfull postoperative period, with no neurological signs/symptoms and no signs of cerebral hypoperfusion, and was disharged on 4th postoperative day on dual antiplatelet therapy.

Conclusions: Herein, we describe a rare case of symptomatic severe atherosclerotic occlusive disease of all supra-aortic vessels treated successful by hybrid repair.

The case I wanted to forget - Case Presentations

GIANT SPLENIC ARTERY ANEURYSM ASSOCIATED WITH HIGH FLOW ARTERIOVENOUS FISTULA DURING SECOND TRIMESTER OF GESTATION

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Splenic artery aneurysm is a rare but potentially life-threatening condition. Its prevalence during pregnancy is reported to be higher than in the overall population, with an estimated incidence from 0.01% to 0.08%. The etiology in pregnancy remains unclear, but hormonal and hemodynamic changes are believed to contribute to its development. However, the consequences can be severe if not detected early and treated appropriately. Diagnosing SAA in pregnancy can be challenging due to its nonspecific clinical presentation. Ultrasound is considered a safe and reliable modality for initial screening, while CT and MRI provide detailed anatomical information. An effective multidisciplinary approach is essential for managing this type of aneurysm. A 35-year-old pregnant patient at 32 weeks gestation presented to the emergency department with recurrent left upper abdominal pain for a few days. Initial clinical examination and investigations were normal for the fetus, but revealed an anemic and tachycardic mother with a hemoglobin level of 8.1 g/dl. An abdominal ultrasound showed focal dilatation of the splenic artery near the splenic hilum, raising suspicion of aneurysm. The diagnosis was confirmed by contrast-enhanced computed tomography angiography, which displayed a large 7.8 cm fusiform aneurysm in the distal third of the splenic artery causing high-flow arteriovenous fistula through communication with adjacent vessels. A multidisciplinary team evaluated potential management options and decided on laparotomic resection of the aneurysm along with simultaneous splenectomy. The postoperative recovery was uneventful, and she was discharged home for further obstetrician follow-up and vaccination. Although very uncommon, the rupture of the SAA in obstetric patients can lead to serious consequences. More researchs are necessary to gain a better understanding of the causes and optimal strategies to manage this rare condition

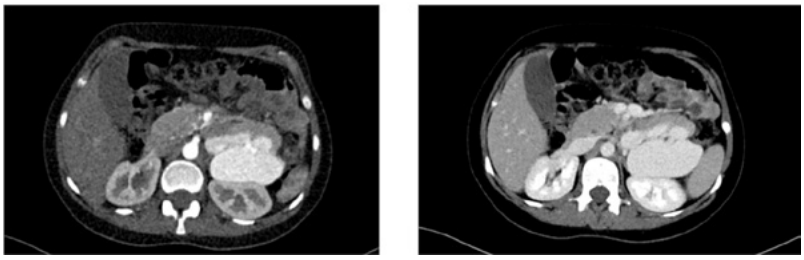

Photo (1) CTA Revealed giant splenic artery aneurysm with high flow arteriovenous fistula

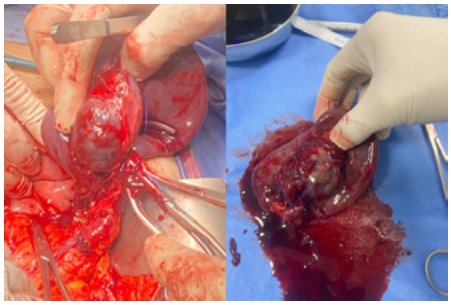

Photo (2) (Left) Intra-Operative splenic artery aneurysm and AVF resection, (Right) spleen, aneurysm and AVF post Splenectomy

MANAGEMENT OF THE ACUTE, COMPLICATED TYP B AORTIC DISSECTION WITH MALPERFUSION: A CASE STUDY

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Background: The acute, complicated type B aortic dissection with limb ischemia and/or visceral malperfusion represents a major challenge for vascular surgeons. Endovascular therapy according to the stabilize principle as the gold standard is associated with a high risk of morbidity and mortality, especially in the acute phase. Finding the right strategy for each patient remains a challenge. This will be illustrated using a case study.

Methods: A 49-year-old man was admitted with sudden onset of thoracic pain, hypoesthesia and weakness of both legs. During clinical examination, the foot pulses were not palpable and the systolic blood pressure was 240mmHg. The performed CTA-scan showed a dissection of the thoracoabdominal aorta with a "true lumen collapse" and hypoperfusion of the visceral segment, an infrarenal aortic occlusion with subsequent leg ischemia. An attempt at endovascular membrane fenestration to ensure perfusion of both lumina resulted in dislocation of the dissection membrane with complete obstruction of the ostia of the visceral segment. An axillo-bifemoral bypass and a median laparotomy were performed with removal of the folded dissection membrane. Because of the protracted intestinal ischemia, a subtotal colectomy and a terminal ileostomy were also performed. Results: The further course of intensive care revealed a permanent need for dialysis and liver insufficiency. The showed no neurological deficits. After a three-month stay, there is currently still an intensive care requirement with partial replacement of liver function using dialysis. Conclusions: In the acute type B aortic dissection with visceral and peripheral malperfusion, endovascular reconstruction of the true lumen through stent implantation and, if necessary, membrane fenestration, represent the gold standard. From the described case example, it is clear that open surgical expertise must continue to be available as a bailout procedure using, if necessary, only a temporary extra-anatomical bypass system.

ACUTELY SYMPTOMATIC LARGE THORACIC AORTIC ANEURYSM WITH UNDERLYING CHRONIC TYPE-B AORTIC DISSECTION: A CHALLENGING AND COMPLEX CASE

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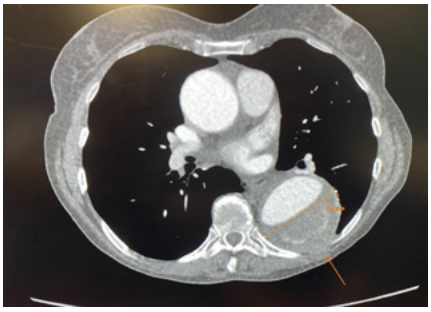
Background: 59 year female, Type B Aortic Dissection (AD) in 2019, uncomplicated. Treated with Goal Directed Medical Therapy. Lost Follow-up due to Covid Pandemic. Presented in December 2023 with chest pain / interscapular pain in a Vascular center. Pain not relieved with analgesia. Normotensive, no end organ injury. Urgent CTA showed a 7.32 cm large aneurysm of Descending Thoracic Aorta encroaching into chest wall, symptomatic with chest and inter-scapular pain.

Methods: Urgently Transferred to a High Volume Tertiary Centre. Planned Urgent operative treatment in middle of the night as risk of rupture was high. Planned Operation: Proximal Landing Zone in between Left Subclavian and Left Common Carotid Artery. Left Subclavian artery origin need to be covered. Distal Landing zone: just above celiac artery. Long stent. Left Carotid -Subclavian bypass with TEVAR with Spinal drain to Reduce risk of Stroke/Spinal Ischaemia contemplated.

Results: Symptom resolved. Recurrence of chest pain after 3 days. At lower end of TEVER stent, large aortic diameter seen on CTA. Possible stent induced new entry tear (SINE).Treated successfully with 4 branched EVAR. Discharged home in next 2 days.

Conclusions: Complicated Type B Thoracic Aortic Dissection is a devastating condition with an hourly increase in mortality rate. Meticulous planning of management from the onset and prompt treatment including appropriate intervention with appropriate protection can save many lives.



OPEN SURGICAL REPAIR OF A HUGE CELIAC ARTERY ANEURYSM

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Introduction: CELIAC ARTERIAL aneurysms represent the fourth most common visceral arterial aneurysm.[1] Although rare, they carry a definite risk for rupture and/or other complications. The reported risk for rupture varies in the literature, but appears to range from 10% to 20%.[1] Most historical series describe infection as the most common cause of these aneurysms; however, recent series depict a declining incidence of infectious causes.[2] The diagnosis of these rare aneurysms is being established more frequently as our use of cross-sectional imaging increases. Thus, the dilemma of choosing the appropriate therapeutic option has become increasingly more important

Methods: challenging case

Case report/ Challenging case: This is a case report of 60 years old female, hypertensive, with a history of chronic mesenteric ischemia symptoms in the form of low weight and occasional postprandial pain, she presented to ER with nonspecific abdominal pain, and pulsating abdominal mass, CTA with contrast showed huge celiac trunk pseudoaneurysm measure 10*6 cm sparing the hepatic artery. There's collateral circulation between the Superior mesenteric artery (SMA) and inferior mesenteric artery (IMA). The etiology of aneurysm is recurrent pancreatitis. The patient has a history of trial of endovascular management in another hospital which failed

Figure 1: CTA showed Celiac artery aneurysm

Results: The decision preferred the open surgery due to: the surgical fit patient, history of trial of endovascular management, no sufficient distal landing zone (distance between aneurysm and renal artery is about 1.5 cm, and picture of chronic mesenteric ischemia and risk of embolization

Mid-lime laparotomy, supra-celiac trunk exposure after release hepatic ligaments, infrarenal aortic exposure and distal control, aneurysmectomy followed by direct repair of aortic defect from inside the aneurysm.

Conclusions: Celiac trunk aneurysm is a rare visceral aneurysm and open surgical repair is feasible in surgical fit patient

Keywords: visceral aneurysm, pseudoaneurysm, pancreatitis, celiac aneurysm, supra celiac control

AN UNEXPECTED COMPLICATION OF SPINAL CORD ISCHEMIA AFTER ELECTIVE ENDOVASCULAR ANEURYSM REPAIR OF A SYMPTOMATIC INFRARENAL ABDOMINAL AORTIC ANEURYSM: A CASE REPORT

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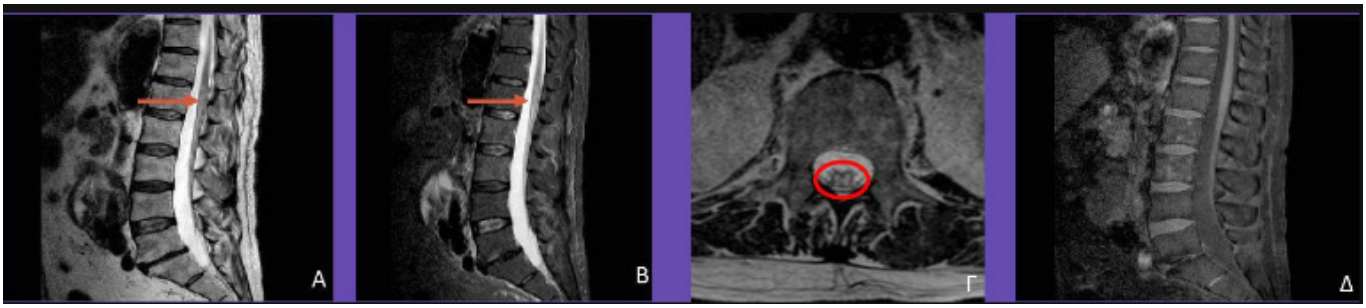
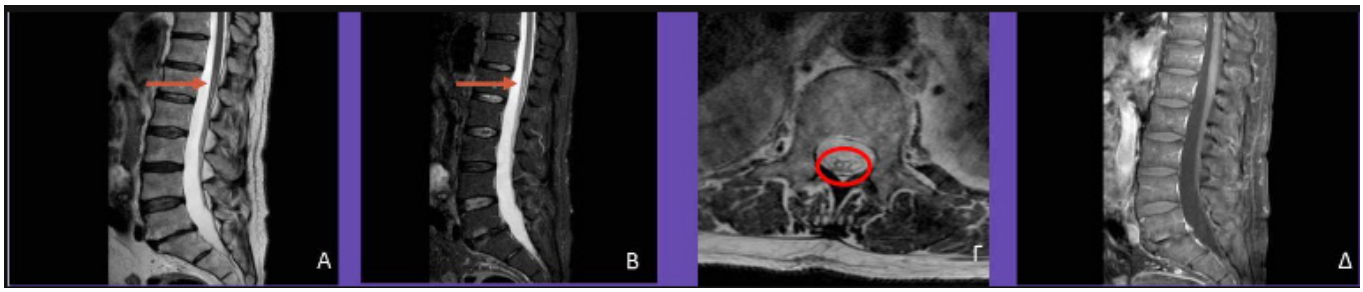
Spinal cord ischemia (SCI) is a rare but severe complication following elective endovascular aortic repair (EVAR) for abdominal aortic aneurysm. The cause of this neurological problem is convoluted and hard to comprehend. The disruption of pelvic circulation, anatomic changes to the Adamkiewicz artery, prolonged hypotension during surgery and manipulations in a lumen thrombus are a few possible causes of SCI following EVAR. SCI can cause paraplegia, limb paralysis, and genitourinary system problems. We describe an unusual case of paraplegia and rectal-urinary disorders after an elective EVAR for a symptomatic infrarenal abdominal aortic aneurysm.





TAKAYASU ARTERITIS PRESENTING WITH A SACCULAR AORTIC ANEURYSM IN A 25-YEAR-OLD PATIENT: FAILURE OF BOTH OPEN AND ENDOVASCULAR MANAGEMENT NECESSITATES MULTIPLE SURGERIES AND EXTRANATOMIC VASCULAR RECONSTRUCTION

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Background: Aneurysms of the abdominal aorta in young patients present a unique and concerning clinical scenario, which presents distinct diagnostic and management challenges. Takayasu arteritis, a systemic inflammatory vasculitis affecting large vessels, can lead to progressive stenosis, occlusion, or dilation of the aorta and its branches.

Methods: An extremely complicated case of a young patient with a Takayasu related aortic aneurysm is presented.

Case: A 25-year-old patient presented with fever, malaise, abdominal pain, and a 4.7cm infrarenal saccular aneurysm. Endovascular treatment was initially used to exclude the aneurysm four years ago; a balloon-expandable stent-graft was placed. Approximately 2.5 years after the stent-graft was placed, the patient developed a new saccular aneurysm proximal to the aortic endograft. This time, a Dacron tube graft was used to reconstruct the infrarenal aorta after the endograft was explanted. Aortic wall samples were sent for histological and microbiological analysis. A diagnosis of Takayasu arteritis was made on the basis of histology and clinical presentation, and treatment was initiated with corticosteroids. Multiple complications occurred including thromboses, infections, new pseudoaneurysms in the aorta and femoral artery, and a life-threatening hemorrhage that were further treated with endovascular means, autologous venous grafting and finally an extranatomic ilio-popliteal bypass through the obturator foramen. Due to immunosuppression caused by the corticosteroids, the patient is currently receiving long-term antibiotic treatment for Gram (-) bacteraemia and there is a high suspicion that the aortic graft may be infected.

Conclusions: The case presents an exceptional challenge for the vascular surgeon regarding how to manage a patient with a rarer form of arteritis and various complications that preclude an ominous outcome.

Photo 1. Initial presentation and endovascular management of the aortic saccular aneurysm of 4.7cm

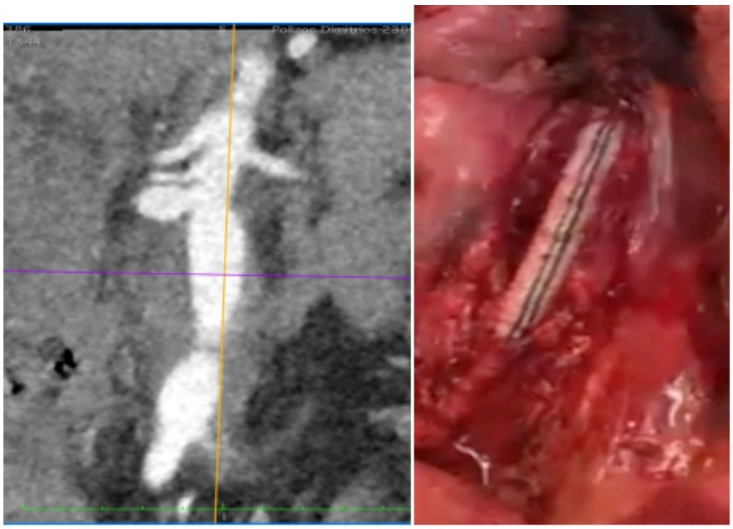

Photo 2. New saccular aneurysm at the proximal part of the stent graft and open reconstruction with a Dacron tube graft

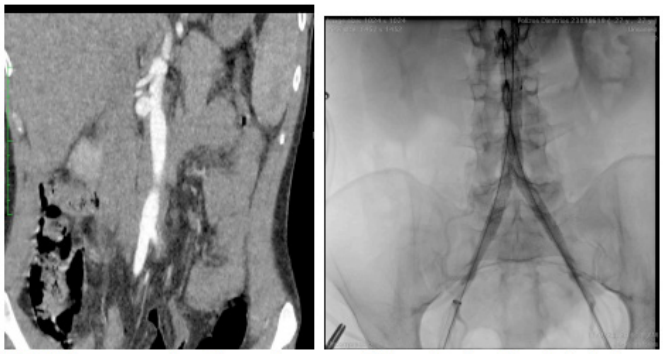

Photo 3. New para-anastomotic pseudoaneurysm at the proximal anastomosis treated successfully with a proximal cuff

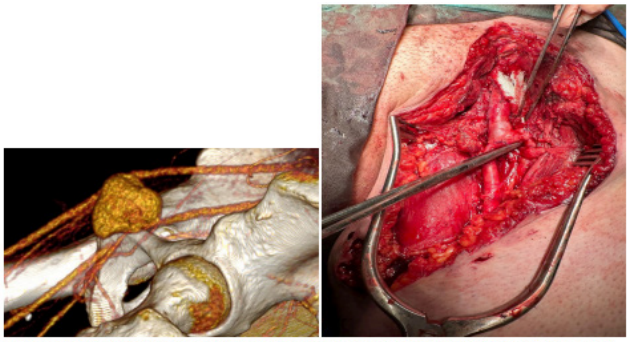

Photo 4. New femoral artery pseudo aneurysm treated with autologous vein reconstruction

Photo 5. Rupture of the vein reconstruction and acute haemorrage lead to the need of an extranatomic bypass through the obturator foramen

PARARENAL AAA RUPTURE AFTER FAILED BRANCHED ENDOVASCULAR AORTIC REPAIR

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Background: Fenestrated and branch endovascular aortic repair (F/BEVAR) for failed prior open or endovascular (EVAR) abdominal aortic aneurysm (AAA) repair, is feasible with low peri-operative morbidity and mortality. However, F/BEVAR is associated with lower technical success rates in comparison to F/BEVAR without prior aortic intervention.

Aim: To report a case of failed BEVAR after EVAR causing rapid aneurysm expansion and rupture of a pararenal AAA.

Methods: A 79-year-old male patient was referred to our department due to a 68mm pararenal abdominal aortic aneurysm after previous EVAR 8 years ago. The patient was assessed of high perioperative risk and it was decided to be treated using a custom-made four-branched endovascular graft.

Results: Two months after first consultation, the patient was taken to the operating room.The branched graft was successfully deployed and the right renal artery was then catheterised and brigded to the branch. After difficult catheterization of the left renal artery, no catheter or sheath could follow the wire, due to the strut of the previous stent graft, resulting in the unsuccesful bridging of the branch. It was then decided to abort the operation and continue in a second stage. One moth after the surgery, the patient was urgently referred to our department due to acute back and abdominal pain. The computed tomography revealed rapid expansion of the aneurysm and contained rupture. The patient was transferred to the operating theater where occlusion of the branch of the left renal artery was successfully performed using plug, followed by catheterization and bridging of the superior mesenteric artery and celiac artery. The patient presented uncomplicated postoperative period, with mild elevation of creatinine levels and was discharged on 6th postoperative day.

Conclusions: F/BEVAR after EVAR are more technically demanding owing to issues related to the previous graft. In the presented case, the suprarenal struts impeded cannulation of left renal artery, resulting in rupture one month later.

EARLY ABDOMINAL AORTIC ANEURYSM RUPTURE AFTER ENDOVASCULAR AORTIC ANEURYSM REPAIR

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Background: Abdominal aortic aneurysm rupture (AAAR) after endovascular aneurysm repair (EVAR) still represents a very challenging event and continues to carry substantial associated morbidity and mortality

Aim: To report a case of AAA rupture durimg the early postoprative period after EVAR due to type Ia endoleak.

Methods: An 68-year-old man with severe comorbidities, was submitted to endovascular aneurysm repair via second-generation endograft (Terumo-Treo Stent-graft). The aneurysm presented a modestly conical-shaped aortic-neck of 28mm diameter. The patient presented uneventful postoperative period and was discharged on 2th postoperative day.

Results: Seven days later, the patient was admitted due to acute back pain along with hypotension. The computed tomography reveald type Ia endoleak, aneurysm increase of approximately 1cm and contained rupture. Due to stent-graft migration, an endovascular approach was attempted using a 36mm Aortic Cuff, under local anesthesia. However, due to persistent type Ia endoleak, it was suggested to perform an open conversion. However the patient denied the open surgery and was self-discharged against medical advice. Three days later, the patient returned to our department with severe back pain and was rushed to the operating theater, and an urgent open conversion was performed. The patient was then transferred to the ICU and returned to the vascular department on 3rd postoperative day. Thirteen months after the third operation, the patient is in good general condition.

Conclusions: Graft-related endoleaks are the predominant causes of late aneurysm rupture. However, AAA rupture during the early postoperative period is not common. Care must be taken in the preoperative patient and stent-graft selection to avoid such complications.

Aortic Case Presentations

RUPTURE OF THE INFRARENAL AORTA DURING THE 1ST POSTOPERATIVE DAY AFTER EMERGENT ENDOVASCULAR TREATMENT OF ACUTE TYPE B AORTIC DISSECTION

M. Pesmatzoglou, N. Kontopodis, Al. Kafetzakis, Em. Tavlas, St. Lioudaki, G. Tzouliadakis, If.Tzartzalou, Al. Liamis, Chr. Chronis, Chr. Ioannou

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Background - Aim: Acute Aortic Syndromes represent the most common emergent aortic situation, which requires prompt diagnosis and treatment to avoid serious complications and death. Acute Type B Aortic Dissections (ATBAD) initially undergo conservative management with close monitoring in an intensive care unit (ICU) setting, aiming to lower blood pressure and heart rhythm, relieve pain and allow for an uneventful recovery during the acute phase. Complicated cases (rupture, malperfusion, aortic enlargement etc) undergo immediate endovascular repair. Similarly, patients with uncontrolled hypertension or refractory pain, are considered an intermediate risk category and are candidates for emergent treatment. The primary goal of endovascular repair is primary entry tear coverage, to lower false lumen pressure, allow true lumen expansion and promote positive aortic remodeling. Nevertheless, reentry tears may continue to perfuse the false lumen leading to its expansion.

Methods: We present a 60-year old female patient who was admitted from the emergency department due to ATBAD. CT angiography indicated a primary entry tear at the level of the Left Subclavian Artery (LSA) origin. She was transferred to the ICU, where the arterial pressure was normalized and the pain was controlled. The 2nd day, the patient complained about pain recurrence and underwent CTA without remarkable changes. Because of refractory pain she was subjected to emergency TEVAR with LSA coverage.

Results: The procedure was uneventful. The 1st postoperative day the patient was transferred to the ward in good general condition. In the afternoon of the same day she complained for back pain and underwent a new (3rd) CT which indicated successful endograft deployment and unremarkable changes distally. During the same night the patient became hemodynamically unstable and died. Post-mortem CT examination indicated rupture of the infra-renal aorta.

Conclusions: Type B aortic dissection may result in mortality even if prompt treatment has been undertaken.

ELECTIVE ENDOVASCULAR REPAIR OF INFRARENAL ABDOMINAL AORTIC ANEURYSMS WITH THE MINOS™ ABDOMINAL AORTIC STENT-GRAFT SYSTEM

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Background - aim: A variety of endografts are currently available for standard endovascular repair (EVAR) of infrarenal abdominal aortic aneurysms (AAA). The purpose of this study was to report the clinical outcomes of the Minos abdominal aortic stent-graft system, which was recently introduced to the European market.

Methods: Between February 2020 and February 2024, we treated 91 consecutive AAA patients (mean age 73.4±8.7 years, 82 males) with elective standard EVAR using the Minos stent-graft. The mean maximum diameter of AAA was 57.7±7.5 mm, the mean proximal neck's (PN) diameter was 24.6±2.8 mm, while the relevant length and angulation were 16.0±7.2 mm and 28.9±10.2°, respectively. Overall, 32 (35.2%) patients presented with shorter and angulated PN, according to the stent-graft's instructions of use. Twenty-four (26.4%) cases were with concomitant significant iliac artery narrowing and tortuosity. Finally, in 39 (42.3%) cases, the distal iliac landing zone was aneurysmatic and were treated with the bell-bottom technique in 35 patients and with limb extension to the external iliac artery in 4 cases. We evaluated the technical and clinical success of the index procedures, which was based on the combination of five factors: freedom from EVAR-related mortality, endograft-related endoleak of any type and endograft migration, as well the absence of notable increase in AAA sac diameter and the patency of bifurcated stent-graft and of access vessels.

Results: Primary technical and clinical success of index procedures was 100%. During a median 24-month clinical and 18-month radiological follow-up the clinical success was 98.9%. No rupture or EVAR-related death was documented. No type III endoleak or stent-graft migration was documented. There were 2 (2.19%) type Ib endoleaks that were treated with iliac extension. One (1.1%) limb occlusion was documented and treated accordingly. Total reintervention rate was 3.3%. Eleven (12.1%) type II endoleaks were detected with stable AAA sac diameter. The overall incidence of sac regression >5mm was 34.1%.

Conclusion: The results of our series showed that the Minos stent-graft provided excellent feasibility and safety features, even through angulated and tortuous iliac vessels and in short and angulated PN. The overall success at 2 years suggests that the performance of Minos stent-graft follows very high standards. Further validation of these promising results with long-term data is essential to complete the evaluation of this recently introduced stent-graft system.

COMPLEX ENDOVASCULAR AORTIC SURGERY MAY OCCASIONALLY NEED COMPLEX OPEN SURGERY: BEVAR TYPE IIIC ENDOLEAK SUCCESSFULLY MANAGED WITH HEPATORENAL BYPASS

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Background: Endovascular repair of complex thoracoabdominal aneurysms has been shown to reduce peri-operative morbidity. The main disadvantage is the high rate of post-procedural complications. In certain cases, these complications can only be managed with open surgery.

Methods: We present a patient with endoleak IIIc secondary to complete separation and migration of a bridging stent graft (BSG) following an urgent branched endovascular aneurysm repair (BEVAR).

Case: A 61-year-old male patient was urgently admitted due to abdominal pain. The CT angiogram revealed a 8cm Crawford type IV thoracoabdominal aortic aneurysm (TAAA). The patient was operated with a BEVAR endograft. A malrotation of the BEVAR device made right renal artery cannulation difficult. While the BSG was deployed, there was significant angulation and kinking which led to the complete separation of the BSG from the branch and caudal migration. It was impossible to achieve bridging with a new BSG or detachment of the migrated stent from the renal orifice. As expected, the CT angiogram at 1 month revealed a type IIIc endoleak. The right renal artery was still patent and perfused through the endoleak. A DMSA renal scan revealed an under-perfused but functional right kidney. We decided to salvage the kidney with a hepatorenal bypass. The operation was done through a right subcostal incision that provides excellent access to the common hepatic, the proper hepatic, and the gastroduodenal artery. A Kocher maneuver was next performed with leftward reflection of the duodenum which allows exposure of the portal vein, the aorta, and the right renal artery. The right saphenous vein was used to perform the bypass from the common hepatic artery to the right renal artery. Finally, the endograft branch was sealed off with an endovascular plug.

Conclusions: Complex endovascular aortic surgery centers should be able to manage complications with open surgery when endovascular methods fail.

Photo 1. The right renal artery bridging graft has been detached from the corresponding branch and has migrated caudally. It still remains attached to the right renal artery orifice

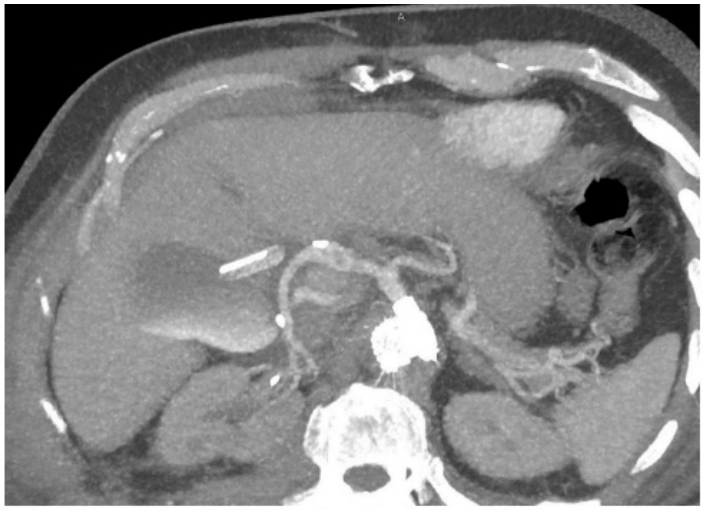

Photo 2. The right saphenous vein was used to perform the bypass from the common hepatic artery to the right renal artery.

MANAGEMENT OF SUPERIOR MESENTERIC ARTERY-PORTAL VEIN FISTULA WITH LARGE PSEUDO-ANEURYSM OF SUPERIOR MESENTARIC ARTERY (SMA)

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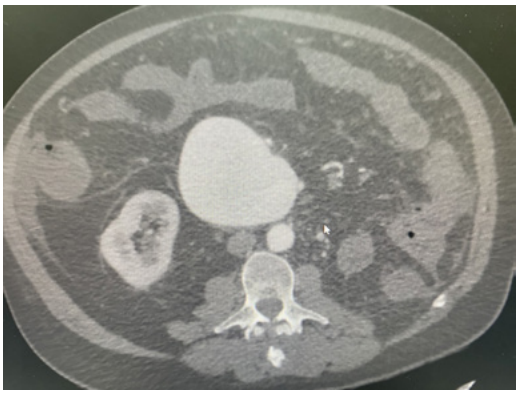
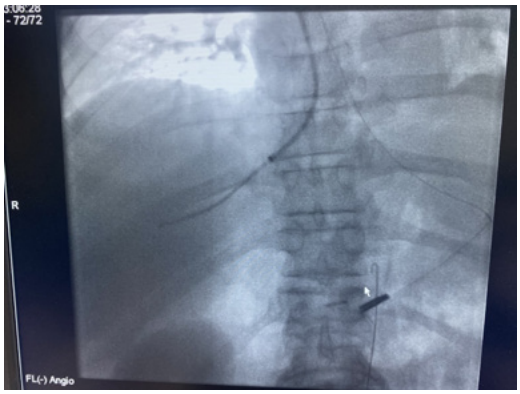
Background: 63 year male, incidental finding of a SMA-Portal vein fistula. Presented with sudden abdominal pain. Haemodynamically stable. Reasonably fit. No history of portal Hypertension, cirrhosis. No post-prandial pain. Not likely to be latrogenic, no previous abdominal intervention, trauma.

Methods: Urgent CTA shows 7.6cm pseudoaneurysm with an entry point from SMA, connected with Portal vein, high risk of rupture. Urgent Intervention planned to treat it Endovascularly. Preparation for urgent laparotomy with open repair in an event of rupture was on board, major vascular tray, omni tract standby. Cell savers stand-by in person. Hepatobiliary surgeon stand-by. Major Hemorrhage protocol with blood in place. Endovascular plan was to cannulate right Internal Jugular vein (IJV), wire & Catheter in portal vein, measure pressure in the aneurysm sac. Access through R Common Femoral Artery (CFA), cannulate SMA. Plugging the hole between SMA and neck of pseudo- aneurysm. Transjugular intrahepatic portosystemic shunt (TIPS) to consider. Pressure recorded in aneurysm sac: 29 mm of Hg through R IJV. CF puncture, sheath, guide wire in place. Navicross catheter through SMA into the aneurysm sac. Amplatger2 Plug in aneurysm neck/hole in SMA.

Results: Pressure in aneurysm sac remeasured: dropped significantly to 16 mm of Hg. TIPS not indicated. Successfully treated. Pain resolved completely.

Conclusions: Very rare and extremely complex case. CTA in 48 hours/ 6 weeks/3 months /6 months/annually. Complex cases in vascular surgery do create controversies in management planning. Meticulous, prompt, Multidisciplinary approach is the key in success. Appropriate decision making is the ultimate tool in success.





THE ENTICING COMBINATION OF TAVI AND EVAR

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The combination of severe aortic stenosis (AS) and abdominal aortic aneurysm (AAA) is not uncommon in elderly patients and should be optimally managed. However, guidelines are insufficient to resolve this comorbidity and reinforce the need for further analysis of this complex, intractable condition. We report 2 cases of patients with severe AS and AAA who underwent simultaneous transcatheter aortic valve implantation (TAVI) and endovascular aneurysm repair (EVAR), emphasizing the importance of this combined pathological condition and the need for simultaneous treatment, through the endovascular technique. The study by a multidisciplinary team highlights the importance of a thorough evaluation of all patients before intervention and the need for more studies and guidelines.

OPEN REPAIR OF TYPE III DISSECTING THORACOABDOMINAL ANEURYSM IN A PATIENT WITH MARFAN SYNDROME

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Background: Marfan syndrome is a systemic disorder of connective tissue caused by mutations in the extracellular matrix protein fibrillin 1, and is associated with cardiovascular complications, resulting in abdominal/thoracoabdominal aneurysms. Elective surgical re- placement of the descending and thoracoabdominal aorta in patients with Marfan syndrome is a safe procedure in experienced centers, however, significant risks of death, paraplegia and renal failure remain a matter of concern.

Aim: To report a case of open repair of type III thoracoabdominal aneurysm in a young patient with Marfan Syndrome.

Methods: An 39-year-old man was referred to our department due an incidental finding of a 63mm type III dissecting thoracoabdominal aneurysm. A 29-gene genetic test demonstrated mutations in fibrillin-1, and a concomitant diagnosis of Marfan Syndrome was made.

Results: The patient underwent open thoracoabdominal aortic aneurysm repair via an left thoracoabdominal incision. A prior temporary extracorporeal left axillofemoral bypass was performed for organ protection. The major visceral vessels were controlled, except for the right renal artery. End-to-end anastomoses were performed with the visceral arteries with continous direct perfusion via the extracorporeal graft. The descending aorta was then cross-clamped and the aneurysm was dissected, followed by the execution of proximal anastomosis. The proximal clamp was the removed, allowing direct flow to the visceral vessels. The ostia of the right renal artery was then exposed and anastomosed in an end-to-end configuration. The patient was transferred to the ICU extubated and returned to the vascular departmenrt on 3rd postoperative day. The 1-month follow-up CT revealed a retrograde dissection of the descending thoracic aorta at the level of previous proximal clamping. An endovascular approach was decided, using a C-TAG 37mm thoracic device (Gore Medical) under intravascular ulstrasound guidance. At 1-year follow-up the patient is in a good general condition, with no signs od stent-related aortic complications.

Conclusions: Surgical repair of descending and thoracoabdominal aortic aneurysms remains the standard of care for patients with Marfan syndrome.

A RARE CASE OF ANGIOSARCOMA MIMICKING AORTIC ENDOGRAFT INFECTION

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Introduction: Primary angiosarcomas originating from the heart, aorta, or great vessels are extremely rare and pose a diagnostic and clinical challenge. Angiosarcomas make up about 1% to 2% of all sarcomas.

Material - Methods: A 72-year-old patient with a history of endovascular repair of abdominal aortic aneurysm 4 years earlier was admitted to our department due to abdominal aortic endograft infection and lumbar vertebral osteomyelitis, confirmed by PET-CT. The scan was performed due to persistent fever with negative blood and urine cultures and elevated inflammatory markers.

The aortic endograft was removed and replaced with a home-made bovine pericardium graft. Despite negative intraoperative cultures and sonication of the endograft, the patient postoperatively received broad spectrum antibiotics for an extensive period of time.

Two months later, the patient was readmitted due to recurrence of fever and the presence of an expanding aneurysm sac around the bovine pericardial graft in a CTA. The bovine pericardium graft was surgically removed, the aorta was ligated below the renal arteries and an axillo-bifemoral bypass was performed.

Postoperatively, the patient remained febrile, despite the antibiotic treatment, with multiple negative blood cultures. On a new PET-CT, hypermetabolic activity was observed in the left lung hilum and the paravertebral space of L2, posterior to the aorta. Bronchoscopy due to hemoptysis was performed. A CT-guided biopsy of the mass near the L2 vertebra revealed epithelioid angiosarcoma of the aorta. The patient was finally referred to the oncology department for further treatment.

Conclusion: In the 15 cases of aortic angiosarcoma post- EVAR in the literature, as well as in our case, the possibility of infection was way higher, so the case was mistakenly treated accordingly. However, in such cases aortic tissue should always be obtained intraoperatively and, apart from culture, histological examination should also be performed to exclude other rare conditions.

Peripheral Arterial Disease & Venous Disease - Case Presentations

Peripheral Arterial Disease

SUCCESSFUL ENDOVASCULAR MANAGEMENT OF ACUTE LOWER LIMB ISCHEMIA DUE TO SPONTANEOUS RIGHT COMMON ILIAC ARTERY DISSECTION: A CASE REPORT

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Background-Aim: A rare cause of acute lower limb ischemia (ALLI) is spontaneous dissection of the iliac artery which poses significant challenges in diagnosis and management. The predisposing factors and best treatment strategies are still being debated.

Methods: This report highlights the case of a 38-year-old patient presenting with ALLI (Rutherford Class IIb) due to an isolated spontaneous dissection of the right common iliac artery (RCIA) extending to the superficial femoral artery, underscoring the importance of recognizing this condition and the feasibility of successful endovascular repair. The patient underwent Color Doppler and Computed Tomography Angiography (CTA) which revealed a spontaneous dissection of the RCIA. The treatment involved stenting of the RCIA, right external iliac artery (REIA), and right superficial femoral artery (RSFA), complemented with percutaneous transluminal angioplasty (PTA) of REIA, right common femoral artery (RCFA), RSFA, and right popliteal artery (RPOPA). Self-expanding stents (SES) were deployed.

Results: Angiographic imaging confirmed satisfactory stent deployment with successful revascularization. No immediate procedural complications were observed following resolution of preoperative ischemic symptoms. Palpable distal pulses in the lower extremity were also restored.

Conclusions: This case demonstrates the efficacy of endovascular stenting and PTA in the management of ALLI due to spontaneous iliac artery dissection. It highlights the critical need for awareness of this rare but significant condition in vascular medicine and the value of a multidisciplinary approach in achieving successful outcomes.

EARLY CORRECTION OF MALFUNCTIONING PRIMARY UPPER LIMB ARTERIOVENOUS FISTULAS: THE SIGNIFICANCE FOR THE DIALYSIS PATIENT

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Background-Aim: Arteriovenous fistulas (AVFs) are crucial for hemodialysis access but can lead to complications such as malfunctioning. Early correction of primary upper limb AVFs aims to address such complications promptly to maintain vascular access for dialysis. This abstract presents three cases where malfunctioning AVFs were successfully corrected.

Methods: Three patients with malfunctioning primary upper limb AVFs were identified and underwent early correction procedures. Diagnostic imaging techniques, including Doppler ultrasound and venography, were employed to assess AVF function and determine the nature of malfunction. Surgical intervention, including revision of anastomosis or ligation of accessory veins, was performed under local or general anesthesia based on individual case requirements.

Results: In all three cases, early correction of primary upper limb AVFs led to significant improvement in vascular access function for hemodialysis. Doppler ultrasound confirmed successful correction of AVF malfunctions postoperatively. Patients experienced improved dialysis efficiency and reduced complications related to inadequate vascular access.

Conclusions: Prompt identification and correction of malfunctioning primary upper limb AVFs are essential to ensure optimal vascular access for hemodialysis. Early intervention, guided by thorough diagnostic evaluation, facilitates timely resolution of AVF complications, thereby improving patient outcomes and reducing the risk of long-term vascular access-related complications. This underscores the importance of vigilant monitoring and proactive management of AVF dysfunction in patients undergoing hemodialysis.

FRACTURED PROXIMAL NITINOL RING IN FENESTRATED ANACONDA DEVICE CAUSING PANCREATITIS

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Background: There has been an increase in the number and complexity of aortic aneurysms treated by fenestrated endovascular stent grafts. The Terumo Aortic Anaconda endovascular aortic stent graft system has been used since 2010 and is one of two widely used platforms. Anaconda is a custom made fenestrated three piece device with a proximal sealing zone consisting of dual proximal ring stents (primary and secondary nitinol rings), an unsupported graft body, and a distal ring stent.

Aim: To report a case of fractured proximal nitinol ring in fenestrated anaconda device causing pancreatitis.

Methods: A 75-year-old male patient was referred to our department due to abdominal pain and fever. The patient had undergone fenestrated endovascular aortic aneurysm repair (FEVAR) with Terumo Aortic Anaconda endovascular aortic stent graft system 5 years prior to admission, due to a 57mm juxtarenal abdominal aortic aneurysm.

Results: Blood test revealed leukocytosis, mild elevation of amylase CRP. A subsequent computed tomography was performed, demonstrating a fracture of the proximal nitinol ring with anterior/lateral migration along with a retropancreatic mass. A multidisciplinary team with more than one radiology specialist was performed to confirm the stent graft fracture. The patient received intravenous antimicrobial therapy and subcutaneous sandostatin, and presented symptom relief after two days. A repeat computed tomography reveal decrease in retropancreatic mass size and the patient was discharged within 7 days, on oral antibiotics, under routine follow-up.

Conclusions: The presented case, highlights the importance of surveillance following aortic endograft placement. Stent fracture identification requires thorough review of follow up examinations, as minor stent graft changes can be challenging to identify and can easily be missed.

INFECTED THROMBOSED AAA TREATED WITH AN IN SITU BOVINE PERICARDIAL SELF-MADE BIFURCATED GRAFT

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Introduction: Infection of a thrombosed AAA is a rare but challenging clinical entity, associated with high morbidity and mortality. It requires prompt, accurate diagnosis and prudent selection among the various treatment options.

Material/Methods: A 72-year-old male patient with a history of dyslipidemia, benign prostatic hyperplasia and both lower limb intermittent claudication was referred to our Department after a long hospitalization in another hospital, due to septic shock and persistent fever over the past two months, attributed to recurrent bacteremia from E. Coli. During the work-up, a CT Angiography was performed that revealed a thrombosed abdominal aortic aneurysm of 3,5cm in diameter with restoration of blood flow in the right common femoral and left external iliac artery from collateral circulation. A PET-CT scan showed a significantly increased uptake of the radioactive substance in the abdominal aortic wall, common iliac arteries and veins.

Open repair of the infected, thrombosed abdominal aortic aneurysm was performed with a self-made bifurcated aortofemoral graft created by bovine pericardium, while the native aorta was excised.

The postoperative course was complicated with deep venous thrombosis of the left iliac axis on the 10th postoperative day, as well as gallbladder hydrops presenting with abdominal pain and treated by percutaneous drainage. After a 6-week long administration of intravenous antibiotics, the patient was discharged, scheduled for a cholocystectomy, which was performed two months later. At six months follow-up the patient remains free of signs of infection and the graft is patent.

Conclusion: Complete excision of the infected aortic wall, and in situ reconstruction using a self-made bifurcated graft created by bovine pericardium provided good results regarding technical success, patency and freedom from reinfection and reoperation. The bovine pericardium, self-made graft is therefore a valuable part of our surgical armamentarium against aortic infections.

DIRECT ISCHEMIC POSTCONDITIONING AFTER EVERSION CAROTID ENDARTERECTOMY - A CONTINUING INVESTIGATION

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Introduction: Ischemic reperfusion (IR) injury plays a critical role in adverse neurological outcomes following carotid endarterectomy (CEA). In this context, we continue to investigate a novel surgical technique called ischemic postconditioning (IPCT), which is designed to mitigate the effects of IR injury. The primary objective of our study was to evaluate the effects of the IPCT on neurological outcome in patients with high risk of IR injury after CEA.

Methods: This is an observational case-control investigation from December 2015 to December 2023. It involved 728 patients identified as "high-risk reperfusion" candidates, divided equally into two groups: those undergoing IPCT and those who did not receive IPCT. The classification of high risk for IR injury after CEA was based on several criteria, including: severe internal carotid artery (ICA) stenosis (>90%), severe bilateral ICA stenosis (>80%), severe ICA stenosis (>80%) with contralateral ICA occlusion, and severe ICA stenosis with a recent history of transient ischemic attack (TIA) or stroke. The extent of carotid stenosis before CEA was assessed through multidetector CT angiography. The IPCT procedure was implemented by executing six cycles of alternating 30 seconds of reperfusion (achieved by declamping the ICA) and 30 seconds of ischemia (through reclamping the ICA), immediately following the completion of the initial CEA.

Results: Cumulative incidence of intrahospital postoperative TIA/stroke was significantly higher in the non-IPCT group when compared to IPCT group 5.7%% vs. 0.6% (OR 0.077; CI 95% 0.010 - 0.616; p ? 0.003). Throughout the follow-up period, there were no reported TIAs, strokes, or neurological mortality in either patient group.

Conclusion: In our study IPCT significantly reduced the incidence of postoperative cerebral ischemic events after CEA in patients with high-risk of IR after CEA.

Venous Disease

ENDOVASCULAR THROMBECTOMY OF PORT-INDUCED SUPERIOR VENA CAVA SYNDROME USING THE INARI FLOWTRIEVER DEVICE

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Background: Superior vena cava (SVC) syndrome is a result of obstruction of blood flow through the SVC, secondary to a thrombus, malignancy, or chest infection. The two predominating causes of SVC syndrome include malignant tumors (around 60% of cases) and thrombosis due to central lines, indwelling catheters, and pacemakers (30%-40% of cases). The cases due to thrombosis are rising due to the increasing usage of indwelling intravenous catheters and pacemakers, placing these patients in hypercoagulopathy.

Aim: To report a case of successful endovascular thrombectomy of port-induced superior vena cava syndrome using the INARI FlowTriever devive.

Methods: A 73-year-old male patient underwent distal gastrectomy due to gastric cancer, post neoadjuvant chemotherapy. On the 1st postoperative day, the patient presented with diffuse facial and bilateral upper extremity edema, along with dyspnea and shortness of breath. The patient rapidly presented upper airway obstruction and was immediately intubated and transferred to the ICU.

Results: The computed tomography demonstrated complete superior vena cava, right subclavian and left jugular vein thrombosis, indication the diagnosis of superior vena cava syndrome. The patient was trasfered to the operatinh theater, where left femoral vein access was gained. The INARI FlowTriever was advanced over the wire to the superior vena cava where multiple aspirations of the thrombus were performed. These aspirations withdrew several fragments of red tissue, indicating a fresh thrombus. Post-thrombectomy venography revealed restoration of antegrade flow with a small degree of residual stenosis, and a 14 x 40mm Atlas balloon angioplasty was performed. The guidewire and sheath were then removed, and manual pressure was held until hemostasis was achieved.

Conclusions: The FlowTriever system has proven to be a successful alternative treatment for patients with pulmonary embolism. Other studies have also shown success of the FlowTriever system outside the scope of PE, such as this case in the setting of SVC syndrome.

RECANALIZATION OF OCCLUDED IVC FILTER AND ILIO-CAVAL OBSTRUCTION, POSTPHELIBITIC

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Introduction: Endovascular intervention is now considered the first-line therapy for stenotic or occluded iliofemoral veins with low morbidity and high clinical success.

Method: a case report / challenging case

Case details: 46-year-old male patient with, a history of recurrent DVT and IVC filter insertion 8 years ago. The patient presented with marked lower limb edema at the thigh and leg, marked venous claudication, severe lower limb heaviness, and pain that limits his daily activity

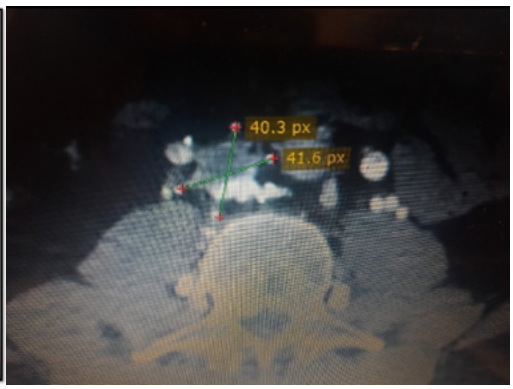
Technique: Ultrasound-guided venous access was performed on the common femoral veins on both sides under general anesthesia. the lesion was crossed by 0.018 GW with the support of a Crossing inside the IVC filter at the same point bilaterally was achieved by 0.018 GW followed by an exchange of GW with 0.035 hydrophilic GW over the supporting catheter.

The pre-dilatation using 5*80 balloon took place inside the IVC filter, followed by dilatation of venous specific balloon 14*100 (Atlas gold, bard) reaching 16 to 18 atm pressure simultaneously. The filters were displaced sideways. Dilatation of obstructed ilio-caval segment was done by the same balloon of 14 mm. and subsequently venoplasty and stenting were performed with 4 stents, 2 stent 14*140 (vonovo, Bard) and 2 stents 14*90 braided stainless steel stents (Wallstents; Boston Scientific, Natick, Mass) All diseased segments, as identified by IVUS, were covered by the stent to ensure adequate inflow and outflow of the stent. (Fig 3).

Results: patent IVC, improvement of symptoms, and no complications

Conclusion: Endovascular recanalization of Occluded inferior vena cava and filter is possible with marked improvement of pain and quality of life and low risk of mortality. Composite dedicated venous stent and eligiloy wall stent is feasible with overlapping 2-3mm

Keywords: IVC occlusion, IVC occluded filter, postphelibitic.



ENDOVASCULAR REPAIR OF AN IATROGENIC INFERIOR VENA CAVA INJURY FROM EXTRACORPOREAL MEMBRANE OXYGENATION SYSTEM

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In this case report, we describe a 48 years old female patient presenting with an iatrogenic injury to the inferior vena cava during the placement of an Extracorporeal Membrane Oxygenation system (ECMO). The Inferior Vena Cava (IVC) is the most frequently injured of the three major abdominal veins. The incidence of IVC injury ranges from 0,5 to 5% of penetrating injuries. Endovascular control of IVC injuries has been relegated to case reports, which detail the use of stent grafts to repair injuries to the cava. The development of expandable stent grafts may allow quick and safe vascular reconstruction.

The inferior vena cava was perforated when the venous cannula of the ECMO was inserted through left femoral puncture. The perforation occurred in the right side of the inferior vena cava, above the confluence of the iliac veins, with further retroperitoneal advancement of the cannula up to retrohepatic space. This perforation was successfully repaired using a 12 Fr Sentrant Introducer Sheath (SENSH1228W) Medtronic™, and two Endurant II/IIs stent graft iliac limbs (ETLW 1616C93EE, ETLW 1613C93EE) Medtronic™, delivered through right femoral approach. The two stent grafts were deployed and the ECMO cannula was removed.

This case advocates the utility of both the Introducer sheath and mainly of the Endurant II (Medtronic™) stent graft component in the repair of the inferior vena cava major injuries in emergency situations.

TRUE ANEURYSM OF EXTERNAL JUGULAR VEIN IN 11 YEARS OLD BOY: CASE REPORT AND LITERATURE REVIEW.

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Aneurysms of the external jugular vein are extremely uncommon in young patients, with a few documented cases. The cause of these aneurysms is not fully known, but may be linked to trauma, congenital vessel wall weakness, or elevated venous pressure. Patients frequently experience a painless lump in the neck that becomes more prominent during coughing and straining. Diagnosis typically involves the use of ultrasound, which is considered the gold standard for accurately determining and confirming an aneurysm. Further assessment may include computed tomography or magnetic resonance imaging. Surgical excision is performed mostly for symptomatic aneurysms or cosmetic concerns. We report a case of an 11-year-old boy brought to the clinic by his parents due to a painless swelling in the right supra-clavicular area that has been present for the past four years. The parents observed the lump during crying or coughing. A neck ultrasound revealed an oval-shaped mass measuring 4.3 x 1.5 x 2.5 cm, partially thrombosed. A contrast-enhanced CT scan of the neck revealed a 4 x 3.3 x 4.3 cm subcutaneous mass on the right side, possibly a thrombosed pseudo-aneurysm of the right external jugular vein with minimal internal blood flow. The patient underwent an excisional surgical intervention of the external jugular vein aneurysm. A histopathological examination showed a slender saccular and vascular tissue containing an organized hematoma, chronic infiltrate, occlusive and degenerative vascular changes such as hyalinization and fibrocalcification. These findings are indicative of a jugular vein saccular aneurysm with no signs of malignancy.The postoperative recovery was uneventful, and the patient was discharged home for regular outpatient follow up. Long-term outcomes and potential complications of external jugular vein aneurysms in young patients are not well documented. Further research and collaboration among healthcare professionals are needed to establish guidelines for the diagnosis and management of this rare condition.

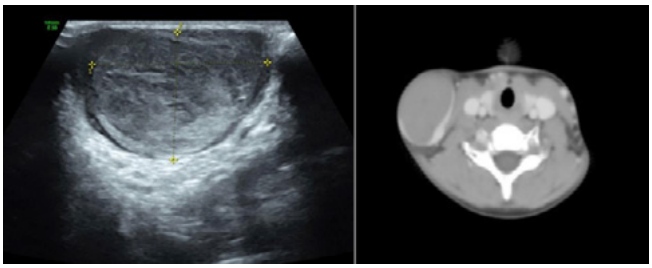

Photo (1) Duplex UltraSound DUS and Computed Tomography Angiography CTA display Right External Jugular Vein Aneurysm

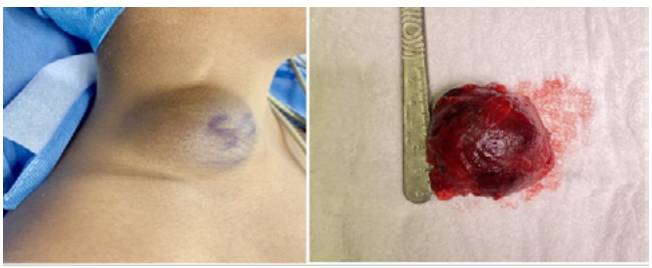

Photo (2) (Right) Pre-operative right neck mass, (Left) Post-operative Right External Jugular Vein Aneurysm

SURGICAL REPAIR OF INFERIOR VENA CAVA ANEURYSM ASSOCIATED WITH CONGENITAL VASCULAR ANOMALY. A REPORT OF A CASE AND REVIEW OF THE LITERATURE

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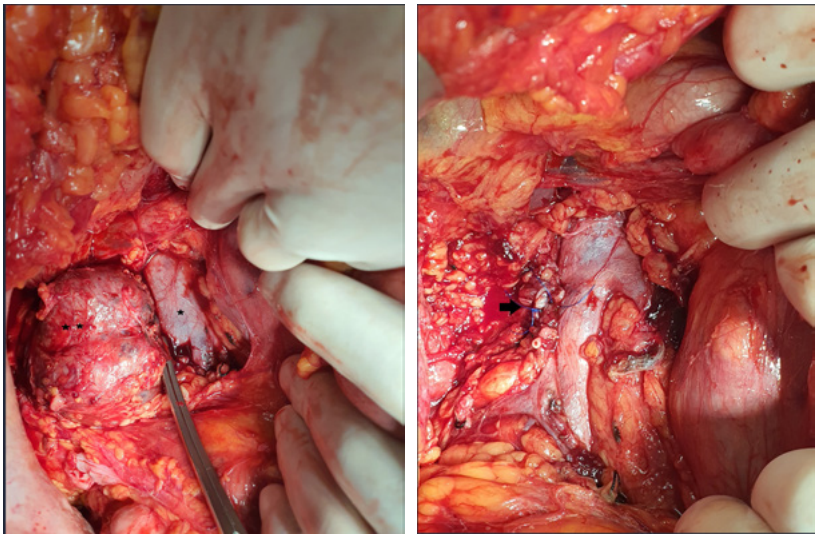
Background: Inferior Vena Cava Aneurysms (IVCAs) constitute a rare, yet potentially lethal disease, especially if left untreated or become complicated.

Methods: Among seventy-seven cases of IVCAs reported in the English literature, only nineteen (19) of the above were associated with congenital or acquired vascular anomalies including the following: IVC obstruction or interruption, tetralogy of Fallot, left-sided IVC, duplicated IVC, Ehlers-Danlos syndrome, blue rubber bleb nevus syndrome, and Klipper-Trenaunay syndrome. We present a new case of α surgically treated symptomatic saccular IVCA with Tetralogy of Fallot along with a literature review of previously published cases associated with congenital vascular anomalies.

Results: Based on the patient's age, symptoms and imaging findings, open surgical reconstruction was deemed the optimal solution, involving surgical excision of the aneurysm and IVC reconstruction. The aneurysmal "mouth" was then closed via lateral continuous venography with 4.0 polypropylene sutures. An endovascular approach involving exclusion of the aneurysmal sac with an endograft was deemed inevitable due to the closeness between the aneurysmal neck and the orifice of the right renal vein. Across the literature, 8 patients were managed conservatively (42%) whereas the rest of the patients were managed operatively. Six patients were submitted to open surgery with resection of the IVCA, whereas 15% of patients (3/19) underwent endovascular repair of the IVCAs.

Conclusions: Conservative management can be conducted in selected cases of IVCAs with close surveillance whereas more active treatment should be considered in patients associated with higher incidence of vena cava thrombosis and aneurysm rupture.



ENDOVASCULAR THROMBECTOMY FOR ACUTE ILIOFEMORAL DEEP VENOUS THROMBOSIS

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Background: Ilio-femoral deep vein thrombosis has a high rate of long-term morbidity, mainly in the form of postthrombotic syndrome. Endovascular interventions of acute deep vein thrombosis using thrombolysis and mechanical thrombectomy have received increased focus in the literature as a safe and effective therapeutic modality in selected patients.

Aim: To report the use of endovascular thrombectomy in the management of acute iliofemoral venous thrombosis in young patients.

Methods: From October 2022 to January 2024, 6 patients were treated in our department for acute iliofemoral deep vein thrombosis. All patients were treated with endovascular mechanical thrombectomy using the ClotTriever Thrombectomy System (Inari Medical, Irvine, CA, USA) or the Aspirex Mechanical Aspiration Thrombectomy System (BD, Franklin Lakes, NJ, USA).

Results: Four patients were female (66.7%) and the mean age was 33 years (range 24-39). All patients presented within 1 week of symptom onset, whereas an identifiable provoking factors was present in 5 cases (83.3%). May-Thurner syndrome was present in two patients (33.3%). Endovascular mechanical thrombectomy was carried out via popliteal vein access in all cases, wheres as ClotTriever Thrombectomy System was used in 5 cases (83.3%). Technical success was 100%, and venous stenting was performed in 4 cases (66.7%) due to residual stenosis. There were no bleeding events or repeat venous procedures. The median postprocedure hospital stay was 2 days and all patients reported complete symptom relief at postprocedure day one.

Conclusions: Endovascular mechanocal thrombectomy is an effective and safe treatment for selected patients with acute iliofemoral thrombosis. Nonetheless, further research is warranted to determine mid-term and long-term outcomes.

GENETIC AND BIOCHEMICAL THROMBOPHILIC MARKERS IN PATIENTS WITH HRONIC VENOUS DISEASE (VENOUSVARICOSEVEINS) AND VENOUS ULCERS

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Aim: The aim of this study is to investigate the correlation of biochemical and thrombophilic markers (such as antithrombin, protein C and S deficiency rate, factor V Leiden involvement rate and G20210A prothrombin mutation) with the severity of clinical presentation of CVD, especially those patients with chronic and relapsing limb ulcers.

Methods: The study was performed in 200 individuals with chronic venous disease (varicose veins and / or venous ulcers) and in a corresponding number of control individuals free(100volunteers) of the above or other clinical symptoms referring to a latent venous or thrombophilic pathology, corresponding to sex and age. The classification was made according to the CEAP system developed under the auspices of the American Venous Forum. Doppler color ultrasound and / or duplex ultrasonography was performed to evaluate the effectiveness of the venous system. The ankle-branchial index calculated to determine the effectiveness of the arterial system.

Results: In a first sample of 30 people (15 men and 15 women) in ages from 50 to 70 years with moderate or severe degree chronic venous disease of the lower extremities shows an increase of the factor MTHFR(C677), increase of heterozygous types of Factor V Leiden and a slight rise in Factor V.Willebrand. Also appears a very small rise of IgG and IgM antibodies as well as a slight increase protein C. A specific increase in the CRP index does not occur as well as the WBC.

Conclusions: The polypeptide tissue antigen TPA appears to contribute to the development of chronic venous insufficiency lower extremity disease but not homocysteine (HCY). In this the small sample of patients does not show a particular rise α1 antitrypsin, plasminogen-PLG, Factor IX and Factor XI as well as protein S.

Young Vascular Surgeons Forum - EVST

USE OF ROTATIONAL ATHERECTOMY-ASSISTED BALLOON ANGIOPLASTY IN THE TREATMENT OF ISOLATED BELLOW-THE-KNEE ATHEROSCLEROTIC LESIONS IN PATIENTS WITH CHRONIC LIMB THREATENING ISCHEMIA

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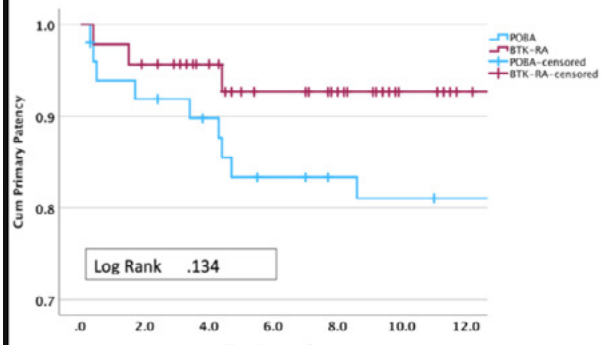
Aim: Aim of the study is to evaluate the safety and effectiveness of rotational atherectomy-assisted balloon angioplasty (BTK-RA) for the treatment of isolated below the knee (BTK) atherosclerotic lesions and to compare the outcomes to plain old balloon angioplasty (POBA).

Methods: Between January 2020 and September 2023, 96 consecutive patients with chronic limb threatening ischemia (CTLI) and isolated BTK-lesions underwent POBA (group A) or BTK-RA (group B). The primary outcome measures were: periprocedural technical success, primary patency, postoperative increase of the ankle branchial index(ABI), target lesion revascularization (TLR), limb salvage, minor amputation and death. Both techniques had similar technical success, operative time, intraprocedural complications and bailout stent implantations independent on the operator's experience.

Results: Group B had significantly higher primary patency rates (93.5% vs 72.0% respectively, p=.006), lower in hospital stay (2.0 - 3.0 vs 4.0 - 6.0 days respectively, p<0.001) and higher postoperative ABI (0.8 - 0.2 vs 0.7 - 0.1 respectively, p=.008), compared to group A, respectively. Significant differences (POBA n: 20, 40%, BTK-RA n=3, 6.5%) were found in minor amputation rates between the 2 groups (p<0.001), while the respective limb salvage rates were similar in both groups (94.0% vs 97.8%, p=.35).

Conclusion: The use of BTK-RA for the treatment of BTK-lesions in patients with CTLI showed significant clinical advantages in comparison to POBA.

Figure 1A: Cumulative patency in 12 months



Survival analysis at 12-month follow up

	0	2	4	6	8	10	12
Total							
Cum Survival (%)		99	98	98	98	97	69
At risk	96	94	93	90	88	87	50
Std error	0.01	0.01	0.01	0.01	0.01	0.02	0.06
Group 1							
Cum Survival (%)		90	83	83	81	81	60
At risk	50	44	42	37	36	35	20
Std error	0.04	0.04	0.05	0.05	0.06	0.06	0.09
Group 2							
Cum Survival (%)		96	92	92	92	92	92
At risk	46	39	30	22	14	7	3
Std error	0.03	0.03	0.04	0.04	0.04	0.04	0.04

Figure 1B: Procedural and follow-up results

	Total N=96	Group 1 N=50	Group 2 N= 46	p-value
Experienced surgeon[1]	60 (62%)	35 (70%)	25 (54%)	.114
Op duration (minutes)[2]	59-30	64-30	58-23	.878
Antegrade punction[2]	83 (86%)	43 (86%)	40 (86%)	.891
Technical success[1]	88 (91.7%)	44 (88%)	44 (95.7%)	.175
Assisted technical success[1]	96 (100.0%)	50 (100.0%)	46 (100.0%)	n/a[3]
Bailout stenting[1]	8 (8%)	6 (12%)	2 (4%)	.175
Peripheral embolization[1]	0 (0.0%)	0 (0.0%)	0 (0.0%)	n/a[3]
Access site complications[1]	1 (1%)	0 (0%)	1 (2%)	.295
Hospital stay (days)[2]	2.5-5	4-6	2-3	**<.001**
Postoperative ABI[2]	0.8-0.2	0.7-0.1	0.8-0.2	**.008**
Postoperative ABI >0.8[1]	38 (48%)	16 (35%)	22 (67%)	**.005**
30 days MACE[1]	1 (1%)	1 (2%)	0 (0)	.335
Mortality[1]	2 (2%)	2 (4%)	0 (0%)	.170
Primary patency[1]	79 (82%)	36 (72%)	43 (93%)	**.006**
Reintervention (TLR)[1]	13 (76%)[3]	12 (85%)[3]	1 (3 %)[3]	.052
Minor Amputation[1]	23 (24%)	20 (40%)	3 (6%)	**<0.01**
Limb salvage[1]	92 (96%)	47 (94%)	45 (98%)	.349

[1] N (%)
[2] Median-IQR
[3] Incidence calculated at patients with failed primary patency, not in the entire cohort.

TREATMENT LENGTH, DEVICE SELECTION AND EXTERNAL ILIAC ARTERY EXTENSION ARE ASSOCIATED WITH INCREASED AORTIC STIFFNESS AFTER ENDOVASCULAR AORTIC REPAIR: A PROSPECTIVE, SINGLE-ARM STUDY

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Background-Aim: Aortic stiffness is a strong independent factor of adverse cardiovascular outcomes. Implantation of stent endografts during endovascular aortic repair(EVAR) increases aortic rigidity, as available commercial endoprostheses are composed of stiffer materials compared to native aortic wall. The aim of this study is to investigate the correlation between endograft properties and aortic stiffness increase.

Methods: This is a prospective, observational and single-arm study. Patients with infrarenal abdominal aortic aneurysms, managed electively with aortobiiliac endografts are consecutively enrolled in our study. Changes in aortic stiffness are calculated by pulse wave velocity(PWV) measurements. Primary endpoint is the correlation of various endograft properties and PWV increase. Statistical analysis is performed by software SPSSv28.0.

Results: 38 patients fulfilling the inclusion criteria were enrolled in this preliminary stage of the study. Patients received Dacron polyester, ePTFE with suprarenal fixation(ePTFESF) and with infrarenal fixation(ePTFEIF) endografts. PWV was significantly increased postoperatively in the total number of patients (10.6 to 11.9 m/s; p<.001), but also in each type of endograft separately. A statistically significant and positive correlation (r=.870; p<.001) of PWV increase and endograft length was found. The observed correlation remained statistically significant in all three endograft categories; Dacron (r=.985; p<.001), ePTFESF (*r*=.969; p<.001) and ePTFEIF (r=.931; p=.001). Multiple regression analysis showed a statistically significant effect of both endograft type and endograft length on PWV increase, which was higher for ePTFESF endografts comparing to ePTFEIF endografts (p=.038) and the universally observed positive correlation was stronger in the ePTFESF group comparing to the ePTFEIF group (p<.001).

Conclusions: Endoprostheses with infrarenal fixation should be preferred in EVAR. Minimum sealing lengths according to instructions for use should be used, avoiding unnecessary extension of iliac limbs to common iliac bifurcations or even to external iliac arteries.

Improvement of endograft properties could minimize the aortic stiffness leading to prevention of adverse cardiovascular events.

AORTIC VASCULAR GRAFT AND ENDOGRAFT INFECTION - OUTCOME ANALYSIS IN A DUAL CENTER COHORT

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Background: Aortic graft infection (AGI) is a serious complication of open and endovascular aortic surgery with significant morbidity and mortality. There is still a low level of evidence regarding diagnostic certainty, comparison of surgical and conservative therapy and procedural outcomes. The aim of this study is a dual center cohort analysis with presentation of the results of both treatment alternatives including a quantitative and qualitative PET-CT analysis for a possible improved risk stratification.

Methods: All Patients with AGI (1/2013 - 12/21) from two university centers were included in a prospective database. Patient characteristics, details of initial surgery, characteristics of surgical treatment and complications during inpatient and follow-up were collected retrospectively. All available PET-CTs were evaluated qualitatively using a visual grading scale and quantitatively using the maximum uptake method. The primary endpoints were mortality during hospitalization and reintervention-free survival at 6 months. Secondary endpoints include survival and complication rates, particularly in the comparison of surgical procedures and the comparison with the conservatively treated group.

Results: 76 patients were treated surgically and 17 conservatively. The diagnosis of AGI was made after 36±49 months. A fistula was present 32 times. Reconstruction was performed with a silver prosthesis (21.3%), hand-sewn bovine pericardium (61.3%) or deep vein (17.3%). With a hospital stay of 45±37 days and 17±34 days in the ICU, the surgical and medical complication rates were 61.8% and 65.8% respectively. In 23.7% of cases there were aortic complications. In-hospital mortality was 19.4%, re-intervention-free survival at 6 months was 50%. The reconstruction material showed no influence on hospital mortality (p=0.18).

Conclusions: Perioperative morbidity and mortality in surgical treatment of AGI remain high. This study shows comparable short- and medium-term mortality in conservatively treated patients, albeit with a small number of patients. Due to the complexity of AGI, a prospective national registry should be established.

MECHANICAL THROMBECTOMY FOR ILIAC LIMB GRAFT OCCLUSION AFTER ENDOVASCULAR ANEURYSM REPAIR USING ROTAREX™S ATHEROTHROMBECTOMY SYSTEM

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Background: Iliac limb graft occlusion is one of the most frequent adverse events after endovascular aortic aneurysm repair (EVAR). Multiple studies, identified limb occlusion as the third most common cause of reintervention post-EVAR, after endoleaks and graft migration, with incidence ranging between 0% and 10.6%. Until recently, over-the-wire thrombectomy anf crossover femoral-femoral graft were most commonly performed for the treatment of symptomatic iliac limb thrombosis.

Aim: To report the use of the Rotarex™S atherothrombectomy system in symptomatic acute, subacute, or chronic graft limb thrombosis following EVAR.

Methods: Seven male patients (mean age 70.6 years) presented with iliac limb graft occlusion after EVAR. Median time to occlusion was 56 weeks (1-364 weeks), whereas all occlusions were unilateral. The presenting symptom was intermittent claudication (n = 4) and acute limb ischaemia (n = 3). Mechanical thrombectomy was performed using the 10F Rotarex Rotational Excisional Atherectomy System (Becton, Dickinson and Company, Franklin Lakes, USA) with stenting/relining of the affected limb.

Results: Technical success was 85.7% (6/7 cases). In one case with iliac limb angulation, the Rotarex wire was cut during the procedure and retrieved with snare device, and the lliac limb was then recanalised with limb stenting/relining. After the successful thrombectomy in the remaining cases, limb graft stenting/relining was performed in all cases (n = 6) and outflow stenting due to external iliac artery stenosis was permorded in 3 cases. Post-operatively, novel oral anticoagulant therapy and antiplatelet therapy was administrated in all cases. Median length of stay was 2 days. Over a median follow-up period of 12 months (4-24 months), there was no event of limb reocclusion.

Conclusions: Rotational mechanical thrombectomy for iliac limb occlusion after EVAR appears to be both safe and effective. However, it is of utmust important to recognise defects contributing to graft occlusion and treat them within the same procedure.

SINGLE CENTER EXPERIENCE WITH THE USE OF BOVINE PERICARDIUM GRAFT TO TREAT AORTIC INFECTIONS

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Background-Aim: An aortic graft or endograft infection is a severe complication that can occur after open or endovascular reconstructive surgery (EVAR) for an abdominal aortic aneurysm and is associated with high morbidity and mortality. Infection of the native aortic wall, leading to a mycotic aneurysm may also have a disastrous course. We describe our single-center experience with the use of home-made bovine pericardium grafts to treat aortic infections.

Methods: Between October 2019 and February 2024, 14 patients [13 males, median age 70.07 ± 9.4 years, range 57-81] underwent surgery with a home-made bovine pericardium graft to treat an aortic infection. The cause was conventional graft infection in 6 cases, mycotic aneurysm in 4 cases, abdominal endograft infection after previous EVAR in 3 cases, and after thoracic endovascular repair in 1 case. In all cases, graft infection was documented by a combination of clinical findings, laboratory tests, imaging, and microbiologic tests.

Results: Mean interval time between initial surgery and graft/endograft infection was 9.63±9.2 years (range 0.3 - 32 years). Two mycotic aneurysms presented with aneurysm rupture. Fever and abdominal or lumbar pain (57%) was evident in 8 patients, while 2 patients presented with a low-grade infection. A fistula was present in 4 cases (3 aorto-enteric and 1 aorto-bronchial). A positive pathogen detection was confirmed in 11 patients. Transabdominal approach was selected in 11 cases, a retroperitoneal in 2, and a thoracoabdominal in 1 case. All patients received an in situ replacement using a hand-sewn graft made of a bovine pericardium sheet. The overall in-hospital mortality was 28.6%. At a mean follow-up of 12±13.99 months, no recurrence of infection was observed.

Conclusions: Bovine pericardium grafts are associated with low graft-related complications and, therefore, provide a valuable and encouraging option for in situ replacement following aortic infection.

e-Poster Presentations

ePP01

ENDOVASCULAR REPAIR OF COMBINED ANEURYSMS OF THE CELIAC TRUNK AND ITS MAJOR BRANCHES: A CASE REPORT AND REVIEW OF THE LITERATURE

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Background - aim: Aneurysms of the visceral arteries are a rare but clinically important vascular condition, as they constitute approximately 5% of all intra- abdominal aneurysms. Their clinical significance is mainly related to their potential for rupture and the challenge of diagnosis and treatment of these uncommon aneurysms. We report a rare case of combined aneurysms of the celiac trunk and its major branches, i.e. the common hepatic, splenic and left gastric artery, that we treated in an endovascular fashion in our department.

Methods: An 61-year old male patient was incidentally diagnosed with intrabdominal aneurysm during abdominal ultrasound. The computed tomography angiography (CTA) revealed multiple splanchnic aneurysmatic disease, with combined aneurysms of the celiac trunk and its major branches, i.e. the common hepatic, splenic and left gastric artery. The maximum sac diameter was 19mm, 45mm, 21mm and 12mm, respectively. The patient was asymptomatic at the time and upon obtaining the informed consent rejected open surgery. Therefore, we proceeded to treat these aneurysms in a totally endovascular way.

Results: Vascular access was achieved through left brachial cut-down. After selective catheterization of the celiac trunk and the common and left hepatic artery, we implanted three iCover® balloon-expandable covered stents, measuring 8x57mm, 8x37mm and 10x57mm, respectively, in a row and with adequate overlap. Final intraoperative angiography was successful. His hospitalization was uneventful and the patient was discharged on post-op day 1 under aspirin. The 1-month follow-up CTA revealed the complete exclusion of all aneurysm sacs and the patency of the implanted covered stents, with good liver perfusion.

Conclusion: This was a rare of combined aneurysms of the celiac trunk, common hepatic, splenic and left gastric artery, that we treated successfully with endovascular implantation of balloon-expandable covered stents.

ePP02

ENDOVASCULAR THERAPY TO TEMPORIZE THE URGENT SEQUELAE OF AORTIC ENDOGRAFT INFECTION IN AN ELDERLY PATIENT

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Background: Although infection is an uncommon complication of endovascular aneurysm repair (EVAR), it is associated with a high morbidity and mortality rate. Among other complications, infection can lead to proximal graft failure and type IA endoleak.

Methods: A patient with EVAR low-grade infection and proximal seal-related adverse events is presented.

Case: An 80-year-old male patient was urgently admitted due to abdominal pain. After undergoing EVAR 2 years ago, the patient was fitted with a proximal infrarenal extension cuff and endoanchors one year ago due to a 1A endoleak. A computed tomography (CT) angiogram revealed a recurrence of the 1A endoleak and overdilatation of the aneurysmal sac with a maximum diameter of 12 cm. The patient was suspected to have endograft infection due to a low grade afternoon pyrexia for more than 3 months. An FDG PET/CT (positron emission tomography/CT) scan showed persistent circumferential thickening of soft tissues with associated FDG avidity in the proximal part of the endograft. A history of Coronary Artery Disease and Chronic Obstructive Pulmonary Disease Stage III rendered the patient unfit for graft explantation and Neoaortoiliac System (NAIS) surgery. Moreover, endoanchors could compromise the success of graft explantation. The patient was successfully managed with proximal seal extension, using a Zenith t-Branch thoracoabdominal endovascular graft. He made an excellent recovery with no complications and was discharged on long-term antibiotic therapy.

Conclusions: Endovascular management of aortic graft infections may be the optimal management for selected patients with aortic graft infections. Patients with significant comorbidities or whose existing aortic graft cannot be removed are the best candidates.

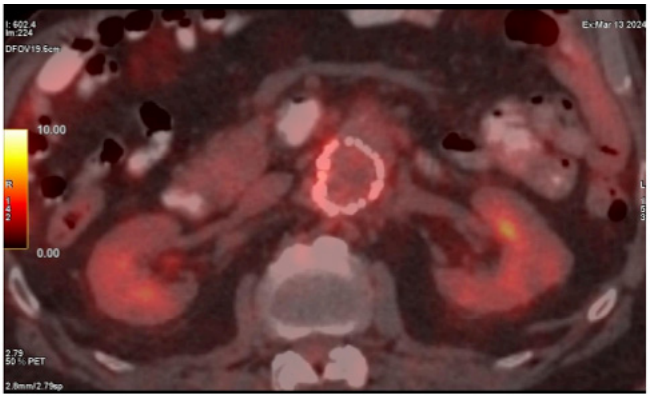

Photo 1. FDG PET/CT (positron emission tomography/CT) scan showed persistent circumferential thickening of soft tissues with associated FDG avidity in the proximal part of the endograft.

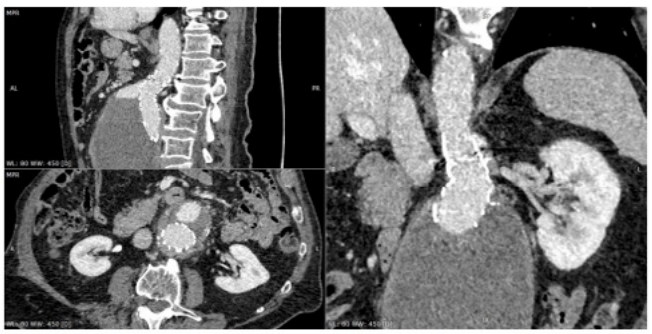

Photo 2. 1A endoleak and overdilatation of the aneurysmal sac with a maximum diameter of 12 cm.

ePP03

ROLE OF VIVOSTAT TREATMENT IN HEALING OF COMPLEX DIABETIC FOOT ULCER

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Background: Diabetic Foot Ulcer remain a major challenge of healing. Even after successful revascularization, due to large and extensive nature of ulcer, patient require prolong hospital stay to have negative suction therapy, regular dressing change in hospital environment. Local treatment with autologous platelet rich plasma gel achieves ulcer healing by releasing Platelet Derived Growth Factor (PDGF), Transformin Growth factor-β3 (TGF- β3), Vascular Endothelial Growth Factor (VEGF). The Vivostat- PRF (Platelet Rich Fibrin) treatment promotes wound healing in these chronic and complex wounds.

Methods: Four cases of complex diabetic foot ulcer with underlying arterial disease analyzed with revascularization procedure and wound treatment with Vivostat.

Result: All patients achieved rapid ulcer healing with good outcome and shorter hospital stay.

Conclusion: Vivostat PRF treatment promotes ulcer healing and is an effective way to treat Diabetic foot ulcers, provides significant patient comfort. Ensure early discharge from Hospital, reduces hospital cost, can achieve limb/foot salvage. Vivostat-PRF treatment may combat the problem of persistent challenge of ulcer healing in our expanding Diabetic patient group.

ePP04

SYMPTOMATIC OR ASYMPTOMATIC? BILATERAL POPLITEAL ARTERY ANEURYSMS: TWO SIDES OF THE SAME COIN

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Background - Aim: Bilateral popliteal artery (PA) aneurysms, while relatively rare, present significant clinical implications, often remaining asymptomatic until complications arise, such as thrombosis, embolization, or rupture, leading to limb ischemia or other severe consequences. We present a case of a patient with bilateral PA aneurysms of totally different presentation and treatment.

Methods: A 63-year-old man presented to the ER with acute right limb ischemia (rest pain) and three active ulcers (Rutherford 5). He had a significant smoking history (>60 pack years), along with type II diabetes and hyperlipidemia. A digital subtraction angiogram (DSA) conducted a month earlier revealed bilateral common iliac artery (CIA) stenoses (60%) and occlusion of the right superficial femoral, supragenicular PA, and anterior tibial arteries, with minimal collateral flow to the posterior tibial and peroneal arteries. An emergent CTA confirmed the DSA findings and identified a thrombosed 1.9 cm PA aneurysm. Additionally, a non-thrombosed 1.6 cm left PA aneurysm was detected, although it had been missed by the performing radiologist during the DSA examination.

Results: Urgent treatment was suggested, given his clinical severity. Same-day interventions included angioplasty and stenting of both CIAs using kissing stents, followed by a femoral-popliteal venous bypass the next day, utilizing a reversed ipsilateral great saphenous vein. Broad-spectrum antibiotics (meropenem, vancomycin) were administered, resulting in noticeable ulcer healing, and discharge occurred after 7 days. Three weeks later, elective endovascular treatment involved placement of 2 Gore/Viabahn stent-grafts for the left PA aneurysm. The patient made a full recovery and was discharged the following day.

Conclusions: In summary, this case highlights the diverse clinical challenges of bilateral PA aneurysms, stressing the urgency of early intervention in cases of ALI. It also underscores the significance of thorough imaging and evaluation to avoid missing potentially critical aneurysms, as evidenced by the initially overlooked left PA aneurysm.

ePP05

ATHERECTOMY DEVICES: TYPES , REVIEW AND PRESENTATION OF A CHALLENGING CASE

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1. Directional excisional atherectomy (silver hawk)

- It uses a rotating blade that is oriented to one side of monorail catheter to excise plaque inside the lumen of diseased vessels, Multiple passes are made, during which the blade is directed sequentially toward all quadrants of the vessel lumen.
- When the cone of the catheter is full, the device is removed for cleaning
- No RCT for SilverHawk, 12-month outcomes on over 1000 patients have been reported in five independent single-center studies with **patency rates between 80 and 88%.** Limitations of plaque excision appear to be the highly calcific vessels

2. Laser Atherectomy (turbo elite):

3. Orbital atherectomy (Diamondback)

- It produces 308 nm wavelength laser energy to achieve photoablation of intraluminal plaque
- It's the only atherectomy device that is suitable and indicated for in-stent stenosis.
- It's effective in CLI who is a poor surgical candidate
- Eccentric positioned diamond , which divide plaque into small particles and ablates calcified plaque , enough to pass through capillary circulation.
- <u>CONFIRM registry:</u>
- It collected 3135 patients ,received orbital atherectomy . It provides a technical safety , low rate of provisional stent insertion 5 %
- <u>CALCIUM 360 trial:</u>
- RCT conducted on 50 patients , comparted between PTA + orbital athrectomy VS PTA alone , primary patency at 1 year is 93% VS 82%.
- In small randomized trials both Silverhawk (Covidien, Plymouth, MN) atherectomy and orbital atherectomy (CSI, St Paul, MN) have been shown to **reduce dissection rate**, **bailout stenting**, and **need for stenting** with a **trend toward less TLR** than balloon angioplasty in treating infrainguinal vessels

1. Rotational atherectomy (Jetstream)

- It uses front end- blades over the rotating catheter tip to cut down plaque inside the lumen
- It's a rotational cutter with active aspiration capacity approved in the USA to treat infrainguinal PAD
- Jetstream atherectomy in long FP lesions had:

- Excellent safety profile
- High procedural success rate (98.3%)
- 12 months restenosis rate is 22.8% consistent with previous studies of FP atherectomy
- Low TLR rate (18.3%)
- Results of a study evaluating JetStream atherectomy for the treatment of in-stent restenosis (ISR) conducted on 60 patients and follow up for 1 year , without use of DCB: need for stent insertion only at 10 %, the athrectomy device didn't caused stent fracture , freedome of TLR at 6m and 12m was 89.3%, 66.8%

5) Rotational Rotarix atherectomy device:

- It's an atherectomy device and trans-cutaneous mechanical thrombectomy device suitable for acute and subacute limb ischemia
- The catheter tip is made up of two overlying metal cylinders, with two side openings. The inner cylinder is connected to the catheter shaft and the outer cylinder to the rotating helix. The helix and the catheter tip rotate at ~40,000-60,000 rpm

ePP06

INFRAINGUINAL ENDOVASCULAR TREATMENT OF PERIPHERAL ARTERIAL OCCLUSIVE DISEASE IN DIABETIC PATIENTS

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Introduction: Periferal arterial occlusive disease (PAOD) manifests as claudication, ischemic rest pain or tissue loss. The incidence of PAOD is increasing due to the rising prevalence of diabetes and obesity in the general population. The aim of this study is to analyse the outcomes of infrainguinal endovascular treatment of PAOD in patients with diabetes.

Methods: This is a retrospective analysis of patient data from 2018 to 2022 with first time infrainguinal endovascular treatment for PAOD. The primary outcome was to compare amputation free survival between diabetic and non-diabetic group. Endovascular procedures comprised of plain balloon angioplasty with selective use of plain or drug eluting stents.

Results: Study included 228 patients, 157 (68,9%) males and 71 (31,1%) females. Most prevalent comorbidities were congestive heart failure (30,3%) and previous myocardial infraction (14,5%). Claudications was present in 50,9%, rest pain in 15,4% and wound was present in 33,8%. Among 228 procedures the target lesion was the femoropopliteal in 128 (56,1%) and in infrapopliteal segment in 100 (43,9%). Diabetes was present in 158 (69,3%) patients, of whom 52 (32,9%) were women. The mean follow up was 8 months. The mean hospital stay was 3 days. Major amputation occurred in 20,2% in the diabetic group and in 2% in non-diabetic group (OR 12,66 95% CI 1,65 - 97,29; p=0,002). The mean time to major amputation in non-diabetic group was significantly longer (p = 0,016). In the diabetic group men had significantly longer amputation free time (p = 0,004) than women. There were 12 (0,5%) deaths and non of them were due to the revascularisation procedure.

Conclusion: This study shown that the diabetic group displayed a considerably higher rate of major amputations, emphasizing the critical importance of early intervention and close monitoring for diabetic PAOD patients.

ePP07

ANASTOMOTIC PSEUDOANEURYSMS IN THE GROIN, TREATED BY VARIOUS IN-SITU AND EXTRA-ANATOMICAL VASCULAR RECONSTRUCTIONS

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Background-Aim: Anastomotic pseudoaneurysm is a feared complication in vascular surgery, since it may be accompanied by serious complications and usually requires complex and technically demanding reconstructive procedures. The groin is the most usual anatomic location of these lesions, because the extracavitary portion of synthetic grafts is their part most prone to infection. This variable is considered an important predisposing factor and a critical pathophysiological component in the development of these lesions. Several surgical options may be available in such a clinical scenario such as in situ reconstruction with an autologous venous conduit, or extra-anatomic prosthetic bypass through uninfected tissue planes.

Methods: We reviewed cases of anastomotic pseudoaneurusms at the groin, which were treated in our institution during a 12-months period, from 01.2023 to 12.2023.

Results: Three patients were included. Two had a previous aorto-bifemoral bypass which had been performed 3 and 5 years ago and one patient had a femoro-femoral bypass which had been performed 6-months ago. These patients underwent in situ reconstruction with autologous vein in one case and extra-anatomic bypass through the obturator foramen in one case and through the wing of the iliac bone in the other. Preoperative and operative details are summarized in Table 1. All patients had an uneventful recovery and were discharged in good clinical condition.

Conclusion: Anastomotic pseudoaneurysm in the groin is a challenging clinical condition which requires a wide spectrum of vascular surgery techniques, including both in situ and extra-anatomic reconstructive procedures, for its treatment.

Patient #	Previous Procedure	Pseudoaneurysm Diameter	Reconstruction	Procedural time	Hospital stay
#1, Male, 63years	Aorto-bi-femoral bypass	8cm	Ilio-(Superficial) Femoral Bypass through the obturatior foramen	150min	8days
#2, Female, 50years	Aorto-bi-femoral bypass	5cm	Ilio-femoral bypass in situ (autologous vein)	180min	6days
#3, Female, 68years	Femoro-femoral bypass	3cm	Axillo-Femoral bypass through the iliac wing	150min	35days

ePP08

SURGICAL REMOVAL OF A LONG-FORGOTTEN UNRECOGNIZED INTRAVASCULAR FOREIGN BODY: A CASE REPORT

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Background - aim: Intravascular foreign body (IFB) embolization is a potential complication of any vascular procedure. Placement of a central venous catheter (CVC) is a common procedure, especially during surgery or in critically-ill patients. The complete loss of the introducing guide-wire into the circulation is a rare complication. The majority of cases are identified immediately or shortly after the procedure. The objective of this article was to report a case of an unrecognized, missed CVC guide-wire, that was found incidentally two years after right internal jugular vein (IJV) cannulation and which was successfully retrieved from the right common femoral vein (CFV).

Methods: An 82-year old male patient underwent in December 2021 open surgery for colorectal cancer. Two years later, in January 2024, he had a follow-up abdominal computed tomography (CT), in which an IFB, and more specifically a guide-wire, was found, extending from the right CFV to the inferior vena cava (IVC). Previous medical records revealed that he had a right IJV catheter during his hospitalization. The patient was asymptomatic, with normal laboratory results. Bilateral lower extremity screening with colored duplex venous ultrasound (cDUS) showed no signs of deep vein thrombosis (DVT) or post-thrombotic syndrome.

Results: Surgical extraction of the guide-wire was performed under local anesthesia and through cut-down and venotomy of the right CFV. His hospitalization was uneventful and the patient was discharged on post-op day 1 under low molecular weight heparin, at therapeutic dosage, for two weeks. The 1-month follow-up cDUS revealed the patency of the CFV, without any signs of DVT.

Conclusion: This was a rare and unusual case of a long-forgotten, unrecognized intravascular CVC guide-wire, that was discovered incidentally two years after the index procedure and was successfully removed through the CFV.

ePP09

PERCUTANEOUS ENDOVASCULAR REPAIR OF ABDOMINAL AORTIC ANEURYSMS; A SINGLE-CENTER EXPERIENCE

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Background - Aim: Recently, percutaneous endovascular abdominal aortic aneurysm repair (pEVAR) has gained its role in abdominal aortic aneurysm (AAA) treatment. The aim of the study is to report the increase of pEVAR in a tertiary center through years and its impact on clinical outcome.

Methods: A single-center, observational, retrospective study of prospectively collected data was conducted. All patients who underwent elective pEVAR (using the Proglide device) and EVAR with femoral cutdown access between 2017 and 2024 were included [2017-2019 early pEVAR experience (253 patients); 2020-2024 late experience (340 patients)]. Baseline characteristics, intra- and peri-operative data were collected. The main outcomes measured were the rate of pEVAR application, the need for blood transfusion and hospital stay.

Results: A total of 593 patients were treated by endovascular means (20.5% pEVAR vs 79.5% EVAR). Mean age was similar between groups (pEVAR 72.8±4.5 vs EVAR 72.3±7; p=0.68). The mean number of Proglide closure devices used for right and left access was 232 and 205 respectively. There was no difference in terms of type of anaesthesia [pEVAR: local 7% and 93% general anaesthesia (GA) vs EVAR: local 9% and 91% GA, p=0.38].The mean operation time was lower for pEVAR (111±40) vs EVAR 129±45 (p=0.000), while the need for transfusion was similar between groups [pEVAR: 20/122 (16.4%) vs EVAR: 70/434 (16%) p=0.65]. The average hospital stay was significantly lower for patients who underwent pEVAR (1.35±0.8) vs EVAR 3.23±2 (p=0.000). Only 1 death occurred in EVAR group. In the initial period pEVAR was used only in 10% of cases, while it was increased significantly in the later experience to 28.2%.

Conclusions: pEVAR is a growing trend in the treatment of AAA, and compared with femoral cutdown access, it can be considered safe and effective, reducing the operation time and hospital stay.

ePP10

CAROTID SUBCLAVIAN ANASTOMOSIS AS A FIRST STEP IN HYBRID TREATMENT OF AORTIC ARCH AND PROXIMAL DESCENDING THORACIC AORTIC INJURY

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Background: The hybrid approach to the treatment of the pathology of the thoracic aorta allows us to significantly expand the possibilities of the isolated TEVAR. An extra-anatomical left CCA-LSA bypass prior to the placement of an endoprosthesis in zone 2, would be sufficient for a save blood flow at the LSA.

Methods: From 2014 to 2024 at the National M.Amosov ICVS of the NAMS of Ukraine, 253 patient with aortic aneurysms were treated by TEVAR; 111 (43,8%) patients of them were operated with the hybrid approach, 56 (22,1%) of them received carotid-subclavian anastomosis, as a first stage. The causes of aortic injury were: descending aortic aneurysm without dissection - 12; 38 patients had an aortic dissection (4 - acute, 6 - subacute, 28 - chronic), PAU (n = 2), postcoarctation aortic aneurysm (n = 3), enlargement residual aorta after previous ascending aortic grafting (causing TAAD) (n = 1). If patients admitted emergency: first TEVAR operation were performed (only two cases). In all cases, a carotid-subclavian shunt was performed from a 5-6 cm supraclavicular access. The middle thirds of the left carotid and left subclavian arteries were connected with the armed d=6mm PTFE grafts, no need to cross the neck muscles.

Results: Mortality among 56 operated on patients consist 1.7% (one patient). There were several complications: endoleak type I or II (3 and 1); bleeding (>200 ml) treated surgically (n-1), treated conservative (n-2): thrombosis of the anastomosis and reoperation (n-1), dissection of the LSA (n-2), trauma of the recurrent laryngeal nerve (n-1), stroke (1). No one case of SCI. In the remote period, one patient died after 3 months from an unknown reason.

Conclusions: Carotid-subclavian bypass for revascularization of the subclavian artery performed in the setting of TEVAR is durable, safe method for expand endograft landing zone to Ishimaru 2 zone.

ePP11

SUPERIOR VENA CAVA SYNDROME, ACUTE THROMBOSIS ON TOP OF CHRONIC LESION

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Introduction: Superior vena cava (SVC) syndrome is a collection of clinical signs and symptoms resulting from either partial or complete obstruction of blood flow through the SVC. This obstruction is most commonly a result of thrombus formation or tumor infiltration of the vessel wall. The most common signs and symptoms include face or neck swelling, upper extremity swelling, dyspnea, cough, and dilated chest vein collaterals.

Methods: A case report

Case report: This is a case report of 65 years male, who was diagnosed with small cell carcinoma of the lung, presented with acute onset of facial and neck puffiness, swelling, and dyspnea on lay lay-down position for 2 2-week duration. Venous duplex showed acute thrombosis of the proximal part of the Rt subclavian vein. The patient has a history of Port-Cath insertion for chemotherapy infusion, it was the suspected provocative agent of acute. After the oncology consultation, there was nothing to do either chemotherapy or radiotherapy for small cell carcinoma and they reported the patient had finished his chemotherapy regime.

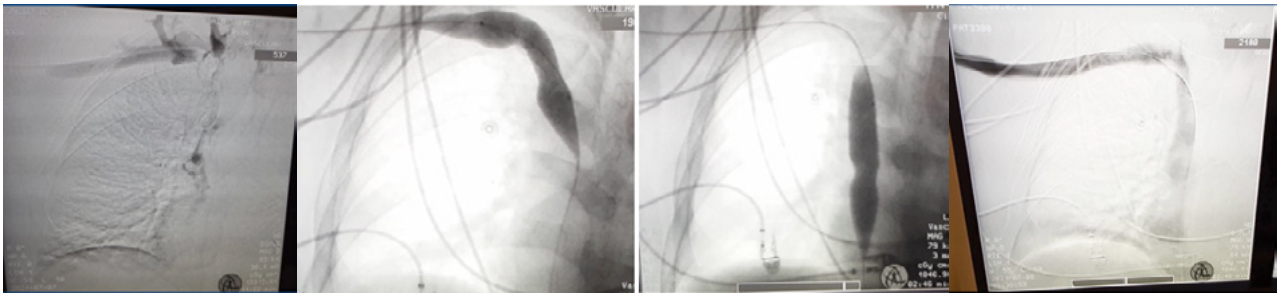
1st line of treatment was full-dose anticoagulation, removal of catheter, head elevation, and CT venography with contrast which detected superior vena cava (SVC) thrombosis. After the failure of conservative treatment for 1 week, the patient was arranged for CDT (catheter-directed thrombolysis).

Steps of intervention: we started Rt femoral vein access, followed by trial of guide wire (GW) passage to the superior vena cava (SVC), which failed. Ultrasound-guided Rt basilic vein access was imitated above the cubital fossa. GW succeeded in passing through thrombosed SVC and the wire was parked at the inferior vena cava (IVC**).** Intraoperative angiography showed SVC thrombosis, Figure (1). We started catheter-directed thrombolysis (CDT) with an infusion of Acetylase (tPA) 50 cc at a rate of 2 mg/h for 24 hours. After complete lysis of SVC thrombosis, we dilated primarily the chronic lesion at SVC by high-pressure balloon measure 10*40 followed by XXL Esophageal Balloon Dilatation Catheter - 18mm x 4cm x 75cm (Boston Scientific). There was no need for stent insertion, Figure (2).

Result: SVC has cleared angiographically of thrombosis and with no significant stenosis or occlusion. The patient improved dramatically after the operation, the dyspnea was relieved, and facial and neck swelling improved, figure (3), (4).

Conclusion: Catheter-directed thrombolysis followed by balloon dilatation has a safe and effective role in the management of SVC syndrome due to acute in-top thrombosis of chronic lesions.

Keywords: SVC syndrome, Acute SVC thrombosis, SVC infiltration



ePP12

THE FIRST EXPERIENCE OF FROZEN ELEPHANT TRUNK OPERATION IN HIGH VOLUME UKRANIAN AORTIC CENTER

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Background: Ongoing development of cardiovascular technologies has made it possible to carry out simultaneous replacement of the ascending, arch and descending thoracic aorta (frozen elephant trunk operation), constantly improving the results and reducing the number of complications during such difficult surgery. In the case of conventional, planned operation, an alternative may be a hybrid, staged approach. In acute conditions, aneurysm ruptures, bleeding, uncontrolled aneurysm expansion - time and opportunities for two-stage correction are limited. Despite the risks, the only possible way to save the patient's life can be one-stage urgent operation.

Methods: During the last decade, the department surgical treatment of aortic pathology the National M.Amosov Institute of Cardiovascular Surgery of the NAMS of Ukraine, performs up to 250 operations for aortic pathology every year, including about 100 patients with acute aortic syndromes, 2/3 of which are aortic dissection type A. From 2020 to 2024, 25 patient with thoracic aortic pathologies were treated with one stage replacement ascending, arch and descending thoracic aortic - frozen elephant trunk operation (FET); Patients age were 36 - 68 y.o, mean - 54,2; 18 (72,0%) patients are male. Concomitant CAD needs CABG took place in 6 (24,0%), COPD - 8 (32,0%), CRF - 5 (20,0%), DM - 5 (20,0%), pulmonary hypertension (more than 70 mm of mercury) - 3 (12,0%), severe mitral insufficiency - 2 (8,0%). Part of the patients, 12 (48,0%), had cardiac operation previously; for the third of them, more than two operation with bypass took place in early; 10 pts (40,0%) operated due different aortic lesions in the ascending part of aorta (supracoronal grafting - 8, Bental`s operation - 2); and one case after aortic valve replacement and coronary bypass surgery, respectively. The causes of aortic injury among all patients were: acute type A aortic dissection - 1 (4,0%); chronic type A aortic dissection - 12 (48,0%), 8 of them - enlargement residual aorta after previous ascending aortic grafting (causing TAAD); non A non B aortic dissection - 5 (20,0%), chronic type B aortic dissection - 2 (8,0%); blunt aortic injury (BAI) - 2 (8,0%), TAAA - 3 (12.0%). Simultaneously of the FET procedure, we performed Jacoub operation - 2, CABG - 6 (1-3 venous autografts), mitral valve plasty - 2, tricuspidal valve plication - 4. All operation we profound with 25^{o}C hypothermia and antegrade cerebral perfusion for all three cerebral vessels. For all operation we used E-Vita Hybrid stent graft system (E-Vita Open Plus - 14, E-Vita Open Neo - 11). Three operations we operated on urgently, all another were planned surgery.

Results: Hospital mortality among 25 operated with FET operation patients consist 8,0% (two patient), which correlates with results reported by colleagues with significant experience in such intervention. The reasons of death were stroke and severe pulmonary insufficiency respectively. In two patients we received neurological complication - permanent paraplegia and transient stroke. Renal failure needed temporary dialysis - 3. Bleeding, needed re-thoracotomy - only 1 case. Prolonged ventilation (more 2 p o days) took place in 4 pts.

Conclusions: Frozen elephant trunk operation allowed treatment of complex patients with extensive thoracic aortic diseases with satisfactory short- and mid-term results. Acute and chronic, especially non-A non-B type of aortic dissections represent interesting subsets for FET procedure.

ePP13

DETERMINANTS OF RECURRENCE RATE DURING MIDTERM FOLLOW-UP OF PATIENTS AFTER ENDOVENOUS LASER ABLATION OF PRIMARY LOWER LIMB VARICOSE VEINS

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Background: The goal of this prospective cohort study was to study the different determinants impacting primary varicose vein recurrence rates and patterns after endo venous laser ablation (EVLA) for primary lower limb varicose veins.

Patients and Methods: 127 symptomatic patients (127 limbs) with great saphenous vein reflux (>0.5 seconds), GSV diameter> 3mm and pre-operative incompetent perforators were followed up within two years for recurrence after EVLA.

Outcomes: Recurrence was defined clinically by venous clinical severity score (VCSS) and CEAP classification and radiologically by patterns of reflux on duplex ultrasound examination. Assessment was done at 1, 6, 12 and 24 months after the procedure.

Results: Two-year life table analysis showed varicose vein recurrence in 9 (7.1%) of limbs. Varicose vein recurrence was mostly seen owed to due to BMI more than 30.5 kg/m2 in 77.8 % (p <0.001, 95% CI 1.105 to 1.590) of recurrence patients, refluxing anterior accessory saphenous vein in 77.8% of patients (p <0.001, 95% CI 3.2 to 1669.1) and postoperative incompetent perforators in 77.8% of patients (p <0.001, 95% CI 2.7 to 69.3). Age, gender and pre-operative GSV diameter ≥5.5 mm were statistically insignificant in determination of recurrence.

Conclusion: BMI, refluxing anterior accessory saphenous vein and postoperative incompetent perforators are the most important determinants of recurrence after EVLA with a statistically significant impact in comparison with age, gender and preoperative dilated GSV diameter ≥5.5 mm.

ePP14

UTILIZING VISUAL ANALOG SCALE FOR THE ASSESSMENT OF LOWER LIMB ARTERIOVENOUS MALFORMATIONS. CASE REPORT ON EVALUATION AND MANAGEMENT OF THE DISEASE IN A YOUNG FEMALE

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The aim of this case report is to demonstrate the implication of using a Visual Analog Scale (VAS) in the clinical assessment of arteriovenous malformations (AVMs) of the lower limb. AVMs of the lower limb are clinical entities characterized by abnormal connections between a high-pressure, high-resistance arterial system and a low-pressure, low-resistance, high-capacity venous system. These AVMs are categorized into low-flow, high-flow, and mixed types. High-flow AVMs constitute 10% of lower-limb AVM cases and typically exhibit chronic progression around a focal point called a nidus. Here, we present the case of a 22-year-old female patient with a high-flow AVM of the lower limb. The initial assessment of her symptoms, utilizing a modified VAS, revealed a disease that significantly impacts her quality of life. This modified VAS included terms such as limb heaviness, claudication, resting limb discomfort/pain, aesthetic discomfort, impact on daily/working life, edema, psychological impact, and skin ulceration. Based on this evaluation, the patient received a score of 61/80, categorizing her as having a heavy impairment of life quality, leading to the administration of endovascular treatment with embolization of the AVM using a combination of coils and ethylene vinyl alcohol copolymer (Onyx®). Intraoperatively, an enormous nidus with extensive branching was revealed, prompting a staged approach due to an increased risk of post-embolization syndrome with catastrophic complications, including ischemia and skin-tissue loss. The patient was then admitted to a strict follow-up program. At the 6-month mark, the clinical evaluation showed a VAS score of 6/80, indicating a 68% improvement and placing her in the category of light impairment of life quality. This case highlights the importance of the implication of a modified VAS in the evaluation, management and follow up of AVM of the lower limbs.

ePP15

ROLE OF SINGLE PERONEAL VERSUS SINGLE NON PERONEAL TIBIAL ANGIOPLASTY IN LIMB SALVAGE

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Peripheral arterial disease (PAD) is usually caused by atherosclerosis that leads to stenosis (narrowing) or blockage in the major vessels supplying the lower extremities.

We sought to determine the benefit of performing single peroneal tibial artery angioplasty revascularization compared with single non peroneal tibial artery angioplasty revascularization for patients presented with chronic limb-threatening ischemia (CLTI).

The objective of this study to assess possibility of limb salvage in case of single tibial revascularization, with an intention and do trial of multiple vessel angioplasty, with comparison between single peroneal versus non peroneal tibial artery angioplasty.

ePP16

COVERED ENDOVASCULAR RECONSTRUCTION OF ILIAC BIFURCATION (CERIB TECHNIQUE); SHORT-TERM AND 1-YEAR OUTCOMES

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Introduction: Successful distal zone seal with internal iliac artery salvage is crucial during EVAR. The aim of this study is to present 1-year outcomes of the CERIB technique, an "off-the-shelf" endovascular option for distal landing zone seal at the external iliac artery (EIA), while maintaining blood flow to the IIA.

Methods: This is a single center, retrospective analysis of prospectively collected data of patients undergoing EVAR for intact AAA or previous failed-EVAR (December 2022 - March 2024). Primary outcomes included technical success and primary patency at maximum follow-up. Secondary outcomes were endoleak rate (EL) associated with the iliac reconstruction and reintervention rate.

Results: A total of 25 patients (96% males, mean age: 72 ± 7.1 years old) with 31 iliac bifurcations treated were included. Treatment indications included a CIA aneurysm (67.7% - 21/31 iliac bifurcations), short-CIA (16.1% - 5/31), narrow lumen CIA (9.6% - 3/31) and EL Ib (6.4% - 2/31). Aortic platforms deployed included the COOK Alpha (9 limbs), GORE C3 (6 limbs), MEDTRONIC Endurant IIS (7 limbs), ENDOLOGIX Ovation Alto (1 limb), ARTIVION E-tegra (3 limbs) and the COOK T-branch platform (5 limbs). Technical success rate was 100%. Primary patency rate at 30-days (31/31 iliac bifurcations), 6-months (22/22) and 1-year (11/11) was 100%. No death was reported for all patients at maximum follow-up. CERIB related EL rate was 3% (1/31 iliac bifurcations), with one case of gutter EL. Reintervention rate was 6.4% (2/31) during the follow-up; including one case of proximal stent extension and relining due to gutter EL and one case of EIA relining due to an asymptomatic stenosis.

Conclusion: CERIB technique showed excellent short-term and 1-year outcomes in terms of freedom from endoleak and patency rates. CERIB technique may be used as an alternative to iliac branch devices for IIA salvage during EVAR. Long-term surveillance is warranted.

ePP17

SINGLE-STAGE OPEN SURGICAL MANAGEMENT OF SYMPTOMATIC ABDOMINAL AORTIC ANEURYSM AND COLORECTAL CARCINOMA USING NAIS TECHNIQUE: A CASE REPORT

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Background: The occurrence of simultaneous malignant diseases and abdominal aortic aneurysm (AAA) is reported to be around 5.4-6.7%. Surgical intervention for abdominal cancer can elevate the risk of AAA rupture and infection. Here, we present a case report detailing a single-stage open surgical approach for the treatment of a symptomatic abdominal aortic aneurysm and an advanced colorectal carcinoma using the NAIS technique.

Case Report: A 71-year-old patient with a 7cm symptomatic infrarenal AAA and ileus due to advanced colorectal carcinoma was evaluated. The patient also had comorbid conditions, including arterial hypertension, chronic obstructive pulmonary disease, and diabetes mellitus. A CT scan was performed, and due to the unsuitable anatomy of the AAA for endovascular repair, a synchronous open approach was chosen. The first stage involved a total colectomy with ileo-rectal anastomosis. Subsequently, AAA resection and aorto-biiliac bypass with the NAIS technique were performed, utilizing bilateral femoral veins as graft material. The patient was discharged on the 8th postoperative day. Follow-up CT scans at the first, second, and fourth year showed no residual tumor formation and a patent graft.

Conclusion: Simultaneous open repair of AAA and concurrent malignant diseases demands meticulous attention to detail, considering the higher cumulative morbidity and mortality associated with single-stage operations. Managing patients with this dual pathology poses a significant surgical challenge, particularly in the absence of a clear consensus in the existing literature.

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