MO-1 The wonder of surgery in treating LEAD/CLTI

○Shuji Kurata

Department of surgery, Shonan Fujisawa Tokushukai Hospital

【What's known?】

There are two methods for revascularization of LEAD/CLTI, surgery and EVT, both of which are essential. However, because EVT is minimally invasive and easy to introduce, the share of EVT is larger than necessary. Of course, EVT is useful, but sometimes EVT is performed excessively even in cases where surgery is better or where EVT is difficult or dangerous, resulting in major amputation or iatrogenic CLTI. As a vascular surgeon, I fear that there are a considerable number of cases that are not actually reported. The first important thing in treatment is not to simply open the blood vessels, but to set appropriate treatment indications for the case. It is important to understand the pathology, consider the advantages and disadvantages of treatment, and carefully consider whether wound healing, which is the most important outcome, can be achieved.

【What's new?】

I think one of the reasons surgery is not so performed is that interventionists are not fully aware of what effective treatments can be performed in vascular surgery. I want interventionists to consult with vascular surgeons who can handle well the case where surgery is appropriate. I would like to convey the wonderfulness of surgery using actual examples.

MO-2 Impact of a Multidisciplinary Approach on Wound Healing in Chronic Limb-Threatening Ischemia: A Retrospective Study

○Eiji Miyauchi[1)], Syosei Osako[1)], Atsuko Hiramine[1)], Ryo Arikawa[1)], Naoya Oketani[1)], Mitsuru Oishi[2)]

[1)] Kagoshima City Hospital,

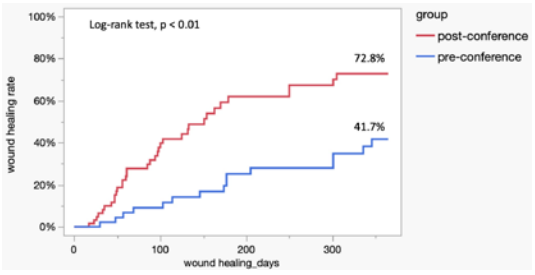
[2)] Department of Cardiovascular Medicine and Hypertension, Graduate School of Medical and Dental Sciences, Kagoshima University

【What's known?】

Background: A multidisciplinary approach is essential for effective treatment of Chronic Limb-Threatening Ischemia (CLTI). At our institution, we established a collaborative conference for CLTI management in April 2022. This conference brings together cardiologists, vascular surgeons, plastic surgeons, and wound care nurses. The aim of this study is to evaluate the effectiveness of this multidisciplinary approach.

【What's new?】

Method: A retrospective study was conducted on 154 CLTI cases classified as Rutherford category 4-6, treated at our institution between April 2021 and March 2023. The cases were divided into a pre-conference group, treated before the collaborative conference, and a post-conference group, treated after its implementation. We evaluated wound healing rates, major amputation-free rates, and major amputation-free survival rates over a 1-year observation period. Results: No significant differences in patient demographics were observed between the pre- and post-conference groups. Similarly, major amputation-free and major amputation-free survival rates showed no significant differences (84.2% vs. 91.4%, p=0.23; 78.9% vs. 85.1%, p=0.34). However, the wound healing rate was significantly higher in the post-conference group compared to the pre-conference group (41.7% vs. 72.8%, p<0.01). Conclusion: These findings suggest that a multidisciplinary approach to CLTI management may significantly improve wound healing outcomes.



MO-3 Clinical Impact of Endovascular Therapy with Percutaneous Fogarty Thrombectomy for Acute Limb Ischemia

○Eiji Koyama
Shonan Kamakura General Hospital

【What's known?】
Background: Endovascular therapy (EVT) for acute limb ischemia (ALI) is one potion of revascularization therapy. Surgical revascularization with Fogarty catheter is standard therapy for ALI, but EVT with percutaneous Forgaty thrombectomy was reported as alternative therapy.
Objective: This study purpose is to demonstrate the efficacy and safety of EVT for ALI with percutaneous Fogarty thrombectomy.
Methods: This study is single-center, retrospective and observational study. Consecutive 89 patents undergoing EVT for ALI from March 2017 to May 2024 were retrospectively analyzed. The endpoint was defined as amputation free survival.

【What's new?】
Result: The mean age was 77.6 ± 11.5 years; male patients was 56.2%; de novo lesion was 74.2%; percutaneous Fogarty thrombectomy group was in 6 cases. The mean EVT number was 1.61 ± 0.63; complication rate was 9.0%. Amputation rate was 5.6% and mortality was 36.0%. Amputation free survival in the percutaneous Fogarty thrombectomy group was significantly lower than the conventional EVT group (0% vs 6.0%; p value: 0.012). And complication including puncture site trouble only was different from 2 group not but significant (7.2% vs 33.3%; p value: 0.136).
Conclusion: EVT with percutaneous Fogarty thrombectomy for ALI was effective compared with conventional EVT. Percutaneous Fogarty thrombectomy is one of option for ALI treatment with EVT.

MO-4 Does trans-radial EVT speed up or slow down the clock?

○Yuko Yazu
Nozaki Tokushukai Hospital

【What's known?】
Background: While trans-radial access (TR) has been recommended over transfemoral access (TF) for iliac artery endovascular treatment (EVT) due to fewer access site complications, dedicated devices have recently become available for TR procedures. Methods: In this single-center retrospective study, we compared TR (n=45) versus TF (n=150) approaches in patients who underwent EVT for de novo iliac artery lesions between 2021 and 2023. After adjusting for patient characteristics, we analyzed procedural details and three time-related parameters: procedure time, hemostasis time, and bed rest time. Results: Complication rates and success rates were comparable between groups. Procedure time showed no significant difference (TR: 32.5 ± 14 min vs. TF: 30.0 ± 26 min, p=0.57). However, significant differences were observed in hemostasis time (TR: 0 ± 0 min vs. TF: 9.8 ± 4.5 min, p<0.001) and bed rest time (TR: 11.6 ± 7 min vs. TF: 286 ± 86 min, p<0.001). The total time from puncture to ambulation was significantly shorter in TR (44.2 ± 16.4 min vs. 315.1 ± 85.6 min, p<0.001), representing a difference of approximately 4.5 hours.

【What's new?】
Conclusion: TR demonstrates superior temporal efficiency compared to TF, offering a more comfortable experience for patients undergoing iliac artery EVT, representing a difference of approximately 4.5 hours.

MO-5 An investigation of the effects of balloon angioplasty based on morphology of calcification using optical frequency domain imaging at femoro-popliteal lesions

○Takashi Miwa

Caress Memorial Hospital

【What's known?】

One of advantages of Optical frequency domain imaging (OFDI) regarding to intravascular ultrasound is a visualization and detection vessel structures with higher resolution, especially morphology of calcifications.

【What's new?】

OFDI during EVT was performed in 44 patients from December 2021 to November 2024 in Tokeidai Memorial Hospital. 20 patients had calcified lesions and 33 calcified lesion were included. Each calcified lesion was analyzed in 5mm sections every 1mm centered on the narrowest area. Calcified lesions were classified 5 groups : Calcified protrusion, Eruptive calcified nodule, medial calcification, intimal calcification without protrusion, mixed calcification.

Lumen area and vessel diameter was measured at narrowest lesion and lumen area was measured at ±1 and ± 2mm lesion from narrowest lesion in each calcified lesions before and after POBA.

(Result)

The increase rate of lumen area between pre and post balloon angioplasty was 15.0 ± 5.4 % in calcified protrusion group, 16.5 ± 10.3 % in eruptive calcified nodule group, 12.5 ± 10.7 % in intimal calcification group, 7.3 ± 9.9 % in medial calcification group, and 15.0 ± 7.9 % in mixed calcification group. Calcified lesion with medial calcification is most difficult to get acute gain in this population ($p<0.05$).

MO-6 Efficacy of proximal protection with atherectomy using an in vitro model

○Daichi Yoshii, Osamu Iida, Hitoshi Minamiguchi, Yasuhiro Ichibori, Kei Nakamoto, Motoki Yasunaga, Taku Toyoshima, Yoshiharu Higuchi

Osaka Keisatsu Hospital

【What's known?】

Background: Although JETSTREAM® atherectomy system (JS) is widely applied for treating severely calcified femoropopliteal lesions, distal embolization remains a clinical challenge in clinical setting. We investigated the efficacy of a novel strategy consisting of proximal protection under use of filter to prevent distal embolization during JS treatment using in vitro testing.

【What's new?】

Method: Calcified nodules extracted from the common femoral artery in human subject were utilized for in-vitro testing. Distal embolization was assessed across three groups: Group A (no filter or proximal protection), Group B (filter only), and Group C (proximal protection with the filter, namely double protection). We assessed the proportion of debris from the following sources: suction from JS, proximal protection sheath, filter, and distal flowed.

Result: Atherectomy was successful in all groups. The debris recovery rates, calculated as the ratio of debris obtained by suction to debris obtained by excision, were only 25.4% for Group A, 38.8% for Group B, and 62.0% for Group C. In Group C, 92.3% of the distal debris was less than 100 μm.

Conclusion: The combination of filter and proximal protection improves debris recovery during JS treatment. However, distal embolization material, consisting of particles less than 100 μm, remains inadequately captured by this system.

MO-7 A Case of Percutaneous Angioplasty for Subclavian Artery Occlusion on the Shunt Side in a Dialysis Patient Suspected of Shunt Dysfunction

○Rin Hoshina, Kojiro Miki, Takuya Tominaga, Hirokazu Tanaka, Nagataka Yoshihara, Kenji Kawai, Hirokuni Akahori, Masaharu Ishihara

Hyogo Medical University

【Case overview】
A 68-year-old male with chronic kidney disease undergoing dialysis was referred for suspected subclavian steal phenomenon. The carotid ultrasound incidentally revealed a left subclavian artery occlusion with retrograde flow in the left vertebral artery, but no symptoms. Because dialysis was performed through an arteriovenous (AV) fistula on the left upper limb, percutaneous transluminal angioplasty (PTA) was planned for concerns on adequacy of dialysis.

【Procedure summary】
Diagnostic angiography confirmed total occlusion of the left subclavian artery, followed by balloon pre-dilation and stent deployment. Post-procedure angiography showed proper lesion dilation and resolution of retrograde flow in the left vertebral artery.

【Clinical time course and implication (or perspective)】
The ultrasound after the procedure revealed a significant increase in flow through the AV fistula, from 423 ml/min to 692 ml/min. The evaluation of dialysis adequacy, assessed by Kt/V, showed improvement from 1.12 pre-procedure to 1.15 post-procedure. We experienced a case of PTA for subclavian artery occlusion in a dialysis patient with an AV fistula on the Ipsilateral Upper Limb. According to the guidelines, revascularization for the subclavian artery is recommended as a Class IIa indication, even in asymptomatic patients, when an AV fistula for hemodialysis is established on the affected side. This case suggests that PTA may benefit dialysis patients regarding dialysis adequacy.

MO-8 A Case of Severe Arm Edema with Arteriovenous Fistula for Hemodialysis, Successfully Managed with Endovascular Treatment for the Stenosed Brachiocephalic Vein Caused by Total Aortic Arch Replacement

○Akira Tashiro, Hiroshi Inagaki

Soka Municipal Hospital

【Case overview】
The patient was a 73-year-old male who had undergone an emergency Bentall operation and total aortic arch replacement with a frozen elephant trunk for a Stanford type A aortic dissection 21 months prior. After surgery, hemodialysis was initiated due to an exacerbation of chronic kidney disease. Subsequently, an arteriovenous fistula was created in the left forearm. The patient was referred to our department due to the progression of swelling in the left upper extremity, making puncturing the fistula increasingly challenging. The CTA revealed that the left brachiocephalic vein was compressed between the sternum and the prosthetic ascending aorta.

【Procedure summary】
Endovascular treatment was conducted on the brachiocephalic vein. Intravenous ultrasound demonstrated evidence of compression of the brachiocephalic vein by external factors. A self-expanding nitinol stent (12x60mm) was deployed in the brachiocephalic vein, accompanied by balloon (12x40mm) dilatation within the stent, which resulted in improved blood flow into the superior vena cava. One week after the treatment, swelling in the left upper extremity had completely disappeared.

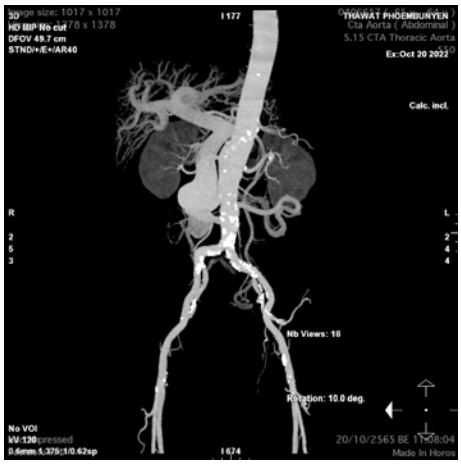
【Clinical time course and implication (or perspective)】
Although arm swelling due to stenosis of the central vein is not uncommon, stenosis of the central vein resulting from aortic replacement or stent-graft insertion is relatively rare and should always be considered as a potential cause.

MO-9 Case report: Treatment of superior mesenteric arteriovenous fistula with covered stent

○Wacharaphong Pitaksantayothin
Vajira Hospital

【Case overview】
64-year-old man came with severe watery diaarhea 2 weeks before this visit. He could not eat anything. He had history of exploratory laparotomy due to stab wound in abdomen 16 years ago. CT scan showed fistula from disatal superior mesenteric artery(SMA) to superior mesenteric vein (SMV). I reconstructed CTB imaging using center line for planing for covered stent. Proximal and distal to fistula were 10 and 9.4mm in diameter.

【Procedure summary】
Right common femoral artery were punctured. Long sheath was inserted in SMA. Angiography could not clearly seen fistula. Even angiography was performed in different angles, fislula was overlapped by large vessels. Contrast went quickly through fistula; distal landing zone could not be seen. Angiogaphy was compared to CTA, the closest branch to the fistula was used as landmark. Branches of SMA should not be covered. Balloon expanding stent had more accuray for deployment, 10mm stent graft was deployed. The fistula was closed.



【Clinical time course and implication (or perspective)】
Pain disappered immediately. Diarrhear disappered in 3days. Ultrasonography showed partial thrombosis of SMV. Preoperative planning was kay of success.

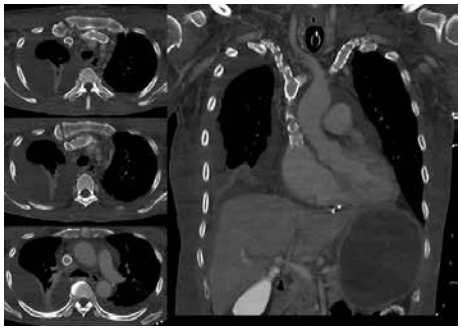
MO-10 A Rare complication of Central venous occlusion combined Chylothorax and Chylopericardium treated with Culotte venous stenting

○Kritsada Luangrungruang
Phramongkulklao Hospital

【Case overview】
66-year-olds male history of multiple hemodialysis access. He developed progressive face and arm swelling with dyspnea, orthopnea within 3 weeks. the investigation shown right chylothorax with chylopericardium and extensive thrombus over svc confluent.

【Procedure summary】
The patient was treated with aspiration thrombectomy (indigo system) of SVC and bilateral brachiocephalic veins. Then the lesion was placed with sinus-venous stent(14x100mm 14x80mm 12x80mm) over SVC confluence by culotte fashion.

【Clinical time course and implication (or perspective)】
Chylothorax and chylopericardium had resolved within 2 weeks after procedure. Unfortunately, he died two months later due to pneumonia and septic shock.



MO-11 Endovascular Intervention for Chronic Total Occlusion of the Brachiocephalic Vein

○Wun-Zhih Siao

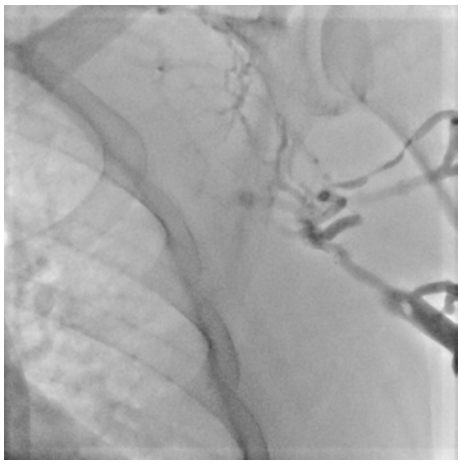
Department of Cardiology, Chung Shan Medical University Hospital, Taichung, Taiwan

【Case overview】

An 80-year-old male patient with gastric adenocarcinoma had a left subclavian vein Port-A implanted several years ago. Later, it was removed due to left upper limb edema. However, the patient experienced recurrent left upper limb edema and developed chest wall venous collaterals on the left anterior chest.

【Procedure summary】

Under ultrasound guidance, a left bronchial vein access was established, along with a left femoral vein access. Through the bronchial vein access, a 0.035 Terumo wire was used to attempt recanalization. With the aid of antegrade and retrograde contrast imaging, the 0.018 Gladius wire was advanced from the bronchial vein access to the right subclavian vein. The wire was then snared and retrieved from the femoral vein access using a snare device. The patient subsequently underwent EKOS thrombolysis and venoplasty, followed by stent placement from the brachiocephalic vein to the left subclavian vein under IVUS guidance.



【Clinical time course and implication (or perspective)】

Postoperatively, the patient experienced reduced swelling in the left arm, and the chest wall venous collaterals showed significant improvement.

MO-12 Acute painful swelling of the right lower extremity in a patient with inferior vena cava and bilateral iliac vein thrombosis

○Meng-Ying Lu

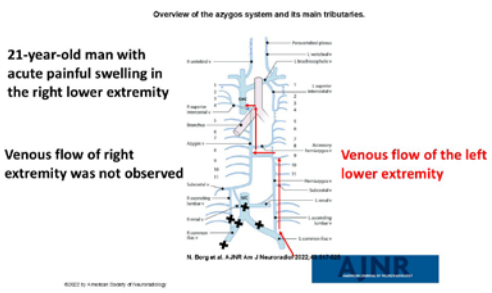
Taitung Mackay Memorial Hospital

【Case overview】

A 21-year-old obese man (BMI: 34) was admitted for several days of painful swelling in the right lower extremity. Sonography revealed total occlusion with thrombosis from the right common femoral vein (CFV) to the popliteal vein, while left lower extremity venous flow remained patent. CT venography showed 100% stenosis with thrombus in the bilateral common iliac veins and the inferior vena cava (IVC).Venous flow in the left lower extremity bypassed through the external iliac vein, ascending lumbar vein, hemiazygos vein, azygos vein, and eventually into the superior vena cava. In contrast, no venous flow was observed in the right lower extremity

【Procedure summary】

Echo-guided puncture was performed at the right popliteal vein, and a 45 cm 8Fr long sheath was inserted. Using a microcatheter (Navicross), a 0.035 GW was advanced to the IVC, with lumen position confirmed by IVUS. Balloon angioplasty and mechanical thrombectomy (AngioJet) were performed from the femoral vein to the IVC. After 24 hours of catheter-directed thrombolysis, final venography demonstrated TIMI III flow from the right femoral vein to the IVC.



【Clinical time course and implication (or perspective)】

Painful swelling of right lower extremity subsided gradually, and the patient was discharged 4 days later.

MO-13 Collaboration between General Surgery and Vascular Surgery in Advancing Haemorrhage Management in Regional Australia: The Role of Endovascular Techniques

○Yung-Hsin Hsueh, Riteesh Bookun, Dakshi De Silva, Siyu Huang
Ballarat Base Hospital

【What's known?】
In regional Australia, access to specialised care is limited, haemorrhage management traditionally relied on general surgeons performing open procedures to control bleeding. The introduction of endovascular techniques provided minimally invasive alternatives that reduce morbidity and hospital stays, driving the need for collaboration between vascular surgeons and interventional radiologists to meet the growing demand.

【What's new?】
A two-year review of embolisation data at Ballarat Base Hospital examined patient demographics, referral patterns, and procedure types. A case of splenic artery aneurysm management during pregnancy highlights the success of these techniques in achieving favourable outcomes.
Forty-four embolisation procedures were performed on patients aged 15–80 years (mean: 60 years), with 68% male. Most referrals (95%) were inpatient, from medical, surgical, and ICU wards. Referral sources included specialists (41%), non-specialist doctors (39%), and clinic doctors (20%). Procedures addressed renal, gastrointestinal, hepatic, and pelvic vasculature, showcasing broad applicability.
The increasing use of endovascular techniques reflects a shift from open procedures and reliance on tertiary centres. A dedicated endovascular team is vital for timely, effective haemorrhage control. Collaboration between vascular surgeons and interventional radiologists is essential for sustainable regional service.

Figure 1: Highlighting splenic artery aneurysms in pregnancy that was management with coiling in a newly established endovascular service in regional Ballarat.

Conclusion: Endovascular techniques are transforming haemorrhage management in regional centres. Dedicated teams will enhance patient outcomes in regional Australia.

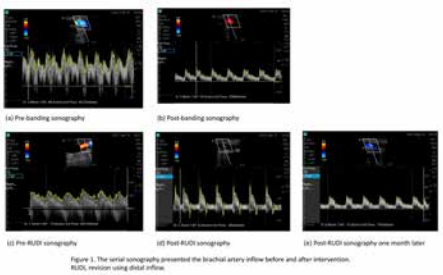
MO-14 An easily omitted cause for dilated cardiomyopathy and pulmonary hypertension − high flow arteriovenous access

○Tzu-Yin Yu[1], Ming-li Li[2]

[1] Department of Surgery, China Medical University Hospital, Taiwan,
[2] Division of Cardiovascular surgery, Department of Surgery, China Medical University Hospital, Taiwan

【What's known?】
Dilated cardiomyopathy (DCM) and subsequent pulmonary artery hypertension (PAH) can arise from various causes. High-output heart failure due to high-flow arteriovenous access (AVA) is often overlooked. Physicians typically do not assess AVA flow volume, instead relying on echocardiographic findings such as heart chamber dilation and elevated pulmonary arterial pressure, which can delay effective treatment.

【What's new?】
We report two uremic patients on hemodialysis who developed progressive dyspnea. One was diagnosed with "primary PAH," and the other with ischemic heart disease and DCM. Both underwent cardiac catheterization for diagnosis, but high-flow AVA in the arms was ignored. Despite treatment, including heart failure medications, PAH therapy, and coronary stenting, symptoms persisted. Both later developed arm swelling, prompting surgical consultation. High-output heart failure was suspected after engorged superficial veins and an inflow artery were observed. Flow volume exceeded 6000 ml/min.
Initial treatment with AVA banding provided only temporary relief, though pulmonary pressure and heart failure symptoms improved. Subsequently, the second case underwent revision using distal inflow (RUDI) procedure, which successfully reduced AVA flow to under 1500 ml/min and achieved improvement in heart failure symptoms. A delicate AVA flow volume measurement is crucial for differentiating diagnosis of DCM and PAH.



MO-15 Is stent graft for upper arm arteriovenous graft more “durable” than forearm arteriovenous graft?

○Hsiu-Ming Lee[1)], Ying Sheng Li[2)], Mingli Levin Li[3)]

[1)] Department of Surgery, Chang Gung Memorial Hospital at Linkou, Chang Gung University, Taoyuan, Taiwan,
[2)] Division of Thoracic and Cardiovascular Surgery, Department of Surgery, Chang Gung Memorial Hospital at Linkou, Chang Gung University, Taoyuan, Taiwan,
[3)] Cardiovascular Surgery, China Medical University Hospital, Taichung City, Taiwan

【What's known?】

Several randomized clinical trials (RCTs) on balloon angioplasty and stent-grafts (SG) for recoiled vein-graft junction (VGJ) lesions revealed significant variability in patient selection between upper-arm and forearm arteriovenous grafts (AVGs). The NEJM 2010, RENOVA 2016, and REVISE 2016 studies reported varying graft location distributions: 75% vs. 21%, 89.4% vs. 10.6%, and 67% vs. 32%, respectively, raising concerns about selection bias and SG patency.

【What's new?】

We retrospectively reviewed patients who received SG for VGJ lesions from November 2013 to November 2023. We analyzed primary patency (PP), assisted primary patency (APP), secondary patency (SP), and access survival (AS) using Kaplan-Meier survival curves. PP refers to access survival without intervention, APP to survival without obstruction, SP to survival without revisions, and AS to functional access without loss to follow-up, death, or abandonment. Using log-rank test, we compared patency between septuagenarians, non-septuagenarians, and AVG locations.

We reviewed 106 upper-arm and 125 forearm SGs, finding no significant differences in demographics or patency outcomes, except for upper-arm AVG patency between septuagenarians and non-septuagenarians ($p < 0.005$) (Fig. 1). Our study found no significant SG patency difference between upper-arm and forearm AVGs, but non-septuagenarians showed better patency for upper-arm AVGs. Future studies should consider potential biases with non-septuagenarians.

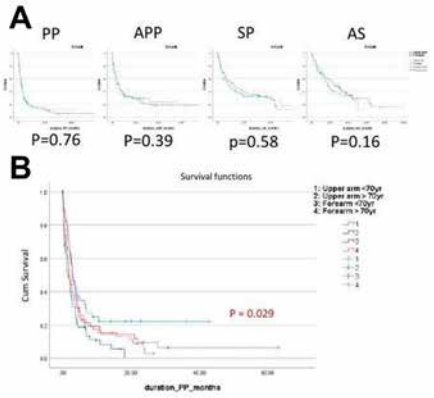


Fig 1：Figure A compares SG patency between upper-arm and forearm AVGs, while Figure B shows log-rank test results for primary patency differences between septuagenarians and non-septuagenarians

MO-16 Efficacy of Percutaneous V-A ECMO Decannulation Utilizing the Perclose™ ProStyle™ Device with Balloon Catheter Flow Control and Intravascular Compression

○Shousei Osako[1)], Eiji Miyauchi[1)], Ryo Arikawa[1)], Naoya Oketani[1)], Mitsuru Ohishi[2)]

[1)] Division of Cardiology, Kagoshima City Hospital,
[2)] Department of Cardiovascular Medicine and Hypertension, Graduate School of Medical and Dental Sciences, Kagoshima University

【What's known?】

Veno-arterial extracorporeal membrane oxygenation (V-A ECMO) is essential for cardiovascular emergencies, but surgical decannulation poses risks for hemodynamically unstable patients due to anesthesia and postoperative complications like wound dehiscence and lymphatic leakage. Recently, a percutaneous approach using the Perclose™ ProStyle™ device and balloon catheters has been proposed as a less invasive alternative. This retrospective study compared surgical (n=37) and percutaneous (n=7) decannulation cases from December 2014 to October 2024.

【What's new?】

The percutaneous method involved blood flow control with a balloon catheter, vascular closure using the Perclose™ ProStyle™ device, and intravascular compression. Hemostasis success rates were 100% for percutaneous and 97.3% for surgical decannulation ($P = 0.554$). Procedural time was shorter for percutaneous cases (58.0 ± 20.2 min vs. 81.1 ± 36.2 min, $P = 0.065$). Complication rates were lower in the percutaneous group (14.3% vs. 43.2%, $P = 0.126$), but one case of pseudoaneurysm occurred. The surgical group had higher incidences of lymphatic leakage (5.4%) and wound dehiscence (16.2%).

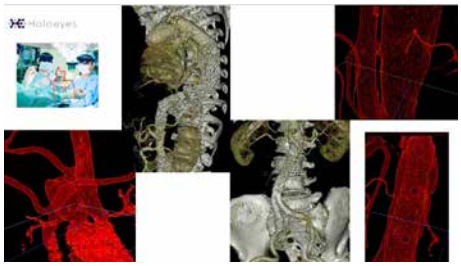
The percutaneous technique achieves effective hemostasis, shorter procedural times, and reduced complication rates. This approach may provide a feasible alternative for facilities without cardiovascular surgeons, especially for high-risk patients. Further large-scale studies are required to validate these findings.

MO-17 A novel preoperative assessment using Holoeyes Virtual reality (VR) system for detecting reentry in chronic dissecting aortic aneurysm

○Koichi Tamai, Hiroki Arai, Taichi Sano, Yasushi Tashima, Koichi Adachi
Yokosuka General Medical Center

【What's known?】
Open repair is generally considered the first-line treatment for chronic dissecting aortic aneurysm (DAA). However, some chronic DAA patients are at high risk for open surgery. Additionally, patients who have undergo primary entry closure may require reentry closure to achieve complete false lumen occlusion. Preoperative assessment using contrast-enhanced CT imaging and angiography is crucial for identifying the location and size of the reentry. Unfortunately, axial CT images are alone often insufficient for determining the optimal operative strategy in many cases.

【What's new?】
The Holoeyes virtual reality system allows us to quickly generate preoperative 3D images using head-mounted display. This system also enables the examination of vascular structures and facilitates the easy identification of reentry sites. We successfully applied this system in two cases of chronic DAA to enhance preoperative planning for reentry closure. Such supplemental imaging tools appear to play a role in the ongoing progress of the endovascular era.



MO-18 Polymer-coated Paclitaxel-Eluting Stents for the Treatment of Hemodialysis Access stenosis: Patency and Pattern of Recurrence

○Arunaachalam Muthaiah[1)], Lingyang Meng[2)], Jun Jie Ng[1)], Pei Ho[1)]
[1)]National University Hospital, Singapore, [2)]National University of Singapore

【What's known?】
Pilot studies have reported favorable outcomes of drug-eluting stents (DES) for hemodialysis (HD) access salvage. Apart from in-stent recurrence, peri-stent restenosis was also observed in peripheral intervention. This study reviews the pattern of recurrence in HD accesses.

【What's new?】
Consecutive patients with DES (Eluvia, Boston Scientific) implanted for dysfunctional HD access salvage between January 2018 and April 2024 in National University Hospital were reviewed retrospectively. All patients had at least 6 months follow-up.

DES was implanted in 31 HD patients (23 AVFs, 8 AVGs). Locations of lesions included juxta-anastomotic segments (n=11), outflow veins (n=15), cephalic arch (n=1) and graft-vein anastomosis (n=4). Median follow up period was 19 months.

Kaplan Meier (KM) estimated in-stent primary patency at 6-, 12- and 24-months was 90%, 90% and 85% respectively. In- and peri-stent PP was 83%, 70% and 54% respectively. Overall circuit PP was 49%, 34% and 30% respectively. Throughout the study, 4 patients died of non-access causes, 2 accesses were abandoned. Remaining HD accesses all in-use. KM circuit secondary patency was 97% at 6-, 12- and 24- months.

Despite high PP of DES in HD accesses, peri-stent and other region of HD access stenosis impaired the long-term circuit primary patency.

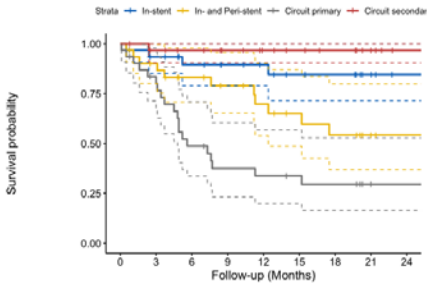


Figure 1: Survival analysis of the ELUVIA stents placed in dysfunctional HD access, analysed with Kaplan Meier methods.

MO-19 Successful thrombectomy of organized thrombus after aggressive wire recanalization in organized thrombus and dilation

○Eho Shibata[1)], Kenji Yoshioka[2)]
[1)] Kameda Medical Center, [2)] Awa Regional Medical Center

【Case overview】
75s male with intermittent claudication of left leg was referred to our hospital. ABI (ankle brachial index) of left leg was 0.58 and contrast computed tomography showed total occlusion of left SFA (superficial femoral artery). Medication therapy could not relieve the symptom and we decided to proceed endovascular treatment.

【Procedure summary】
We inserted 6Fr sheath from left common femoral artery antegradely, and passed the lesion with 0.014inch guidewire. After the stenting, angiography showed total occlusion of left DFA (deep femoral artery). Organized thrombus in the SFA seemed to migrate into DFA during the procedures. We tried thrombectomy with 8Fr guiding catheter or ballooning but failed due to its size and hardness. Therefore we penetrate in the center of the thrombus with guidewire, and inflate balloon in the thrombus to disrupt it. After the procedures, we successfully aspirated the thrombus and opened the DFA.

【Clinical time course and implication (or perspective)】
This is a successful case with adaptation of ARCADIA (aggressive wire recanalization in calcified atheroma and dilatation) technique to organized thrombus. This method might be one solution for tough thrombus resistent to thrombectomy or ballooning.

MO-20 In Situ Laser Fenestration as a Bailout Strategy for Failed Antegrade Target Vessel Cannulation in Urgent Off-the-shelf Branched EVAR

○Viktoria Poell, Julia Krueger, Anna Menges, Roland Bozalka, Peter N. Sabisch, Benedikt Reutersberg, Alexander Zimmermann
University Hospital Zurich

【Case overview】
Antegrade cannulation of target vessels in branched endovascular aortic repair (BEVAR) can be challenging, especially with torqued or cranially directed vessels. We present two cases of successful in situ laser fenestration (ISLF):

【Procedure summary】
1. A 71-year-old female patient with a ruptured thoracoabdominal aortic aneurysm (TAAA) received an off-the-shelf 4-fold BEVAR (Cook Zenith t-branch). Cannulation of the left renal artery failed due to its cranial origin. Our use of ISLF enabled successful implantation of a bridging stent graft, ensuring renal perfusion.

2. A 69-year-old female patient was treated for a symptomatic TAAA (diameter 75 mm) using a Cook Zenith t-branch. We chose a two-stage endovascular procedure for spinal ischemia prevention with planned temporary aneurysm sack perfusion (TASP). After multiple failed attempts to treat a severely twisted and cranially directed left renal artery, we left the left renal artery branch open for TASP (instead of using the left iliac as originally planned). After seven days, we occluded the branch with a plug and successfully connected the left renal artery using ISLF.

【Clinical time course and implication (or perspective)】
Using ISLF as a bailout strategy is a viable option to expand the portfolio of off-the-shelf BEVAR ensuring that even difficult anatomies are treated adequately in urgent cases.

MO-21 Staged Complex Paravisceral Aortic Aneurysm Repair in a Patient with Occluded Iliac Arteries

○David L Coffman, Houssam Farres, Biraaj M Mahajan, Yaman Alsabbagh, Christopher Jacobs, Camilo Polania, Young M Erben

Mayo Clinic Florida

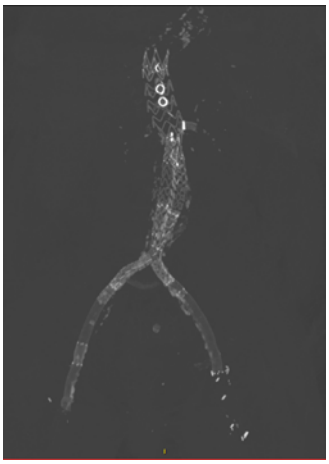
【Case overview】

We describe endovascular aneurysm repair (EVAR) using endoconduits (ECs) and a physician modified endograft (PMEG) in a 64-year-old with a 57mm paravisceral abdominal aortic aneurysm and aortoiliac occlusive disease (AOID).

【Procedure summary】

The AIOD was first addressed by performing bilateral iliac artery angioplasty/stenting with Gore VBX and Viabahn endoprostheses. Endarterectomy with patch angioplasty was then performed on bilateral common femoral arteries (CFAs) in preparation for Endoconduits (ECs) end-to-side placement using 10mm Hemashield grafts.

One month later, EVAR was performed. First, the previously placed ECs in bilateral CFAs underwent balloon thrombectomies and right and left ECs were accessed with 8F and 22F sheaths, respectively. Subsequently, a 32mm bifurcated Terumo PMEG with fenestrations to the celiac, superior mesenteric and left renal arteries was introduced via the right EC to the aorta. The 22F sheath was advanced for selective cannulation of each visceral artery using a 7F TourGuide. Next, 7mmx22mm iCAST stents were placed and balloon angioplastied within each visceral vessel. The remainder of the EVAR was completed in standard fashion.



【Clinical time course and implication (or perspective)】

The patient was discharged on post-operative day 2. Two-week follow-up imaging demonstrated a successful repair. Staged EVAR with recanalization of iliac arteries and creation of ECs expands the pool of patients eligible for EVAR.

MO-22 A case of endovascular treatment in which optical frequency domain imaging evaluated the elements shift of Aperta NSE

○Keiichiro Kishikawa, Eiji Karashima, Takeshi Arima, Hirotaka Noda, Shioto Yasuda, Takeo Kaneko

Shimonoseki City Hospital

【Case overview】

[**Background**]

Elements shift of a NSE PTA balloon during the three inflations of NSE PTA could detect in patients with using optical frequency domain imaging (OFDI) previously. Recently, new version of NSE PTA balloon, named Aperta NSE, was produced. The elements of NSE PTA were not fixed on the balloon, while those of Aperta NSE were fixed on the ballon. The elements shift of Aperta NSE during the three inflations of Aperta NSE had not been reported previously.

【Procedure summary】

[**Case**]

Endovascular treatment was performed for an 89-year-old man with a symptomatic stenosis in the left superficial femoral artery. A 5.0 × 40-mm-long Aperta NSE was inflated three times without shaft rotation (NSE three inflations). After that, six of the scores induced by Aperta NSE balloon were detected by OFDI.

【Clinical time course and implication (or perspective)】

[**Conclusion**]

OFDI detected six scores after the NSE three inflations of Aperta NSE. Because the Aperta NSE balloon has four elements, the image of OFDI proved the elements shift of the Aperta NSE balloon when the NSE three inflations was performed in a patient.

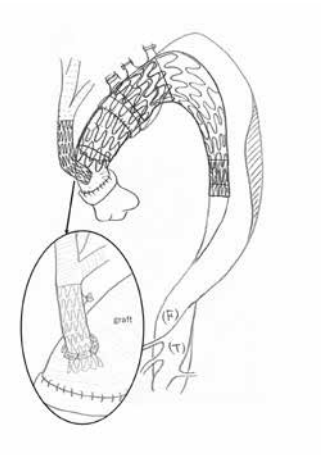
MO-23 A case of total debranching TEVAR using “real chimney technique” for prosthetic graft

○Yasuka Nakanishi, Mitsuru Yuzaki, Motoki Yasunaga, Yuki Oga, Taku Toyoshima, Daichi Yoshii, Osamu Iida, Toru Kuratani

Osaka Keisatsu Hospital

【Case overview】
Residual dissection after central repair for Stanford type A acute aortic dissection (TAAD) poses a significant challenge. When treating with TEVAR, particularly after ascending aortic replacement, the distance of the proximal landing zone become critical issue. We report a case using “real chimney technique” to address this issue.

【Procedure summary】
A 70-year-old male, who had undergone ascending aortic replacement 20 years ago for TAAD, required Zone 0 TEVAR with total debranching for a distal arch aneurysm due to residual dissection. The real chimney technique was selected for this case. The previous graft was minimally exposed at the most proximal point, and a branched graft was fixed with seven mattress sutures. After puncturing through the branched graft and creating an anastomosis site with a balloon, a GORE Excluder leg extension (12mm-7cm) was deployed with a 2-cm protrusion into the aorta. This was followed by the reconstruction of the supra-aortic trunks. One week later, Zone 0 TEVAR was successfully performed.



【Clinical time course and implication (or perspective)】
The real chimney technique allows for making long proximal landing zone due to closer proximal debranching without side-clamping. This technique is particularly beneficial for patients with residual dissection after ascending aortic replacement.

MO-24 A Case of Successful Minimally Invasive Endovascular Revascularization for Acute Limb Ischemia Using a Novel Indigo™ Thrombectomy Device

○Ayako Ishii, Osamu Iida, Daichi Yoshii, Taku Toyoshima, Hiromi Tsutsui, Motoki Yasunaga, Mikio Shiba, Kei Nakamoto, Yasuhiro Ichibori, Hitoshi Minamiguchi, Yoshiharu Higuchi

Osaka Keisatsu Hospital

【Case overview】
We present the case of an 80-year-old female with a medical history of hypertension, chronic atrial fibrillation, and left breast cancer, who developed discomfort in her left lower limb. Three days later, she exhibited pain, pallor, both sensory and motor deficits, and was emergently admitted to our hospital. Computed tomography angiography (CTA) revealed thrombotic occlusion extending from the left common femoral artery to the superficial femoral artery. She was diagnosed with Rutherford IIb acute limb ischemia (ALI), and we decided to perform emergency endovascular therapy.

【Procedure summary】
Using the Indigo™ thrombectomy device, thrombus aspiration was performed from the left common femoral to the popliteal and deep femoral arteries, successfully restoring adequate peripheral blood flow. The procedure was completed in 17 minutes.

【Clinical time course and implication (or perspective)】
Postoperative recovery was uneventful, with symptom resolution and no reperfusion injury. The patient was discharged home independently on the 9th postoperative day. We report a successful case of minimally invasive and rapid endovascular treatment of acute limb ischemia using the Indigo™ thrombectomy device, with a brief literature review.

MO-25 Results of stenting to treatment of arterial lesions in acute lower limb ischemia (ALI)

○Arkom Suesawatee

Department of Surgery, Phrapokklao hospital, Chanthaburi province, Thailand

【What's known?】

Study aims

Report our results of transluminal angioplasty with adjunctive balloon and stent after surgical thromboembolectomy in ALI. Primary outcome was 1-year re-occlusion rate. Mean follow up = 13.5 months (1-52)

Methods

Medical record review January 2019 - December 2023. Patients diagnosed ALI. Surgical management; initial treated by clot removal as surgical thromboembolectomy with Fogarty balloon catheter. Then, adjunctive balloon and stent used for treated atherosclerotic lesions and intimal dissection that limited distal blood flow. Patients were classified into 2 groups; balloon alone (BA) and stent (ST) groups.

Result and conclusion

All 30 cases (30 limbs, mean age = 65 year, 70% male) were treated : 14 cases with balloon angioplasty and 16 cases with stents placed. The demography, comorbidities were similarly between both group. Femoropopliteal level was commonest site. Thrombosis needed stent more than emboli (87.5% vs 12.5%, p=0.02). Mean operative time of BA was 232.85 $\pm$110.72 min vs ST was 250.93 $\pm$ 88 min (p = 0.31). Major amputation BA vs ST = 1 (7.14%) vs 0 % (p=0.46). One-year reintervention rate; BA vs ST = 5 (35.71%) vs 3 (18.75%), p = 0.41. Stent is suitable and reasonable used in ALI treatment.

【What's new?】

Role of stenting in ALI is controversial.

MO-26 A Stubborn Thrombus in the Leg

○Jeffrey CY Lee[1], Guangming Tan[2]

[1]Grantham Hospital, Hong Kong, [2]Prince of Wales Hospital, Hong Kong

【Case overview】

A 51 year-old woman with a history of mitral valve replacement, diabetes and underwarfarinisation presented with severe right leg claudication. The right ankle brachial index (ABI) was 0.83, and the left ABI was 1.03. Intervention was offered for diagnosis and revascularization.

【Procedure summary】

Right common femoral artery antegrade access was obtained. Angiogram showed an organised thrombus at the distal superficial femoral artery extending to the anterior tibial and tibioperoneal trunk bifurcation. There was poor distal outflow. A 7Fr Destination sheath and a Glidewire Advantage was inserted. IVUS showed an eccentric thrombus without underlying atherosclerosis. Manual aspiration with a multipurpose catheter was attempted first, but was unsuccessful. Hence we decided to then use the Rotarex Atherectomy system for thrombectomy. This was complicated with dissection and haematoma at the lesion site. We salvaged by using a 5.0mm balloon to macerate the clot. However, there was still residual stenosis, and a Supera 6.5/120mm stent was deployed. The result was a good 3-vessel distal run off.

【Clinical time course and implication (or perspective)】

Our case illustrates the importance of IVUS in intra-procedural diagnosis and planning. We should be familiar with specialized devices and have bailout plans ready. We should also choose stents with good patency and low fracture risk when stenting across joints.

MO-28 Short-term Results of Multi-Branch AOrtic Reconstruction with G-iliac System (BAO-G) Technique in Aortic Aneurysm Endovascular Repair

○Yiyun Xie, Bao Liu, Jiang Shao, Zhichao Lai, Tianjing Zhang

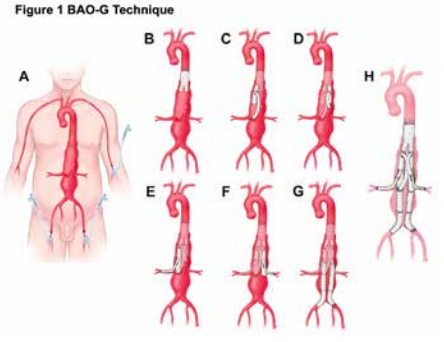
Department of Vascular Surgery, Peking Union Medical College Hospital, Chinese Academy of Medical Science, Beijing, China

【What's known?】

Available total endovascular repair for visceral arteries reconstruction in aortic aneurysms still face problems such as stent-grafts accessibility, time-cost, squeezing and gutter leak, and high requirements of endovascular techniques for cannulation. Here we report short term results of using a novel endovascular technique named multi-Branch Aortic reconstruction of thoracoabdominal aortic aneurysm with G-iliac system (BAO-G) technique and its derivative techniques in patients with aortic aneurysm implicating visceral branched region.

【What's new?】

The BAO-G technique used off-the-shelf iliac-branched devices to reconstruct visceral arteries (Figure). In average 3.33 ± 0.33 branches of six patients, primary technical success rate was 83.3% (5/6). All patients were follow-up at least one time with median 3 months (3-12). During follow-up period, all reconstructed branches were patent (20/20, 100%), and no IBD-related endoleak or organ ischemia was detected. In conclusion, BAO-G technique and its derivation techniques could be a novel choice for patients with aortic aneurysm implicating visceral branched region with satisfactory safety and efficacy in short-term.



MO-29 Ex-vivo machine learning impedance analysis for thrombus analysis in patients with occlusive lower limb Peripheral Arterial Disease: towards improved diagnostic precision and treatment selection

○Yann Gouëffic[1)], Christos-Nikolaos Zacharopoulos[2)], Pierluca Messina[2)], Quentin Cavalie[2)], Franz Bozsak[2)], Julien Adam[1)], Karen Doyle[5)], Alexandra Hauguel[3,4)]

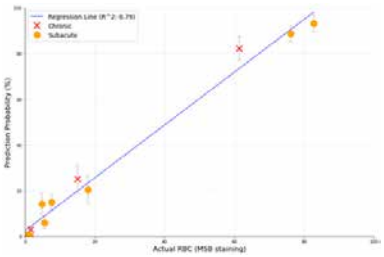
[1)] Hospital Paris Saint-Joseph, Paris, France, [2)] Sensome, Massy, France,
[3)] LadHyX, Institut Polytechnique de Paris, Palaiseau, France,
[4)] Marie Lannelongue Hospital, Groupe Hospitalier Paris Saint-Joseph, Le Plessis Robinson, France,
[5)] Physiology, School of Medicine, CURAM, University of Galway, University Road, Galway, Ireland

【What's known?】

Accurately identifying red-blood-cell-rich (RBC)-rich, or "fresh", thrombus is essential for treatment selection in occlusive lower limb Peripheral Arterial Disease (LLPAD). The thrombus type could determine endovascular or surgical approaches and help prevent embolic events during treatment. Still, no easy-to-use and objective approach, during the procedure, is currently available.

【What's new?】

This prospective, monocentric study examines the effectiveness of impedance measurements in assessing RBC content in thrombi. Fifteen patients referred for arterial bypass or amputation due to LLPAD were included for ex-vivo data acquisition. Lesions from six patients visually presented with a thrombus, corresponding to four chronic and two sub-acute cases. Their impedance signature was recorded ex-vivo, and their RBC content was evaluated using histology. An impedance machine learning model was used to differentiate RBC-rich (RBC content > 40%) from RBC-poor ischemic thrombi, and its performance was assessed on LLPAD thrombi. The prediction probabilities strongly correlated (R^2=0.79) with the RBC content confirmed by histology (Figure 1).
Our findings indicate that the time of symptom onset alone does not reliably predict RBC content. This study demonstrates that impedance measurements combined with machine learning can accurately assess the RBC content in thrombi for patients with LLPAD, thereby potentially enhancing diagnostic precision and treatment selection.



MO-30 A case of abdominal aortic injury occurring two months after EVT

○Shota Kajiyama[1)], Yuuki Imoto[1)], Takeshi Serikawa[1)], Takeshi Arita[1)], Hiroo Noguti[1)], Keita Nakamura[1)], Atushi Hirohata[2)]

[1)] Fukuoka Wajiro Hospital, [2)] Sakakibara Hospital

【Case overview】

The patient is a 71-year-old male with Leriche syndrome presenting with intermittent claudication classified as Rutherford category 3 (ABI R/L = 0.44/0.52).

【Procedure summary】

As the patient declined surgical treatment, a consensus was reached with the cardiovascular surgery team, and in November X, peripheral vascular intervention (EVT) was performed using Covered Endovascular Reconstruction of the Aortic Bifurcation (CERAB).

【Clinical time course and implication (or perspective)】

Approximately two months later, the patient was urgently transported to our hospital with a chief complaint of abdominal pain. A CT scan revealed a gap between the self-expanding stent and the stent graft, as well as extravasation at the same site. The patient was diagnosed with delayed iatrogenic intra-abdominal hemorrhage following EVT and was admitted. Endovascular aneurysm repair (EVAR) was subsequently performed.This is a case review and also a review of outcomes of 34 cases treated at our institution since 2018, where stent grafts were used to reconstruct the aortic bifurcation.

MO-31 Stent Deformation Caused by Balloon Dilatation to In-Stent Total Occlusion Using Scoring Balloon; A Case Report

○Kenta Ishibashi, Motohiro Motohiro, Akeo Hirai, Tatsuya Nishikawa, Mana Hiraishi, Mitsuo Kinugasa, Yasutaka Hirayama, Koishi Tamita

Akashi Medical Center

【Case overview】
An 81 years old man who had several histories of endovascular therapy (EVT) to low extremity arterial disease was referred to our hospital for right limb claudication. CT angiography revealed total occlusion from right proximal superficial femoral artery (SFA) to distal SFA.

【Procedure summary】
EVT to right SFA occlusion was performed using 6-Fr Crossroads (Nipro) from left femoral artery. After angiography, we crossed the occluded lesion with a 0.035 inch guide wire intravascular ultrasound (IVUS) was performed. IVUS showed thrombus and fibrous plaque in the occlude stents. Therefore, we tried to treat the lesion using scoring balloon (ULTRASCORE, BD) and Filtrap (Nipro) for distal protection. The scoring balloon was successfully dilated and removed. Angiography and IVUS after balloon angioplasty revealed stent deformation at the distal portion of the SFA stent. Additional balloon angioplasty with non-compliant balloon was tried, but the stent deformation was not improved. Therefore, we implanted the drug eluting stent in this lesion. After stent implantation, the lumen of the stent deformity was secured, and completion angiography showed good flow.

【Clinical time course and implication (or perspective)】
After this EVT, his limb claudication was improved. We report here a case of stent deformity after balloon dilation to in stent total occlusion using a scoring balloon.

MO-32 A Case of Endovascular Therapy for Critical Limb Ischemia in the Right Lower Extremity with Complex Lesions

○Hiromoto Sone[1)], Yosuke Ueno[2)], Masanori Hirota[2)], Yuki Numajiri[1)], Yuki Ishii[1)], Tomoka Tanizaki[1)], Ayumi Omura[1)], Yosuke Takei[1)], Kazuma Tahiro[1)], Hiroyoshi Mori[1)], Tokutada Sato[1)], Hiroshi Suzuki[1)]

[1)] Division of Cardiology, Department of Internal Medicine, Showa University Fujigaoka Hospital,
[2)] Division of Cardiovascular Surgery, Showa University Fujigaoka Hospital

【Case overview】
The patient is a 77-year-old female who presented with an ulcer and pain in the right fourth toe. She was classified as Rutherford category IV, with ankle brachial index unmeasurable and low skin perfusion pressure. CT scan revealed severe stenotic lesions with extensive calcification at the ostia of both common iliac arteries, occlusion from the right external iliac artery to the common femoral artery, and a long occlusion of the right superficial femoral artery. While bypass surgery was considered, the patient was determined to be frail and low ADL, leading to a decision to pursue EVT.

【Procedure summary】
The treatment was divided into two stages for the iliac and femoral regions. In the first session, an antegrade approach via the left radial artery using the R2P system and a retrograde approach via puncture of the right popliteal artery were performed, employing a bidirectional strategy. Using IVUS-guided detach-and-go techniques and snaring, wire externalization was successfully achieved, restoring adequate blood flow from the right EIA to POP artery. In the second session, a bilateral groin approach was used to deploy covered stents with the Double-D molding technique at the ostia of both common iliac arteries.

【Clinical time course and implication (or perspective)】
The Patients wound status was improved three months later.

MO-33 A Case of Treating Calcified Nodules in the Superficial Femoral Artery Using Forceps

○Munenori Ota, Hiroaki Hirase, Ryusuke Yamamoto, Takao Matsui, Yasuhisa Kurita
Takaoka Minami Heart Center

【Case overview】
A woman in her 70's was referred from a local clinic for intermittent claudication. She had previously undergone treatment for calcified nodules in the left common femoral artery and superficial femoral artery using the ARCADIA technique. This time, lower extremity angiography revealed a recurrence of calcified nodules in the left common femoral artery and superficial femoral artery, leading to an indication for treatment.

【Procedure summary】
In this case, although the previous treatment had been time-consuming, it was anticipated that the procedure would be completed relatively quickly this time, given that the recurrence was located in an area previously dilated. However, the treatment of the left superficial femoral artery also required significant time during this procedure. Therefore, a different technique was required for this procedure. Since Jetstream is not available at our institution, we decided to address the calcified nodules using forceps via an ipsilateral common femoral artery approach. Using forceps, a favorable lumen was achieved, and the procedure was finalized with a DCB.

【Clinical time course and implication (or perspective)】
The ABI improved from 0.69 to 0.93, with accompanying symptomatic relief. In the event of recurrence in the common femoral artery, the use of forceps via a superficial femoral artery approach may be considered in the future.

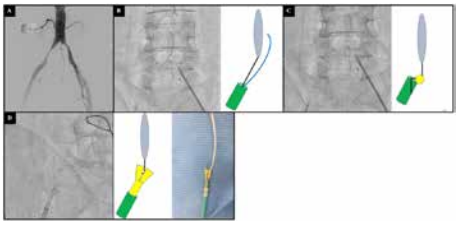
MO-34 Flower technique - A bailout technique to retrieve disrupted balloon catheters and stents

○Masataka Yoshinaga, Akane Miyazaki, Taishi Fukushima, Takehiro Ito,
Yuusuke Funato, Syun Ito, Yoshihiro Sobue, Eiichi Watanabe
Fujita Health University Bantane Hospital

【Case overview】
We report a case in which we encountered the difficulties to retrieve disrupted devices during endovascular treatment. A 75-year-old man with stenosis in the bilateral common iliac arteries, and then endovascular treatment was scheduled.

【Procedure summary】
Efforts to retrieve the balloon into the guide sheath were unsuccessful, suspected that the balloon shaft had fractured. This was attributed to inadvertently pushing the balloon too far beyond the wire. Consequently, the wire became disengaged from the balloon, leading to its entanglement in a visceral branch within the abdominal arteries and resulting in the fracture of the balloon shaft. Therefore, we cut the shaft of the balloon catheter and inserted another 6Fr guiding catheter with 4 cut slits at the soft tip manually created by cissors (flower technique). We then slowly pulled the balloon catheter and it was successfully incorporated into the "flower" guiding catheter and guiding sheath.

【Clinical time course and implication (or perspective)】
The retrieved balloon catheter revealed that proximal part of the balloon shaft was significantly bent and it was perceived as a cause of the difficulty in removing the balloon catheter. The procedure was completed with metallic stents implanted in the bilateral common iliac arteries without any other complications.



MO-35 The usefulness to make a vessel rupture and place covered stent for distal bypass graft repeated restenosis

○Shingo Kurimoto, Takahito Kohara, Hiroto Tamura, Kenichiro Yuba
Tokushima Red Cross Hospital

【Case overview】
A 71-year-old woman was treated to distal bypass surgery (above knee popliteal to posterior tibial artery bypass) with chronic limb-threatening ischemia of her left foot. After that, this graft repeated restenosis or occlusion 7 times in 3 years. Restenosis site was the same in the proximal bypass graft. We treated endovascular intervention repeatedly on each time.

【Procedure summary】
On the last session, we dilated this lesion with 3mm cutting balloon to get the larger acute gain. But that dilatation caused graft vessel rupture. Though we tried to balloon tamponade for a long time, we didn't obtain hemostasis. Finally, we deployed the coronary covered stent (GRAFTMASTER 2.8×19mm) into the rupture segment and obtained complete hemostasis.

【Clinical time course and implication (or perspective)】
Since then, it's been about 3 years without restenosis. In this case, we unexpectedly perforated vessel and placed covered stent for bypass graft restenosis segment. This technique is similar to "pave-and-crack" technique to make a vessel rupture intentionally and place covered stent. This technique may be useful for distal bypass graft repeated restenosis.

MO-36 A case of Critical Limb Threatening Ischemia successfully salvaged by drug-coated balloon angioplasty after occlusion of femoropopliteal bypass using saphenous vein graft

○Tatsuo Yokomine, Tatsuro Takei, Toshiko Ninomiya, Takafumi Inoue, Kazunari Kitazono, Tahashi Kajiya, Junnichiro Takaoka
Tenyoukai Central Hospital

【Case overview】
A 78-year-old man with hemodialysis was diagnosed with Chronic Limb-Threatening Ischemia (CLTI) with localized necrosis in the left toe. The patient underwent femoro-popliteal (FP) bypass using saphenous vein graft (SVG) for superficial femoral artery (SFA) in-stent occlusion and popliteal artery (POP) occlusion, but the bypass graft occluded. Subsequently, necrosis expansion and infection were observed, resulting in WIfI classification clinical stage 4, and the patient was referred to our hospital.

【Procedure summary】
We performed EVT on a native SFA and POP, but it failed. Subsequently, we performed EVT on an FP bypass graft. Blood flow was restored and maintained by Plain Old Balloon Angioplasty, leading to toe amputation and improvement in wound healing. However, the wound worsened again, and bypass graft re-occlusion was observed. Therefore, revascularization was performed on the bypass graft using a drug-coated balloon (DCB). As a result, we succeeded in maintaining patency and achieved wound healing. And, the IVUS finding was suggested that arterialization of SVG.

【Clinical time course and implication (or perspective)】
We report a case of CLTI that successful limb salvaged by DCB to FP bypass failure, and the relationship between FP bypass using SVG and arterialization, with a review of the literature.

MO-37 Safety and clinical outcomes of Acute Limb Ischemia treatment with the Indigo Aspiration system

○Jun Nakamura, Mitsutoshi Asai, Takahisa Yamada, Takashi Morita, Masato Kawasaki, Atsushi Kikuchi, Takumi Kondo, Tsutomu Kawai, Masahiro Seo, Takeshi Fujita, Masatake Fukunami

Osaka General Medical Center

【What's known?】
The Indigo Aspiration System (Penumbra Ltd., Alameda, CA, USA), a catheter-based device intended for the endovascular removal of clots from peripheral arteries.The INDIGO system is now available in Japan, and is attracting attention as an alternative treatment to urokinase.

【What's new?】
The aim of study was to evaluate the safety and clinical outcomes of Acute Limb Ischemia (ALI) treatment with the Indigo Aspiration system
This was single center and retrospective observational study. A total 13 patients were treated with Indigo Aspiration system.
The mean age was 74.7±11.3 years old. 57% of patients were male, and 35% had atrial fibrillation and diabetes. Antegrade blood flow was successfully restored in all cases, of which two cases underwent additional surgical treatment and two cases underwent percutaneous Fogarty thrombectomy. All cases also underwent additional procedures such as balloon therapy. The average blood loss was 286±161 ml and the aspiration time was 565 ±44 seconds. The patency rate at 30 days was 84%, with one patient experiencing early re-occlusion and one patient dying from cardiogenic shock.
Although ALI is associated with a high mortality rate, the INDIGO Aspiration system was associated with a high procedural success rate and good short-term limb salvage rates.

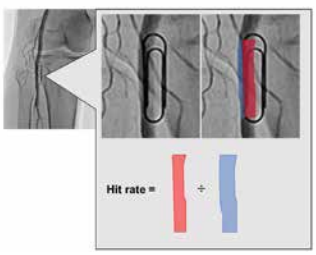
MO-38 Evaluation of the anatomical merkmal method for anterolateral popliteal artery puncture technique: prospective study

○Daisuke Yamazaki

Akita Cerebrospinal and Cardiovascular Center

【What's known?】
The anterolateral popliteal artery (PA) puncture technique reported by Tan et al. in 2017 is a method of puncturing the P3 region of the PA from the anterolateral side while in the supine position and has many advantages such as simple preparation and easy hemostasis. We retrospectively investigated lower limb contrast CT to see if there were any anatomical merkmals that would make the anterolateral PA puncture technique easier to perform, and we hypothesized that the PA runs along the medial border of the fibula when viewed from the lateral oblique position, where the tibia and fibula are furthest apart.

【What's new?】
We investigated this study to prospectively evaluate whether merkmal method would also be effective in practice in a situation similar to the actual puncture. The hit rate was calculated by placing a paper clip on the site where the PA was assumed to run without actually performing the puncture and contrasting it. 80 cases (160 limbs) were prospectively studied, with a target rate of 43.8 (0-79.8)%. In conclusion, the merkmal method of the anterolateral PA puncture technique is not recommended for completely blind puncture, but it is useful for conserving contrast media and improving the accuracy of puncture.



MO-39 Relation between renal function and major adverse outcomes in peripheral artery disease patients with and without chronic limb-threatening ischemia

○Masayuki Takahara[1)], Yuichi Saito[2)], Yuji Ono[3)], Kayo Yamamoto[2)], Norikiyo Oka[4)], Sakuramaru Suzuki[5)], Raita Uchiyama[5)], Yo Iwata[4)], Yoshio Kobayashi[2)]

[1)] Kimitsu Central Hospital, [2)] Chiba University Graduate School of Medicine,
[3)] Japanese Red Cross Narita Hospital, [4)] Funabashi Municipal Medical Center,
[5)] Japan Community Health Organization Chiba Hospital

【What's known?】

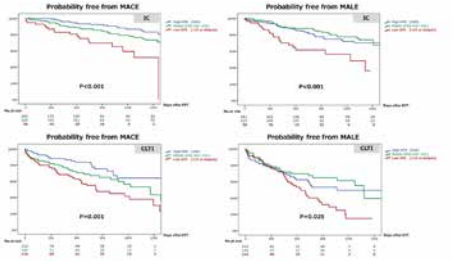
Background: Although worse renal function is reportedly associated with poor outcomes in patients with peripheral artery disease (PAD), the combined prognostic impact of kidney disease with the presence of chronic limb-threatening ischemia (CLTI) is unclear.

【What's new?】

Methods: This multicenter, retrospective study included 823 patients undergoing endovascular treatment (EVT) for aortoiliac and femoropopliteal PAD from January 2019 to December 2023. Patients were divided into three groups according to renal function (Figure), further stratified by the presence or absence of CLTI. Major adverse cardiovascular events (MACE) and major adverse limb events (MALE) were evaluated.

Results: During the median follow-up period of 725 days, worse renal function was progressively associated with increased risks of MACE and MALE in patients without CLTI (i.e. intermittent claudication) (Figure). When focusing only on patients with CLTI, overall results were similar (Figure).

Conclusions: Renal function was a useful predictor of MACE and MALE in patients with PAD after endovascular treatment, irrespective of CLTI.



MO-40 Predictors of reintervention for wound recurrence after wound healing in chronic limb-threatening ischemia with inframalleolar lesions from MAVERIC registry

○Riho Suzuki[1)], Shuko Iwata[2)], Yuichiro Hosoi[3)], Yuki Tanaka[4)], Michinao Tan[2)], Yutaka Dannnoura[1)], Takao Makino[1)], Hisashi Yokoshiki[1)]

[1)] Sapporo City General Hospital, [2)] Caress Memorial Hospital,
[3)] Sapporo Higashi Tokushukai Hospital, [4)] Sapporo Kosei General Hospital

【What's known?】

Chronic limb-threatening ischemia (CLTI) patients with inframalleolar (IM) lesions have been reported to have a higher incidence of wound recurrence and reintervention after wound healing. Still, the predictors of these events have not been fully investigated.

【What's new?】

We conducted a retrospective, multicenter, observational study of 418 limbs from 330 CLTI patients with IM lesions between January 2018 and August 2022. Among these patients, 261 limbs from 205 patients who achieved wound healing after endovascular therapy (EVT) were enrolled. 61 limbs (23.4%) required reintervention due to wound recurrence. Logistic analysis revealed that age≥70 (odds ratio, 2.25; 95% confidence interval, 1.14-4.44; P=0.01), multiple reintervention before wound healing (odds ratio, 2.37; 95% confidence interval, 1.27-4.42; P<0.01) were predictor of revascularization due to wound recurrence, on the other hands, Wound, Ischemia, and foot Infection (WIfI) criteria stage 4 (odds ratio, 0.43; 95% confidence interval, 0.22-0.83; P=0.01) was a positive predictor of no revascularization. Patients with WIfI stage 4 had a higher prevalence of minor amputation rate than patients with WIfI stage <3 (47.2% vs 33.3%: P=0.03). In conclusion, The predictors of revascularization for wound recurrence after wound healing in CLTI patients with IM lesions were age≥70 and multiple reintervention before wound healing.

MO-41 Association between Prasugrel and Limb Event following Endovascular Therapy for Femoropopliteal Lesion from LANDMARK registry

○Kazuki Tobita[1)], Hikaru Tanemura[1)], Shun Sawada[1)], Eiji Koyama[1)], Motoaki Kai[1)], Hirokazu Miyashita[1)], Keiichi Hishikari[2)], Shinsuke Mori[3)], Tatsuki Doijiri[4)], Yasutaka Yamauchi[5)], Shigeru Saito[1)]

[1)] Department of Cardiology, Shonan Kamakura General Hospital,
[2)] Cardiovascular Center, Yokosuka Kyosai Hospital,
[3)] Department of Cardiology, Saiseikai Yokohama City Eastern Hospital,
[4)] Department of Cardiology, Yamato Seiwa Hospital,
[5)] Cardiovascular Center, Takatsu General Hospital

【What's known?】

Background Patients with lower extremity artery disease (LEAD) had poor prognosis due to severe atherosclerotic change. Prasugrel reduced cardiac events for ischemic heart disease patients, however, the relation between Prasugrel and limb event with LEAD is still unclear.

【What's new?】

Aim This study aim is to investigate the effect of prasugrel for LEAD patients with femoropopliteal artery lesion from LANDMARK registry.

Methods This study was a retrospective multicenter registry enrolling consecutive 1378 patients (1777 lesions) treated in Kanagawa (evaLuation of clinical outcome After eNDovascular therapy for feMoropopliteal ARtery disease in Kanagawa: LANDMARK registry). Primary outcome was defined as primary patency. Secondary outcomes defined as all cause death, major amputation, freedom from target lesion revascularization (TLR), acute thrombosis and bleeding event.

Results A total of 327 pairs taking thienopyridine were analyzed after propensity score matching. Mean follow up periods were 1393 days. Patient and lesion background were not different in 2 groups. Primary patency was not different between 2 groups (prasugrel vs clopidogrel; 64.5 % vs 66.1 %, p=0.681). all cause death, major amputation, freedom from target lesion revascularization (TLR), acute thrombosis and bleeding event were not different between 2 groups too.

Conclusion The limb prognosis taking prasugrel is equal to taking clopidogrel.

MO-42 Clinical Impact of Additional inframalleolar Angioplasty in Chronic Limb-threatening Ischemia Patients with Tissue Loss Undergoing infrapopliteal Endovascular Therapy

○Taku Toyoshima[1)], Osamu Iida[1)], Motoki Yasunaga[1)], Yosuke Hata[2)], Hiroaki Nohara[3)], Akito Kawamura[3)], Haruya Yamane[4)], Kuniyasu Ikeoka[4)], Kazuho Ukai[4)], Daichi Yoshii[1)], Yoshiharu Higuchi[1)], Yasushi Sakata[5)]

[1)] Osaka Keisatsu Hospital, [2)] Kansai Rosai Hospital, [3)] Osaka Rosai Hospital,
[4)] National Hospital Organization Osaka National Hospital,
[5)] Osaka University Graduate School of Medicine

【What's known?】

Background: The clinical impact of additional inframalleolar (IM) angioplasty in chronic limb-threatening ischemia (CLTI) patients undergoing infrapopliteal (IP) endovascular therapy (EVT) remains controversial.

【What's new?】

Method: This multicenter, retrospective study analyzed 1799 limbs with tissue loss in 1371 CLTI patients who underwent IP EVT between April 2010 and March 2023. Clinical outcomes were compared between groups with and without additional IM angioplasty (IP plus IM versus IP alone). The primary outcome measure was 1-year wound healing.

Results: The prevalence of diabetes mellitus, and hemodialysis did not differ between two groups. No significant differences were observed in GLASS stage or GLASS IM classification between two groups. Kaplan-Meier analysis showed no significant difference in 1-year wound healing rates between the IP plus IM versus IP alone group (55.8% versus 58.6%, p=0.565). Interaction analysis revealed that additional IM angioplasty significantly improved wound healing in patients with WIfI high-risk, but not in those with WIfI low to moderate risk (P for interaction=0.015).

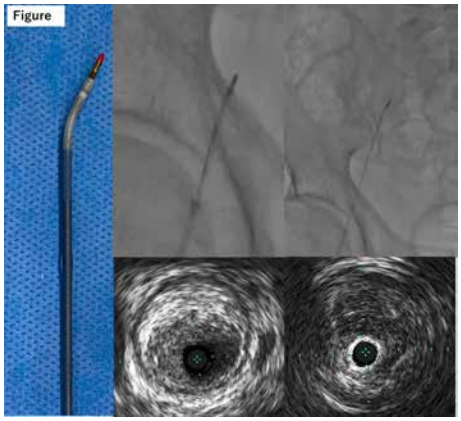
Conclusion: This study demonstrates that additional IM angioplasty does not improve wound healing in CLTI patients with tissue loss undergoing IP EVT. However, additional IM angioplasty may be beneficial for patients with WIfI high-risk, but not for those with WIfI low to moderate risk.

MO-43 A Novel Technique for Treating Chronic Total Occlusion Lesions in Peripheral Artery Disease Patients: The Intravascular Ultrasound Preceding with Angled Guiding Catheter (I-PAD) Technique

○Mitsuo Sobajima, Yohei Ueno, Hiroshi Onoda, Teruhiko Imamura, Koiciro Kinugawa
The Second Department of Internal Medicine, Toyama University

【Case overview】
A 74-year-old male presented with intermittent claudication (Rutherford category 3) due to a CTO in the right external iliac artery. We performed EVT via the right common femoral artery using the I-PAD technique.

【Procedure summary】
We retrogradely advanced the I-PAD system (i.e. partially extending the IVUS (Eagle Eye Platinum ST, Philips) transducer portion from the tip of the angled guiding catheter (GoGo catheter D-shape, Medikit) into the CTO lesion (Figure). Under real-time IVUS imaging guidance, the system's tip was advanced into the CTO lesion without a guidewire. The system was carefully maneuvered within the CTO lesion, directing the tip toward the center of the vessel while avoiding proximity to the vessel wall. We successfully traversed the CTO lesion using the I-PAD system in approximately three minutes. After crossing the lesion, we advanced a guidewire and removed the angled guiding catheter, followed by appropriately-sized stent placement based on the IVUS findings.



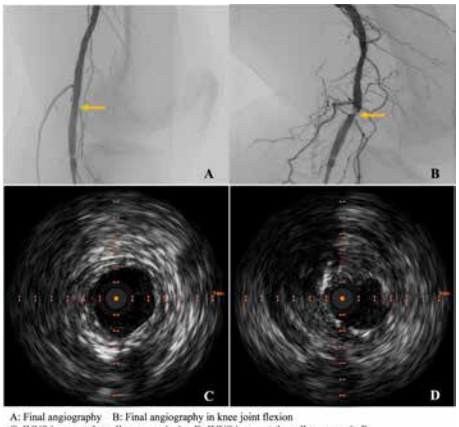
【Clinical time course and implication (or perspective)】
The procedure was completed successfully without any procedure-related complications, and his symptoms improved. This I-PAD technique might be an effective method for accurately and quickly crossing CTO lesions.

MO-44 Impressive images during knee joint flexion in intervention for a severely calcified popliteal artery

○Takaaki Ozawa, Kenji Yanishi, Jun Yoshimura, Kan Zen, Satoaki Matoba
Kyoto Prefectural University of Medicine

【Case overview】
A 79-year-old male with lower extremity artery disease was treated with a 5.0-mm drug coated balloon (DCB) for severe calcified occlusion in the left popliteal artery. Three weeks later, the left popliteal artery was reoccluded, and thus, second EVT was performed.

【Procedure summary】
The first angiogram showed that the left popliteal artery was occlusive from just proximal to the previously treated severe calcification. Because the severely calcification was suspected as the cause of early re-occlusion, after successful wiring, we debulked severe calcification using JETSTREAM SC and XC catheters. Then pre-dilation was performed a 5.0-mm cutting balloon, and the target lesion was dilated a 6mm-DCB.



A: Final angiography B: Final angiography in knee joint flexion
C: IVUS image at the yellow arrow in A D: IVUS image at the yellow arrow in B

【Clinical time course and implication (or perspective)】
The final angiogram revealed optimal revascularization without any complication. However, IVUS and angiogram during knee joint flexion revealed vascular folding and narrowing at the proximal end of the severe calcification (Figure1), which coinsided with the occlusion point. In this case, flexion of the knee caused torsion and stenosis at the boundary between the plate-like severe calcification and normal vessels, which might have been a cause of early re-occlusion. The IVUS and angiogram images of severely calcified popliteal arteries during knee joint flexion may play an important role in determining the strategy in EVT.

MO-45 “The WIENPHIL Technique”: A Novel Approach for Safe and Effective JETSTREAM Using WIngman outEr tube Navigation of filtraP for Heavily calcIfied Lesions

○Hideaki Aihara, Yui Takaiwa
Tsukuba Medical Center Hospital

【Case overview】
The JETSTREAM system is highly effective for lesion modification in heavily calcified lesions. However, it poses a risk of distal embolization caused by the debris generated during the procedure. Filtrap, a distal embolization protection filter, serves as a solution to this problem. Despite its benefits, the Filtrap delivery system has a maximum diameter of 3.9Fr, which makes it challenging to position distally in cases of severe stenosis or occlusive lesions without pre-dilation. To address this limitation, we developed a novel technique using the WINGMAN035 catheter.

【Procedure summary】
After crossing the lesion with the WINGMAN035, the inner bevel tip of the catheter is removed, leaving the outer tube in place. The Filtrap delivery system is then inserted through this outer tube, allowing the filter to be placed distal to the occlusion without the need for pre-dilation. This approach effectively reduces the procedural risks associated with debris-related embolization while maintaining the safety and efficacy of the JETSTREAM system.

【Clinical time course and implication (or perspective)】
By eliminating the need for pre-dilation, this technique simplifies the process and enhances the feasibility of treating complex lesions, offering a safer and more effective solution for managing heavily calcified and high-risk vascular lesions.

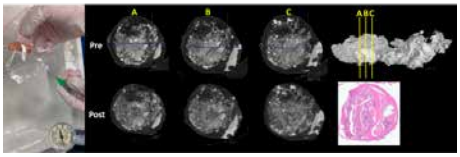
MO-46 Micro-CT Evaluation of the Fracking Technique *Ex Vivo* for Calcified Lesions in the Common Femoral Artery

○Norihito Nakamura, Kazuki Aihara, Yuto Ono, Yu Sato, Yuki Matsumoto, Manabu Shiozaki, Sho Torii
Tokai University Hospital

【Case overview】
The fracking technique involves fracturing calcified plaques in the common femoral artery (CFA) using a needle and hydraulic pressure to achieve acute luminal gain in heavily calcified lesions. Here, we report an *ex vivo* evaluation of tissues subjected to fracking technique.
A 76-year-old man with intermittent claudication underwent surgical endarterectomy, resulting in the removal of a severely calcified lesion from the CFA. The excised calcified tissue was first assessed by micro computed tomography (micro-CT), followed by fracking technique.

【Procedure summary】
Fracking points were identified at locations where saline injection via syringe could no longer proceed due to heavy calcification. Fracking technique was performed using an 18-gauge micro-puncture needle connected to a balloon indeflator, with the pressure gradually increased until a sudden pressure drop indicated successful calcification fracturing. The procedure was repeated at multiple fracking points within the calcified plaques until no additional fracking points were detected, with a total of five times performed. Micro-CT imaging before and after fracking technique demonstrated that sheet calcification within the vessel was successfully fractured and fragmented into smaller calcium particles.

【Clinical time course and implication (or perspective)】
This study highlights the effectiveness of fracking technique for heavily calcified lesions, as assessed through *ex vivo* micro-CT imaging.



MO-47 A case of Acute Compartment Syndrome due to Acute Limb Ischemia salvaged by a comprehensive care

○Saori Migita, Daichi Yoshii, Osamu Iida, Hitoshi Minamiguchi, Yasuhiro Ichibori, Kei Nakamoto, Motoki Yasunaga, Taku Toyoshima, Yoshiharu Higuchi

Osaka International Medical and Science Center

【Case overview】
A 73-year-old man had a sudden onset of intractable rest pain, cyanosis, and motor-sensory deficitsdistal to the ankle. He had a pas medical history of angina pectoris after coronary artery bypassgrafting and atrial fibrillation following left atrial appendage closure. Laboratory examinationrevealed significant elevation creatine kinase level of 7927 U/L. We diagnosed Rutherford IIb acutelimb ischemia (ALI); a contrast-enhanced CT scan showed occlusion of the left superficial femoralartery.

【Procedure summary】
The mechanical aspiration thrombectomy devices (Indigo™; Penumbra Inc.) successfullyaddressed the lesion, restoring blood flow to the posterior tibial artery. However, The day aftertreatment, Re-occlusion was found and emergency revascularization was again performed bythromboembolectomy with a Fogarty catheter, stenting for residual stenosis, and balloon dilationfor tibial artery. Postoperatively, he had developed severe leg swelling and a high intra-lateralcompartmental pressure of 48 mmHg. And a prophylactic fasciotomy was performed,. leading togradual reduction in the leg tension.

【Clinical time course and implication (or perspective)】
The lower leg tension gradually decreased, and the incisionhealed with the use of negative pressure wound closure therapy.Acute compartment syndromedue to ALI was successfully salvaged managed by a comprehensive care.

MO-48 Mesenteric steal syndrome caused by abdominal aortic stenosis due to Takayasu arteritis

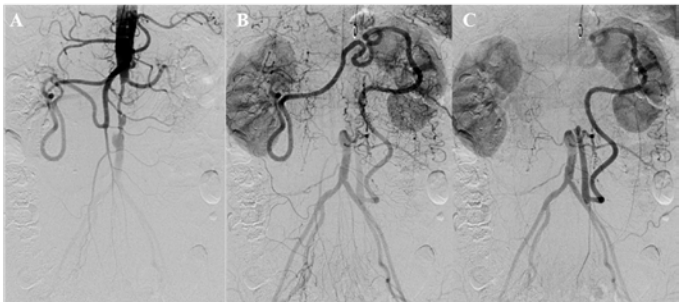
○Kentaro Inoue, Yusuke Fujioka, Kohei Ueno, Shinichiro Yoshino, Koichi Morisaki, Tomoharu Yoshizumi

Kyushu University Hospital

【Case overview】
67-year-old woman with abdominal angina after eating or ambulation and weight loss. CT revealed severe stenosis in the infrarenal aorta and development of the arc of Riolan.

【Procedure summary】
The aortic lesion was gently dilated with a 4 mm × 40 mm SABER X®, and a S.M.A.R.T.® 8 mm × 6 cm stent was deployed. Post-ballooning was performed with a 6 mm × 40 mm Sterling®.

【Clinical time course and implication (or perspective)】
Her abdominal angina resolved, and her weight had increased by 3 kg, 3 months after treatment.

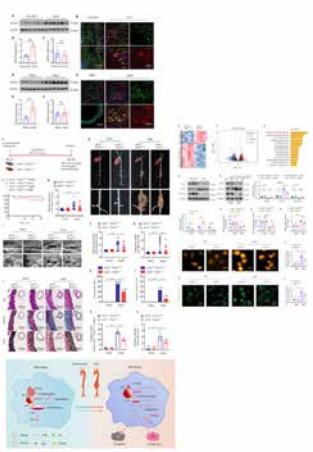


MO-49 SENP3 Drives Abdominal Aortic Aneurysm Development by Regulating Ferroptosis via De-SUMOylation of CTH

○Long Chen, Yiping Shi, Qin Shao, Ben He
Shanghai Jiaotong University

【What's known?】
Abdominal aortic aneurysm (AAA) is a high-risk inflammatory disorder, with high mortality rate upon rupture and without an effective cure. SENP3, a SUMO2/3-specific protease, is closely involved in the development of cancer and cardiovascular diseases. However, the role of SENP3 in macrophages in AAA remains elusive.

【What's new?】
We found that the protein expression of SENP3 was significantly upregulated in both human and murine AAA specimens. SENP3 expression was negatively regulated by the E3 ubiquitin ligase STUB1/CHIP. Furthermore, we demonstrated that myeloid-specific SENP3 knockout inhibited AAA formation in both AngII- and CaCl2-induced mouse models. We consistently observed that SENP3 deficiency repressed AAA lesion macrophage infiltration and inflammatory response. Mechanistic studies identified Cystathionine Gamma-Lyase (CTH), a critical enzyme involved in hydrogen sulfide (H2S) production within the vessels, as a target protein of SENP3 that mediated the regulatory effects of SENP3 on ferroptosis and inflammatory programs in macrophages. CTH was SUMOylated at Lysine 361 and could be de-SUMOylated by SENP3. SUMO-3 promoted CTH protein stability, whereas SENP3 facilitated its proteasome-dependent degradation. Most importantly, we found that CTH inhibitor counteracted the protective effect of SENP3 deficiency on AAA. Additionally, supplementation with ATB346, a novel H2S-donating naproxen derivative, prevented AAA development in mice.



MO-50 3-years outcomes of combination therapy using both DES and DCB for SFA CTO

○Tatsuki Doijiri
Yamatoseiwa Hospital

【What's known?】
Background: Over the past five years since the introduction of Drug-Coated balloon (DCB) for F-P lesions, they have become the first choice as the final device. However, DCB have weaknesses, with SFA ostial lesions being a significant predictor of loss of patency, often involving thrombotic plaque. In these cases, we often use Drug-Eluting Stent (DES). The current recommendation is full coverage with DES but Total stent length becomes longer.

【What's new?】
We retrospectively analyzed 48 cases of combination therapy (proximal DES, distal DCB) for SFA ostial CTO performed at our institution from February 2019 to February 2023, assessing freedom from CD-TLR at Three-year from LANDMARK Registry.
Result: Eluvia stent was used in 95% of cases, Zilver PTX in 5%. The DCBs used were IN PACT (51%), LUTONIX (22%), and Ranger (27%).The results will be presented on the day along with their clinical significance and considerations.

MO-51 The accumulation of epicardial adipose tissue rather than visceral or subcutaneous fat is associated with cardiovascular death in patients after open surgical repair for abdominal aortic aneurysms

○Yohei Kawai[1)], Masayuki Sugimoto[2)], Hiroshi Banno[2)], Akio Kodama[1)]

[1)] Department of Vascular Surgery, Aichi Medical University,
[2)] Division of Vascular and Endovascular Surgery, Department of Surgery, Nagoya University Graduate School of Medicine

【What's known?】
The accumulation of adipose tissue, such as increased epicardial adipose tissue volume (EATV) and visceral fat area (VFA), is associated with the development of cardiovascular (CV) disease. However, little information is available regarding the relationship between EATV and CV death in patients who undergo open surgical repair (OSR) for abdominal aortic aneurysms (AAAs). The aim of this study was to evaluate the association between adipose tissue and CV death and to identify factors related to CV death after AAA repair.

【What's new?】
Between 2005 and 2019, a total of 739 patients underwent OSR for AAA. Patients with ruptured AAAs and infected AAAs were excluded. Among them, 492 patients with preoperative optimal computed tomography (CT) scans were included. The EATV, VFA and subcutaneous fat area were retrospectively quantified from preoperative noncontrast CT images. The EATV index was defined as the EATV divided by the body surface area. Multivariate analysis revealed that age and an EATV index ≥ 73.8 cm^3/m^2 were significantly associated with CV death after AAA repair. Consequently, this study demonstrated that the EATV index was associated with CV death in patients who underwent OSR for AAA, suggesting its potential utility as a novel risk stratification tool for personalized postoperative management.

MO-52 Inadvertent Placement of Thoracic stent-grafts in False Lumen during Aortic Dissection Surgery – Unicentric Analysis and Systematic Review

○Mingli Levin Li[1)], Hsiu-Ming Lee[2)], Tzu-yin Yu[3)]

[1)] Cardiovascular Surgery, China Medical University Hospital, Taichung City, Taiwan,
[2)] Department of Surgery, Chang Gung Memorial Hospital at Linkou, Chang Gung University, Taoyuan, Taiwan, [3)] Department of Surgery, China Medical University Hospital, Taiwan

【What's known?】
Thoracic endovascular aortic repair (TEVAR) is widely used for aortic dissection (AD). Still, it can cause severe complications when misplaced in the false lumen, such as heart failure, significant bleeding, strokes, and malperfusion.

【What's new?】
This single-center study analyzed six TEVAR misplacement cases among 2339 AD patients (2011-2023). Furthermore, we systematically reviewed published cases following PRISMA guidelines (Figure 1), examining causes, oversight factors, management strategies, and outcomes. Thirty-four cases from 22 studies, including six from our institution, were reviewed. Patients (67.6% male) averaged 53.6 years old. Type A dissection occurred in 64.7%, with 70.6% anterogradely placement. Complications included visceral malperfusion (50%) and unstable hemodynamics (23.5%). Intraoperative TEE or IVUS outperformed aortography for diagnosis ($p < 0.001$). Endovascular septal fenestration with retrograde stent extension reduced mortality ($p = 0.022$), while delayed treatment and early symptoms within three days increased mortality ($p = 0.039$). Overall mortality was 29.4%, mainly due to multiorgan failure (80%).

In conclusion, accidental TEVAR placement in the false lumen markedly increases mortality. Despite seemingly acceptable survival rates, underdiagnosis and publication bias may mislead conclusions. Prompt diagnosis with aortography, TEE, IVUS, and CT in suspicious circumstances is essential for early, accurate diagnosis and interventions.

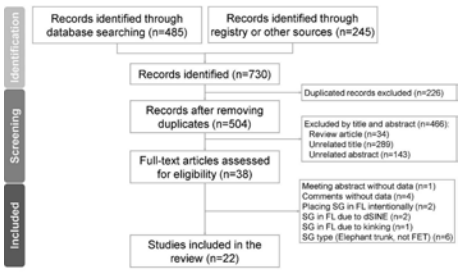


Fig 1：PRISMA flowchart outlining study selection process for the review.

MO-53 10 Year Follow-up of Patients with Severe Persistent Postprocedural Hypotension post Carotid Artery Stenting

○Gabrielle Stratford, Olufemi A Oshin, Bibombe P Mwipatayi

Department of Vascular Surgery, Royal Perth Hospital, Perth, Western Australia, Australia

【What's known?】

Persistent Post-Procedural Hypotension after Carotid Artery Stenting (PPPH-CAS) is an SBP drop >40mmHg from baseline OR SBP <90 mmHg at end of case lasting >1 hour. Identified short-term outcomes include increased risk of CVA, MACE, in-hospital mortality and longer hospital stay. Long-term patient outcomes post-occurrence is unclear.

【What's new?】

A retrospective analysis was undertaken of ten-year post-procedure outcomes for patients in Western Australia who previously had carotid artery stenting (CAS), with subsequent persistent postprocedural hypotension (PPH). Data reviewed included patient demographics, co-morbidities, and procedural data such as contrast volume, balloon andembolic protection device use, and stent type. Outcomes included all-cause mortality, carotid related mortality, in-stent restenosis/occlusion, carotidfracture, and MACE (including stroke). Kaplan-meier analysis is performed for outcomes up to 10 years. We found no difference in carotid disease relatedmortality, stroke, stent fracture or restenosis/occlusion, between CAS patientswith PPH, and other CAS patients.

MO-54 In-vivo impedance identification of RBC-rich clot in peripheral arterial disease using the Clotild® Smart Guidewire System

○Koen Deloose[1], Christos-Nikolaos Zacharopoulos[2], Julie Lafaurie-Janvore[2], Quentin Cavalie[2], Lise Schaub[2], Franz Bozsak[2]

[1] AZ Sint Blasius Dendermonde, Belgium, [2] Sensome, Massy, France

【What's known?】

A key limitation of endovascular treatment of Peripheral Artery Disease (PAD) is the inability to infer the clot composition, which is crucial for selecting the best treatment approach for long-term revascularization outcomes. This study aimed to assess the capability of using miniaturized electrical impedance spectroscopy sensors paired with machine learning to address this clinical gap.

【What's new?】

In a prospective single-center feasibility study, in-vivo impedance data from seventeen PAD patients were collected using the Clotild Smart Guidewire System. A machine learning model was trained to identify RBC-rich clots (RBC content > 40%). During interventions, the physician provided labels for expected lesion types based on the clinical presentation of each case. Comparing the physicians' assessment of the lesion characteristics to the model consistently showed good agreement in identifying RBC-rich regions where clots were expected and non-RBC-rich tissues in areas with other tissue types (Figure 1). Moreover, in both cases where thrombolysis fully resolved the clot, the model identified RBC-rich regions with high confidence. Clotild, paired with a machine learning model, detected RBC-rich clots in vivo with high spatial accuracy, showing strong potential to improve clinical outcomes where real-time clot identification is essential to choose the right treatment approach.

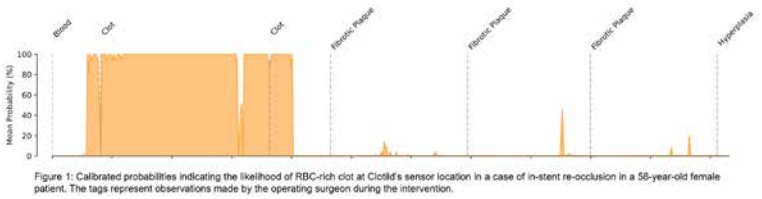


Figure 1: Calibrated probabilities indicating the likelihood of RBC-rich clot at Clotild's sensor location in a case of in-stent re-occlusion in a 58-year-old female patient. The tags represent observations made by the operating surgeon during the intervention.

MO-55 Endovascular Treatment of Chronic Limb-Threatening Ischemia Caused by Occluded Popliteal Artery Aneurysm

○Yosuke Takei, Yuki Numajiri, Yuki Ishii, Yuka Tanizaki, Hiromoto Sone, Kazuma Tashiro, Hiroyoshi Mori, Tokutada Sato, Hiroshi Suzuki

Showa University Fujigaoka Hospital

【Case overview】
A 79-year-old man presented with an ulcer at the tip of his left great toe, indicating ischemic tissue compromise. Duplex ultrasound revealed a left popliteal artery occlusion with a saccular aneurysm measuring 19 mm in short-axis diameter, consistent with chronic limb-threatening ischemia (CLTI) caused by popliteal artery aneurysm (PAA) thrombosis. PAAs, though rare, account for 80% of peripheral arterial aneurysms and often present with thrombotic occlusion or embolism, manifesting as intermittent claudication, acute limb ischemia, or CLTI.

【Procedure summary】
Initial revascularization via ipsilateral antegrade femoral access included aspiration thrombectomy with an 8F TVAC® catheter (NIPRO) and a 6F Mach1® guide catheter (Boston Scientific), followed by prolonged balloon dilatation with a 5.0/150 mm semi-compliant balloon, achieving TIMI grade 3 flow. Re-occlusion occurred the next day. A second intervention involved thrombus removal, high-pressure pre-dilatation with a 6.0/150 mm SHIDEN® HP balloon (Kaneka), and deployment of overlapping Supera™ stents (6.0/150 mm and 6.5/40 mm), successfully restoring blood flow.

【Clinical time course and implication (or perspective)】
Post-procedure dual antithrombotic therapy with aspirin and rivaroxaban improved perfusion. Minor amputation of the ulcerated area achieved favorable wound healing. This case demonstrates the effectiveness of endovascular interventions, particularly stent implantation, for occluded PAAs.

MO-56 Chronic Clinical Findings after Rheocarna Therapy in a Chronic Limb-threatening Ischemia Patient with Inframalleolar Lesions

○Akinori Satake

Narita Memorial Hospital

【Case overview】
An 87-year-old man was referred to our hospital for non-healing ulcers on the right third, fourth, and fifth toes. The patient was diagnosed with chronic limb-threatening ischemia. Pre-treatment angiography of the right lower extremity revealed inframalleolar lesions.

【Procedure summary】
We failed to perform endovascular treatment because of severe calcification. Therefore, we treated the patient with a novel low-density lipoprotein apheresis device (Rheocarna; Kaneka, Osaka, Japan).

【Clinical time course and implication (or perspective)】
Angiography performed four days after therapy revealed significant improvement in microcirculation. One year after therapy, he managed to avoid major amputation and achieve wound healing. In addition, angiography revealed that the microcirculation was maintained. Moreover, two years after therapy, angiography revealed that the microcirculation also was maintained and he had avoided major amputation.

MO-57 A case of EVT with excimer laser for repeated SFA stent graft

○Shoichiro Furukawa
Oita Prefectural Hospital

【Case overview】
The patient is a man in his 70s with intermittent claudication. He had undergone bypass surgery with an artificial vessel for an occluded lesion in the right SFA 3 years ago. He was treated with EVT and additional stenting for bypass occlusion. His claudication symptoms in the right lower extremity worsened and re-occlusion was observed. ABI was 0.41, and EVT was performed again.

【Procedure summary】
Angiography showed re-occlusion from the graft entry and the stent was also occluded. The proximal cap was slightly hard, but the lesion in the stent was soft with a long section of thrombotic lesion. The lesion was also a thrombotic lesion in the stent and was considered an indication for Excimer Laser. After POBA, there was some residual thrombus in the DFA, but blood flow in the SFA was improved. The patient ended with an additional DCB at POP artery, possibly due to stenosis of the POP artery.

【Clinical time course and implication (or perspective)】
Although this was a long segmental thrombotic lesion, it passed without distal embolization. This case suffered from thrombotic lesions, and we report on its subsequent course.

MO-58 A Case of Femoropopliteal Stent Graft Infection in the Postoperative Period in Patients with Peripheral Artery Disease Requiring Surgical Intervention for Removal

○Sakurako Nagahori, Osamu Iida, Motoki Yasunaga, Taku Toyoshima, Daichi Yoshii, Hitoshi Minamiguchi, Yasuhiro Ichibori, Kei Nakamoto, Yoshiharu Higuchi
Osaka Keisatsu Hospital

【Case overview】
A 70s-year-old female with a medical history of lung cancer and hypothyroidism presented with right leg intractable pain. In February of year X-1, she underwent stent graft placement (VIABAHN 5.0*250mm) in the right superficial femoral artery for symptomatic peripheral artery disease (PAD), with a favorable postoperative course. However, in April of year X, she realized right thigh swelling and pain and admitted to our hospital.

【Procedure summary】
Her C-reactive protein levels were elevated and duplex ultrasound revealed fluid accumulation around the graft site, raising suspicion for graft infection. Consequently, antibiotic therapy was initiated. The patient then underwent surgical intervention, which consists of removal of the infected stent graft and femoral-popliteal bypass surgery using the great saphenous vein graft.

【Clinical time course and implication (or perspective)】
Postoperative recovery was uneventful, and the patient was discharged without any perioperative complication. However, 4 months after the bypass surgery, a stenosis at the distal anastomosis of the bypass graft was found and an additional balloon treatment was performed. The patient is currently under follow-up observation and is asymptomatic. We encountered a rare case of post-stent graft infection, a potentially lethal complication associated with stent graft placement for PAD, occurring in the remote postoperative period.

MO-59 A case of the subintimal coverage with DES for recurrent occlusion

○Keishiro Izaki, Kenji Suzuki, Shohei Kameyama, Keiko Watanabe, Shiho Taniguchi, Yuki Fujii, Kazutaka Miyamoto, Ayaka Endo, Naoki Hirata, Tasuku Hasegawa, Toshiyuki Takahashi

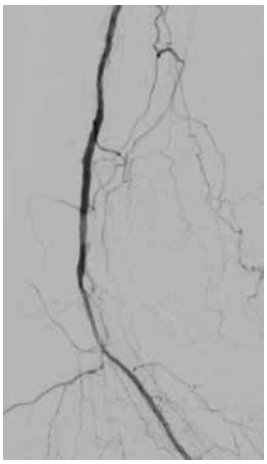
Tokyo Saiseikai Central Hospital

【Case overview】

An 80-year-old man with a left foot ulcer caused by CLTI, accompanied by severe AS, was referred to our hospital for EVT, as bypass surgery was considered high-risk and inappropriate.

【Procedure summary】

We performed the angiography and severe stenosis in the left SFA and occlusion in the left PTA were identified. An initial antegrade approach failed due to difficulty in crossing the severely calcified distal PTA lesion, with the wire entering the subintimal space. Consequently, retrograde transplantar access was performed, enabling the rendezvous technique to connect the retrograde wire with the antegrade microcatheter. A 2.0*200mm balloon was used for dilation and the procedure was completed with confirming good flow. However, follow-up angiography 10 days later revealed reocclusion in the distal PTA. A second attempt using the antegrade approach was unsuccessful, so we conducted the retrograde transplantar access again, performing the rendezvous technique and deployed 2.5*48mm Xience in the distal PTA. Final angiogram was shown in Figure.



【Clinical time course and implication (or perspective)】

Following the re-EVT, the patient underwent Lisfranc amputation and TAVI. Follow-up angiography revealed reocclusion in the PTA, but the stent patency was maintained and wire crossing via the antegrade approach was achieved without difficulty. Subintimal coverage with DES proved effective for maintaining patency and managing re-EVT.

MO-60 First-in-human intravascular polarimetric signatures of superficial femoral artery in-stent restenosis lesion

○Naoki Fujisawa, Takenobu Shimada, Kenichiro Otsuka, Daiju Fukuda

Department of Cardiovascular Medicine, Osaka Metropolitan University Graduate School of Medicine

【Case overview】

A 73-year-old male with severe claudication presented with in-stent restenosis (ISR) of a bare nitinol stent implanted in his left distal superficial femoral artery 10 years prior.

【Procedure summary】

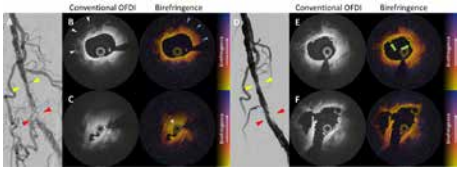
Intravascular polarimetry (IVP) with optical frequency domain imaging (OFDI) was performed before and after excimer laser atherectomy (ELA). IVP provides detailed tissue characterization by measuring polarization properties (i.e. birefringence). Birefringence is elevated in collagen and collagen-synthesizing smooth muscle cells.

IVP demonstrated sheet calcification and fibrous plaques with increased birefringence in the proximal ISR segment and organizing thrombi with low birefringence in the distal ISR segment. We performed ELA using a 2.0 mm excimer laser system (Turbo-Power, Philips).

After the ELA procedure, IVP revealed residual fibrin or white thrombi, but no ablation of calcified or fibrous plaques. Given that organizing thrombi were evaporated, subsequent drug-coated angioplasty was successfully performed without any distal embolization.

【Clinical time course and implication (or perspective)】

ELA is useful for ablating hyperplastic tissues without severe calcification. A pathological study demonstrated that fibrin deposition can occur due to thermal injury during ELA. In this case, IVP provided detailed in vivo insights into ELA's effects. IVP with OFDI can provide tissue characterization of underlying plaque morphology in great detail during endovascular intervention.



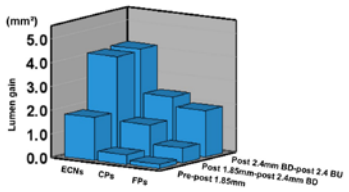
MO-61 INtravaScular optIcal frequency domain imaGing evaluaTion of the femoropopliteal lesion with JETSTREAM atherectomy device (INSIGHT JETSTREAM)

○Koji Kuroda[1)], Amane Kozuki[2)], Kenzo Uzu[3)]

[1)] Hyogo Prefectural Awaji Medical Center, [2)] Osaka Saiseikai Nakatsu Hospital,
[3)] Konan Medical Center

【What's known?】
There have been no reports of detailed evaluations using intravascular imaging during Jetstream treatment.

【What's new?】
This study aimed to investigate the effects of calcification characteristics and wire bias on lumen gain in Jetstream-atherectomy using optical frequency domain imaging (OFDI). We enrolled consecutive patients who underwent OFDI-guided Jetstream-atherectomy with 1.85 mm, 2.4 mm blade down (BD), and 2.4 mm blade up (BU). Cross-sections were categorized into three groups based on the OFDI findings before Jetstream-atherectomy: fibrous plaques (FPs), calcified protrusions (CPs), and eruptive calcified nodules (ECNs). 1502 cross-sections in 36 limbs were serially analyzed. There were 186 FPs, 753 CPs, and 563 ECNs. The acquired lumen gain after all atherectomy steps was significantly larger in the ECNs group compared with the CPs and FPs groups. ECNs had the strongest effect on the variability in the lumen gain. In the effect of wire bias on the degree of debulking, a significant correlation was observed between wire distance and lumen gain in 1.85-mm and 2.4-mm BD atherectomy procedures. However, in the 2.4-mm BU procedure, no significant correlation was recorded.



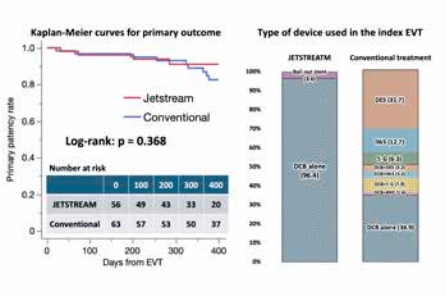
MO-62 Clinical outcomes after endovascular therapy for IVUS-detected nodular calcification with or without JETSTREAM atherectomy device

○Hirokazu Miyashita, Kazuki Tobita, Hikaru Tanemura, Shun Sawada, Eiji Koyama, Motoaki Kai, Futoshi Yamanaka, Shigeru Saito

Shonan Kamakura General Hospital

【What's known?】
EVT for LEAD with nodular calcification (NC) would be challenging because the lesion can be unresponsive to balloon dilatation or prevent the full expansion of the scaffold. JETSTREAM has been launched to overcome calcified lesions. However, its effectiveness for NC is still unknown. This study aims to compare the primary patency rate 1 year after the treatment for lesions with NC between with and without JETSTREAM.

【What's new?】
The IVUS-detected NC lesions were extracted from the institutional database from November 2022 to April 2024 for the JETSTREAM group (n=56) and from November 2020 to October 2022 for the conventional treatment group (n=63). The baseline characteristics, except for gender, were well-balanced. The lesion length was 150mm and 174mm (p=0.163), and the mean PACSS score was 3.5 and 3.6 (p=0.310) in JETSTRAM and conventional groups, respectively. Regarding the device used, DCB alone was 96.4% and 34.9% (p<0.001), and scaffolds were implanted in the other cases. Primary outcome was not significantly different between the two groups (91.0% vs. 86.7%, log-rank: p=0.368).
In conclusion, conventional treatment and JETSTREAM for NC were effective in primary patency at 1 year. Although the conventional treatment was comparable to the JETSTREAM, they required scaffold in around two-thirds of the cases.



MO-63 The risk factors of progression to chronic limb-threatening ischemia after endovascular therapy for femoropopliteal artery disease presented with intermittent claudication

○Keisuke Shoji

Department of Cardiovascular Medicine, Kyoto Chubu Medical Center

【What's known?】
There are limited evidences about the risk of progression to chronic limb-threatening ischemia (CLTI) in patients with intermittent claudication (IC) undergoing endovascular therapy (EVT) for femoropopliteal disease.

【What's new?】
This was a single center, observational, retrospective study. We assessed patients who initially complained IC and underwent first EVT from April 2013 to October 2022. We evaluated risk factors regarding progression to CLTI after EVT in these patients. We identified 196 limbs (mean age: 76 years old, male: 60.2%). Twenty-one limbs (10.7%) progressed to CLTI. Median time from initial EVT to diagnosing CLTI was 859 days. Unadjusted regression analysis demonstrated chronic heart failure (hazard ratio (HR): 2.71, p=0.025), chronic kidney disease without hemodialysis (HR: 3.13, p=0.047), hemodialysis (HR: 6.43, p<0.01), PACSS grade4 (HR: 2.98, p=0.04), P2-P3 segment disease (HR: 4.72, p<0.01), and poor infra-popliteal runoff (HR: 15.1, p<0.01) were the significant risk factors of progression to CLTI. None of target lesion severity based on TASC, number of interventions, finalized devices in index EVT, nor usage of any stents was significant risk factor. In conclusion, the progression to CLTI after EVT might depend on patient backgrounds, vascular calcification, and vessel condition distal to the femoropopliteal artery, not on revascularization strategy nor number of interventions.

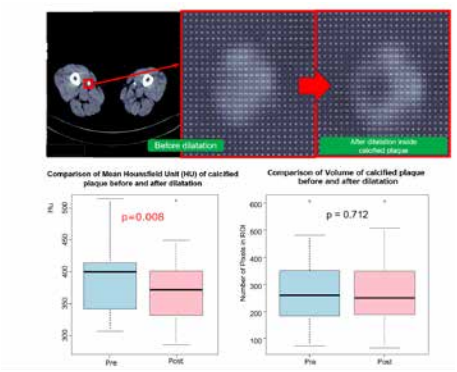
MO-64 Non-Contrast CT Analysis of Intralesional Balloon Dilation in Calcified Plaques

○Dai Ozaki[1)], Hiroshi Abe[1)], Masaaki Maki[1)], Ryosuke Shimai[1)], Hiroyuki Isogai[1)], Hiroki Nishiyama[1)], Tetsuro Miyazaki[1)], Takashi Tokano[1)], Toru Minamino[2)]

[1)] Juntendo University Urayasu Hospital, [2)] Juntendo University Hospital

【What's known?】
Calcified plaques remain one of the unresolved challenges in endovascular treatment. In recent years, techniques involving the passage of wires through calcified plaques and subsequent expansion from the inside have become increasingly common; however, there are no reports on the changes in plaques during this process.

【What's new?】
We evaluated changes in CT values and volumes of calcified plaques in 36 cases treated between December 2020 and December 2024, using pre- and post-procedure non-contrast CT imaging. Calcified plaques were analyzed as regions of interest (ROI) using 24×24-pixel grids across three cross-sectional areas (CSA). The average CT values showed a significant decrease after balloon dilation (p = 0.0082), while volume showed no significant change (p = 0.7124). A significant decrease was also observed in the 600-899 HU range (p = 0.0163).
These results suggest that balloon dilation reduces plaque density while having minimal impact on volume.



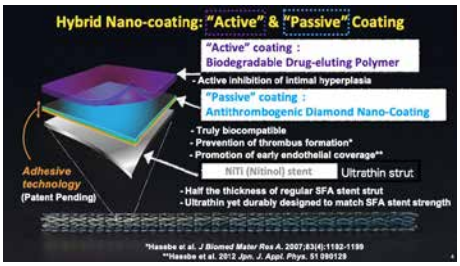
MO-65 Preclinical Evaluation of an Innovative Hybrid Nano-Coated Ultrathin Nitinol Stent for Below-the-Knee Atherosclerotic Disease: "*Leave the Right Thing Behind*" Concept

○Terumitsu Hasebe[1,2,5)], Yukihisa Ogawa[1,2)], Shunto Maegawa[1,2)], Kenta Bito[1,2)], Shunsuke Kamei[1,2)], Yoko Usami[1,2,3)], Yutaka Okamoto[1,4)], Taku Ishikawa[1,4)], Emi Kearon Matsuoka[2)], Tomohiro Matsumoto[1)], Elazer R. Edelman[2,5)]

[1)] Tokai University Hachioji Hospital, Tokai University School of Medicine,
[2)] Global Vascular Co., Ltd., [3)] Saitama Medical University International Medical Center,
[4)] BIOZONE MEDICAL Co., Ltd.,
[5)] Institute for Medical Engineering and Science (IMES), the Massachusetts Institute of Technology (MIT) / Harvard-MIT Biomedical Engineering Center

【What's known?】
Below-the-knee (BTK) atherosclerotic lesions remain challenging to treat, with percutaneous transluminal angioplasty (PTA) yielding limited success. The LIFE-BTK study highlited the critical role of scaffolds in improving clinical outcomes. To address these challenges, we developed a Hybrid Nano-coated Nitinol Drug-eluting Stent (**Hybrid-DES**) incorporating an ultrathin-strut nitinol design (<120 microns), fluorinated diamond-like carbon (F-DLC) nano-coating, and a sirolimus-infused biodegradable polymer. This innovative design combines anti-thrombogenic and antiproliferative properties with the promotion of early endothelialization. Moreover, the F-DLC nano-coating minimizes metal ion release from the stent surface, further enhancing safety and performance.

【What's new?】
The *in vivo* effectiveness of **Hybrid-DES for BTK** lesions was assessed using a porcine stent-overexpansion model. Equipped with a 5Fr delivery system for easy access, the Hybrid-DES demonstrated minimal inflammation and optimal endothelial coverage at five days, comparable to coronary DESs. Over six months, it significantly reduced volume obstruction (21.1% vs. 51.6% for BMSs) while achieving full endothelial coverage without evidence of thrombus or inflammation. Additionally, a comparison with commercially available SFA DESs revealed that the Hybrid-DES exhibited superior performance. These findings highlight the potential of the Hybrid-DES as a groundbreaking solution for the treatment of challenging BTK lesions.



MO-66 Impact of cardiac function on the wound healing in patients with chronic limb threatening ischemia

○Sho Nakao[1)], Yosuke Hata[1)], Motoki Yasunaga[2)], Taku Toyoshima[2)], Hiroaki Nohara[3)], Akito Kawamura[3)], Haruya Yamane[4)], Kuniyasu Ikeoka[4)], Osamu Iida[2)], Yohei Sotomi[5)], Yasushi Sakata[5)]

[1)] Kansai Rosai Hospital Cardiovascular Center, [2)] Osaka Keisatsu Hospital Cardiovascular Division,
[3)] Osaka Rosai Hospital, [4)] NHO Osaka National Hospital,
[5)] Osaka University Graduate School of Medicine

【What's known?】
Whether impaired cardiac function (CF) was negatively collated with wound healing in patients with chronic limb threatening ischemia (CLTI) has not been well studied.

【What's new?】
This retrospective multicenter study enrolled 1804 limbs in 1406 patients undergoing endovascular intervention between April 2010 and March 2023. We compared 1-year wound healing rate between 703 limbs with impaired CF and 1101 limbs without. Impaired CF included patients with atrial fibrillation, reduced ejection fraction and past history of heart failure. Propensity score (PS) matching, inverse probability weighting (IPW) and multivariate Cox proportional hazard analysis were used to evaluate the effect of CF on the outcomes.
After PS matching, 1-year wound healing rate was significantly lower in the group with impaired CF compared with those without (47.8%±2.0% vs. 54.7±2.1%, p<0.001). The IPW analysis confirmed a significant association between impaired CF and delayed wound healing risk (adjusted hazard ratio [aHR] 0.83, P=0.008). Multivariate analysis revealed that impaired CF (HR 0.637, P<0.001) as well as body mass index<18.5, hemodialysis, non-ambulatory status, connective tissue disease, high WIfI classification and high GLASS inframalleolar classification were significantly associated with delayed wound healing. In conclusion, impaired CF was an independently associated with delayed wound healing in patients with CLTI.

MO-67 The prediction of Skin perfusion pressure value by toe blood flow pattern just after EVT in CLTI patients

○Kuniyoshi Fukai, Hirotsugu Yamamoto, Yusuke Takagi, Yoshito Minami, Masayuki Kikai, Tetsuro Hamaoka, Takuo Nakagami, Takeshi Shirayama

Omihachiman Community Medical Center

【What's known?】

In comprehensive severe chronic lower limb ischemia (CLTI), release of ischemia is an essential therapeutic process. But it is difficult to determine whether toe blood flow is sufficient immediately after revascularization. Here we show the association between Skin perfusion pressure (SPP) value and toe blood flow just after EVT.

【What's new?】

Between October 2021 and July 2024, among 345 limbs (233 cases) that could be evaluated using laser doppler flowmetry during catheter treatment, we identified CLTI 137 limbs (80 cases). We analyzed CLTI 107 limbs (61 cases) with SPP early phase at few days and late phase at about 1 week.

In SPP early increase group, the rate of toe blood flow increase and non-increase just after EVT was 72.7% vs 15.8%, $p<0.0001$. When SPP delayed increase group was included, the rates were 86.4% and 41.5%.

32 of 107 limbs (29.9%) experienced toe blood flow down just after EVT.

Increased toe blood flow immediately after EVT was strongly associated with early increase in SPP levels. But in 41.5% CLTI patients even if toe blood flow was monitored during EVT using a laser-doppler flowmetry, it is difficult to predict whether blood flow will gradually improve in the future.

MO-68 Risk Factors for Severe MAC in Patients with CLTI: A Multicenter Retrospective Study

○Yuichiro Hosoi[1)], Shuko Iwata[2)], Riho Suzuki[3)], Yuuki Tanaka[4)], Yutaro Kasai[1)], Go Takenouchi[5)], Tan Michinao[2)], Seizi Yamazaki[1)]

[1)] Sapporo Higashi Tokusyukai Hospital, [2)] Caress Memorial Hospital,
[3)] Sapporo City General Hospital, [4)] Sapporo Kosei General Hospital, [5)] Obihiro Tokusyukai Hospital

【What's known?】

Background

Chronic limb-threatening ischemia (CLTI) is associated with poor prognosis. The MAC score, recently introduced, is thought to predict lower limb events. While factors like age, diabetes, and dialysis contribute to vascular calcification, factors specifically associated with the MAC score remain poorly understood.

【What's new?】

Objective

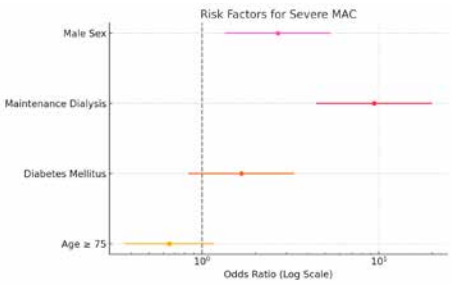
This study aimed to identify factors associated with severe MAC (MAC score 4–5) in CLTI patients undergoing below-the-knee (BTK) treatment.

Methods

This multicenter retrospective study included 318 CLTI patients aged over 20 years, classified as Rutherford category 5–6, presenting with inframalleolar disease, and treated with endovascular therapy (EVT) for below-the-knee arteries between January 2018 and August 2022. For bilateral CLTI, the more severe limb was analyzed.

Results

Multivariate analysis identified maintenance dialysis (odds ratio [OR]: 9.42, 95% confidence interval [CI]: 4.43–20.0, $p < 0.01$) and male sex (OR: 2.69, 95% CI: 1.35–5.32, $p < 0.01$) as independent factors for severe MAC



MO-69 Effectiveness of early revascularization with the “Indigo System” for femoropopliteal artery lesions

○Tomofumi Tsukizawa, Masahiko Fujihara, Yuko Yazu
Nozaki Tokushukai Hospital

【What’s known?】
The benefits of early revascularization using the newly introduced Indigo system for acute lower limb ischemia (ALI) in Japan remain uncertain.

【What’s new?】
We retrospectively analyzed 20 cases of acute limb ischemia (ALI) in the femoropopliteal artery treated with the Indigo system, comparing outcomes between early revascularization (within 48 hours) and late revascularization (beyond 48 hours). The primary outcome was the rate of technical success, defined as achieving TIMI grade 3 flow with no residual stenosis. All other outcomes were considered technical failures.
7 patients were enrolled as early group and 13 patients as late group. The mean age of patients was 80.0 years in the Early group and 72.6 years in the Late group.
The Early group had a 100% technical success rate, significantly higher than the Late group’s 38.5% (p=0.015). Procedure time was shorter in the Early group (53.6 vs. 78.0 minutes), and fewer guidewires (0.9 vs. 1.9, p=0.003) and balloons (1.4 vs. 2.9, p=0.006) were used. While lesion characteristics and device usage varied, in-hospital mortality, amputation rates, complications, and hospital stay length were similar.
Early revascularization with the Indigo system improves technical success and device efficiency, highlighting the importance of timely intervention in ALI cases.

MO-70 Association with Controlled Nutritional Status Scores and Bleeding Events in Lower Extremity Arterial Disease

○Takafumi Fujita
Fukuoka University School of Medicine

【What’s known?】
Controlled nutritional status (CONUT) score is an objective indicator of nutrition, which can influence clinical adverse events, such as cardiovascular events and bleeding events in patients with coronary artery disease. However, the association between bleeding events and malnutrition in patients with LEAD remains unclear. Therefore, we evaluated the association between CONUT score and bleeding events in patients with LEAD.

【What’s new?】
The current retrospective single-center study (n=224) compared the bleeding event between high CONUT group and low CONUT group in LEAD patients who underwent EVT. Median follow-up duration was 934 days. The high CONUT group had significantly higher cumulative bleeding events than the low CONUT group. The cutoff value of the CONUT score was 4 based on the ROC curve. Univariate analysis revealed that patients with a high CONUT score over 4 points, CLTI, non-ambulatory, high serum CRP, and CKD on hemodialysis had significantly more bleeding events than those with low CONUT scores. In conclusion, a high CONUT score at admission is closely associated with bleeding events in patients with LEAD.

MO-71 Effectiveness of Percutaneous Deep Venous Arterialization for Recalcitrant Heel Ulcers Following Failed Revascularization of Target Below-the-Knee Arterial Lesions

○Tomonari Takagi

Takatsu General Hospital

【What's known?】
Recalcitrant heel ulcers in patients with peripheral vascular disease pose a significant risk of major amputation when below-the-knee (BTK) revascularization fails. At our institution, percutaneous deep venous arterialization (pDVA) has been explored as a therapeutic option. This study aimed to evaluate its efficacy and safety.

【What's new?】
We analyzed 11 cases of recalcitrant heel ulcers with failed BTK revascularization, treated with pDVA between May 2021 and June 2024. The mean age was 64.5 years; 72.7% were male, 81.8% had diabetes mellitus, 90.9% were on maintenance dialysis, and 90.1% had WIfI Grade 3 heel wounds. Arteriovenous fistulas were predominantly created at the ankle using the VAST technique, with 10 cases involving the posterior tibial artery and 1 involving the anterior tibial artery. The DVA route was created using balloon angioplasty alone, without stent placement.
The results showed a complete wound healing rate of 72.7% and a freedom from major amputation rate of 72.7% over a mean follow-up of 216.9 ± 96.6 days. These findings suggest that pDVA is both effective and safe for treating recalcitrant heel ulcers in patients with failed BTK revascularization.

MO-72 Intravascular ultrasound-derived virtual fractional flow reserve in the superficial femoral artery

○Takenobu Shimada[1)], Yoshihiro Iwasaki[2,3)], Atsushi Funatsu[2)], Tomoko Kobayashi[2)], Shigeru Nakamura[2)], Daiju Fukuda[1)]

[1)] Osaka Metropolitan University Graduate School of Medicine, [2)] Kyoto Katsura Hospital, [3)] Omi Medical Center

【What's known?】
Virtual fractional flow reserve (FFR) can be estimated from any imaging modality in a coronary artery; however, there are no data about virtual peripheral FFR (PFFR) in an extremity artery.

【What's new?】
We analyzed intravascular ultrasound (IVUS) images of 6 diseased superficial femoral arteries (SFAs) in which PFFR was measured simultaneously under a hyperemic condition. IVUS-derived PFFR was calculated be using the equation $\Delta P = FV + SV^2$. The values of F and S were calculated by analysis of IVUS images, and V is blood velocity calculated on the basis of the time-averaged mean velocity examined by duplex ultrasound by using the stenotic flow reserve concept.
The values of IVUS-derived PFFR and actual PFFR were similar in five cases: 0.73 and 0.72, 0.87 and 0.92, 0.90 and 0.92, 0.66 and 0.73, and 0.79 and 0.72, respectively. In one case in which run-off of the below-the-knee artery was poor, PFFR (0.91) was higher than the IVUS-derived PFFR (0.73).
Virtual PFFR in an SFA can be estimated from IVUS image analysis.

MO-73 Clinical outcome of drug coated balloon for femoropopliteal artery disease with cacification

○Ryuichiro Imai, Shuichi Seki
Chikamori Hospital

【What's known?】
The purpose of this study was to evaluate clinical outcomes of drug coated balloon for femoropopliteal artery disease with calcification(PACCS grade 3 or 4)

【What's new?】
Retrospective study was performed of 157 patients(183 lesions) who underwent EVT for femoropopliteal arteries presented from November 2017 to December 2023. The mean age of the patients was 75 ± 10years old and 63% of the patients were male, 64% of the patients had diabetes mellitus, 54% had renal failure on dialysis and 34% had chronic lime-threating ischemia. 41% of the lesions were classified as C/D according to TASCIIclassification. 29% of the lesions were chronic total occlusion(CTO). Mean lesion length was 145mm. Primary patency rate at 1 year were 75.9%(PACCS grade 3 or 4) and 82.8%(PACCS grade 0-2) respectively ($P<0.01$)
Conclusion: This study demonstrated that femoropopliteal artery disease with higher calcification grades had significantly lower primary patency rates than femoropopliteal artery disease with lower calcification grades

MO-74 What are the characteristics of patients who develops ischemic wounds on the opposite side of lower extremity during 2 years after EVT for one side ischemic wounds?

○Eiji Karashima, Keiichiro Kishikawa, Takeshi Arima, Takehiro Noda, Shioto Yasuda, Takeo Kaneko
Shimonoseki City Hospital

【What's known?】
Recently, EVT is often performed for the LEAD patients with ischemic wounds. During follow-up, ischemic wounds occur on the opposite side of EVT in some patients. However, it is not well understood in which patients this phenomenon occurs. We thus try to investigate the characteristics of patients with the ischemic wounds occur on the opposite side of EVT during the 2 years follow-up after EVT.

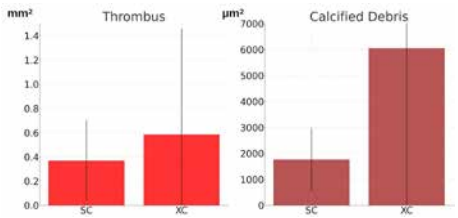
【What's new?】
During the 2017 and 2022, EVT was performed to the 80 LEAD patients with ischemic wounds in our hospital. When bilateral wound was observed at the time of first medical examination, the case was excluded. The ischemic wounds occur on the opposite side of EVT during the 2 years follow-up was shown in the 16 patients (Bilateral group), and others were not ($n = 52$, Unilateral group). Even there are no significant difference between the groups in hypertension, diabetes, dislipidemia, smoking, and ABI. However, the rate of dialysis was significantly higher in the Bilateral group.
From the finding of our study, more careful follow-up of lower extremities even to the opposite side of EVT may help to reduce the incidence of ischemic wounds especially in the dialysis patients.

MO-75 The difference in aspiration particle size depending on the size of the JET STREAM

○Yui Takaiwa, Hideaki Aihara, Masayoshi Ozawa, Atsushi Uchida, Kazunori Kikuchi
Tsukuba Medical Center Hospital

【What's known?】
The JETSTREAM system is useful for lesion modification in highly calcified lesions.
This device reduces distal embolization by ablating the lesion while continuously releasing saline solution and aspirating through its tip.
However, there are no previous reports on the difference in aspirated particle size among the four different JETSTREAM sizes.

【What's new?】
This study examined debris collected in suction bags from 13 patients treated with the JETSTREAM system (2022–2023). Device sizes used were SC (6 cases) and XC (12 cases). Debris was filtered, paraffin blocks prepared, and sections HE-stained. The sizes of the thrombus and calcified debris were measured, and averages were calculated.
Thrombus sizes were 0.37 ± 0.33 mm^2 (SC) and 0.59 ± 0.87 mm^2 (XC), while calcified debris sizes were 1770 ± 1220 μm^2 (SC) and 6060 ± 7190 μm^2 (XC). Although not statistically significant, XC tended to collect even larger thrombus and calcified debris. Calcified debris was smaller than thrombus overall, suggesting that larger calcified debris may be challenging to aspirate with the system.



MO-76 The plaque characteristics of drug-coated balloon restenoticfemoropopliteal lesions compared with de novo lesionsusing optical frequency domain imaging

○Kazuki Takata, Amane Kozuki, Yoichi Kijima, Ryoji Nagoshi, Yoshiro Tsukiyama, Yusuke Fukuyama, Shunsuke Kakizaki, Junya Shite
Osaka Saiseikai Nakatsu Hospital

【What's known?】
Background: The patency rate of drug-coated balloon (DCB) treatment for femoropopliteal (FP) DCB restenosis has been reported to be worse compared with treatment for de novo lesion. The mechanism of this poor patency is unknown. The aim of the study was to evaluate the plaque characteristics of FP DCB restenotic lesions using optical frequency domain imaging (OFDI).Method:The de novo and DCB restenotic FP lesions underwent OFDI guided EVT were enrolled. The plaque characteristics of minimal lumen area was evaluated. The plaque was classified to fibrous, lipid, calcium,layered or disrupted. Disrupted plaque was defined as a plaque with the evidence of discontinuation of the surface.

【What's new?】
Among 119 lesions enrolled, 15 lesions were DCB restenosis and 104 lesions were de novo.The frequency of disrupted plaque was significantly and remarkably greater in DCB restenosis lesions (53% vs 1.9%, $p<0.05$).
Conclusion: The plaque characteristics of FP DCB restenotic lesions were apparently different from de novo lesions. Disrupted plaque was frequently observed in DCB restenotic lesions.

MO-77 Pathological Evaluation of Early Failure in Below-the-Knee Lesions After Balloon Angioplasty

○Manabu Shiozaki, Sho Torii, Norihito Nakamura, Yuki Matsumoto
Tokai University

【What's known?】

Background

Risk of restenosis after balloon angioplasty for below-the-knee (BTK) arteries is high, as balloon angioplasty is the only treatment options for BTK arteries. However, the cause of restenosis in BTK arteries has not been pathologically evaluated before.

Methods

Twenty BTK arteries after balloon angioplasty from 19 patients who underwent autopsy or lower limb amputation were assessed. In total of 683 histological sections were evaluated, which were separated with acute phase or late phase. Restenosis was defined as sections with >75% stenosis. Restenotic lesions were demonstrated in 370 sections (54.7%). Acute phase was defined within 7 days and late phase was over 8 days after treatment (median follow-up days, 6 (5-6) vs 35 (21-140)).

【What's new?】

Results

The number of sections in acute and late phase was 111 and 259, respectively. Pathological evaluation revealed that sections with r demonstrated higher prevalence of intimal dissection (82.9% vs 42.5%). On the other hand, prevalence of and progressive plaque was lower in sections (21.6% vs 46.3%, 33.3% vs 50.2%).

Conclusions

The current study demonstrated that intimal dissection was associated with early restenosis suggesting possibility of using scoring balloon for each BTK arteries to prevent intimal dissection.

MO-78 Impact of Lipid-rich Plaques in Femoropopliteal Artery on Limb Outcomes in Patients Receiving Endovascular Therapy

○Yusuke Sato
University of Fukui

【What's known?】

Background: A lipid-rich plaque (LRP) detected using near-infrared spectroscopy-intravascular ultrasound (NIRS-IVUS) is related to increased major adverse cardiovascular events in patients with coronary artery disease. However, the impacts of LRP in the femoropopliteal artery (FPA) on limb outcomes remain underexplored.

【What's new?】

Methods: This single-center prospective observational study included 37 patients (median age, 75.6 years; male, 75.6%; diabetes mellitus, 61.1%; dialysis, 22.2%) who underwent endovascular therapy for femoropopliteal disease between July 2022 and October 2024. NIRS-IVUS assessment was performed on the entire femoropopliteal arterial segment. The participants were divided into LRP (n=13) and non-LRP (n=24) groups for comparison. LRP was defined as a maximum lipid-core burden index in any 4-mm region (max-$LCBI_{4mm}$) >400. The primary outcome was major adverse limb event (MALE) at 12 months, which consisted of target-vessel revascularization, acute limb ischemia, and major amputation.

Results: The patients in the LRP group had a significantly lower 12-month MALE-free survival rate than those in the non-LRP group (log-rank p=0.01). LRP was also related to a worse 12-month MALE-free survival rate (HR, 10.1; 95% CI, 1.2-87.1; p=0.04).

Conclusions: The LRP in FPA was associated with poor 12-month MALE-free survival in patients undergoing endovascular therapy for femoropopliteal disease.

MO-79 Impact of Ultrasound-Guided Popliteal Sciatic Nerve Block in Endovascular Treatment Procedures for Chronic Limb-Threatening Ischemia

○Kunihiko Nishian, Masashi Fukunaga, Ryoko Nakamura, Machiko Nishimura, Reiko Fujiwara, Daizo Kawasaki

Morinomiya Hospital

【What's known?】

Although the usefulness of popliteal sciatic nerve block (PSNB) during endovascular treatment (EVT) for Chronic Limb-Threatening Ischemia (CLTI) in pain management has been reported, the impact of PSNB on EVT procedures is unknown.

【What's new?】

Aim: To evaluate the impact of PSNB for EVT.

Methods: PSNB was initiated in our institution from April 2023, defined as phase-1 before the introduction of PSNB (before April 2023) and as phase-2 after the introduction of PSNB (April 2023-December 2024). We analysed retrospectively 248 patients who underwent PSNB during EVT for isolated below-the-knee (BTK) lesions in phase-2. Of these, 30 limbs in 21 patients who underwent EVT during both periods were enrolled. Contrast dose, radiation dose, and procedure time were compared between phase-1 and phase-2.

Results: All procedures were successfully performed without any complications. Contrast dose and radiation dose were significantly lower in phase-2 than that in phase-1 (107 ± 41 cc vs 77 ± 30 cc; $p<0.01$, 172 ± 184 mGy vs 111 ± 93 mGy; $p=0.044$). Procedure time was also significantly shorter in phase-2 than that in phase-1 (63 ± 37 min vs 44 ± 17 min; $p=0.033$).

Conclusion: PSNB was very easy and safe. This technique was a very useful for patients with CLTI during EVT procedure to reduce their burden.

MO-80 Impact of Anemia on Long-term Clinical Outcomes after Endovascular Treatment for Lower Extremity Peripheral Artery Disease

○Yuji Ono[1)], Yuichi Saito[2)], Norikiyo Oka[3)], Masayuki Takahara[4)], Sakuramaru Suzuki[5)], Raita Uchiyama[5)], Kayo Yamamoto[2)], Yo Iwata[3)], Yoshio Kobayashi[2)]

[1)] Japanese Redcross Narita Hospital, [2)] Chiba University Graduate School of Medicine, [3)] Funabashi Municipal Medical Center, [4)] Kimitsu Central Hospital, [5)] Japan Community Health Organization Chiba Hospital

【What's known?】

Background: Although associations of anemia with adverse outcomes after peripheral vascular open surgery have been reported, the prognostic impact on major adverse cardiovascular and limb events (MACLE) after endovascular treatment (EVT) remains unclear.

【What's new?】

Methods: This multicenter study included 828 patients undergoing EVT for aortoiliac and femoropopliteal peripheral artery disease from January 2019 to December 2023. The receiver operating characteristic (ROC) curve analysis was employed to determine the best cut-off value of preoperative hemoglobin, and multivariable analysis was performed to identify factors associated with MACLE.

Results: During the median follow-up of 726 days, MACLE occurred in 367 (55.7%) patients. The ROC curve analysis showed that hemoglobin levels were predictive of MACLE (area under the curve 0.62, best cut-off value 11.8 g/dL, $p<0.001$). Multivariable analysis identified preoperative anemia as an independent factor associated with MACLE (hazard ratio 1.60, 95% confidence interval 1.24-2.06, $p<0.001$). In the ROC curve analysis, preoperative hemoglobin had a greater prognostic value for all-cause death and major cardiovascular events than for major limb events (area under the curve, 0.67, 0.60, and 0.54, respectively).

Conclusions: Preoperative anemia was independently associated with long-term outcomes, particularly for mortality and major adverse cardiovascular events, in patients with PAD undergoing EVT.

MO-81 The Utility of IVUS Evaluation in addition to the Conventional Risk Factors for Predicting Restenosis after EVT using DCB in Femoropopliteal Artery Lesions

○Hiroaki Akai, Kazunori Horie, Akiko Tanaka, Hiromasa Okada, Naho Itou, Norio Tada

Department of Cardiovascular Medicine, Sendai Kousei Hospital

【What's known?】
POPCORN study showed risk factors for 1-year restenosis after EVT using DCB for femoropopliteal lesions. IVUS evaluation was not included in POPCORN study.

【What's new?】
This study sought to investigate whether IVUS endpoints could predict the incidence of restenosis after DCB treatment, independent from the POPCORN risk scores.We reviewed retrospectively consecutive 147 femoropopliteal lesions treated with IVUS-guided EVT using DCB between 2021 and 2023.We assessed the association between 1-year restenosis and sufficient post-procedural lumen area measured by IVUS, in addition to the POPCORN risk score, including no BTK runoff, history of EVTs, distal RVD under 5mm, PACSS grade 4, CTO, popliteal segments, low-dose DCB and residual stenosis.The sufficient lumen area was defined as that more than 12.7mm^2.The rate of CLTI, CTO and hemodialysis were 24%, 48% and 18%, respectively.Restenosis was found in 38 lesions (26%) at 1 year.The Cox multivariate analysis showed that the POPCORN risk score was the independent predictor for restenosis (HR 1.53, per 1.0, P=0.006), whereas sufficient lumen area was protective against restenosis (HR 0.35, P = 0.006)IVUS evaluation might be associated with onset of restenosis after DCB treatment independent from the classical risk factors.

MO-82 Predictors of recurrent restenosis after repeat drug-coated balloon therapy for drug-coated balloon restenosis in femoropopliteal lesions: results of the RECURRENCE study

○Takashi Yanagiuchi[1)], Kuniyoshi Fukai[2)], Koji Sogabe[3)], Yoshihiro Iwasaki[4)], Taku Kato[5)], Shunpei Ushimaru[1)], Hirokazu Yokoi[1)]

[1)] Rakuwakai Otowa Hospital, [2)] Omihachiman Community Medical Center,
[3)] Kyoto Saiseikai Hospital, [4)] Omi Medical Center, [5)] Japanese Red Cross Kyoto Daiichi Hospital

【What's known?】
Despite the widespread use of drug-coated balloons (DCBs) for femoropopliteal (FP) lesions, there is still no consensus on treatment strategies for DCB restenosis.

【What's new?】
This study aimed to determine the risk factors for recurrent restenosis after repeat DCB therapy for DCB restenosis in FP lesions. This multicenter and retrospective study included 118 consecutive limbs of 104 patients treated via repeat DCB for primary DCB restenosis in FP lesions between May 2018 to Dec 2022. The Kaplan-Meier estimate of freedom from recurrent restenosis was 74.6 % at 1 year. The Cox proportional hazard multivariate analysis revealed that recurrent restenosis was independently associated with the time from initial DCB to primary restenosis (hazard ratio [HR], 0.85; p<0.001), history of EVT≥2 (HR, 3.11; p=0.007), and PACSS grade≥3 severe calcification (HR, 2.76; p=0.023). Furthermore, receiver operating characteristic curve analysis showed that the cutoff value of the time from initial DCB to primary restenosis to prevent recurrent restenosis was 12.6 months, with an area under the curve of 0.841 (p<0.001). Repeat DCB treatment for restenosis lesions may be an acceptable strategy especially for the restenosis more than 12.6 months after initial DCB treatment in regard to 1-year recurrent restenosis.

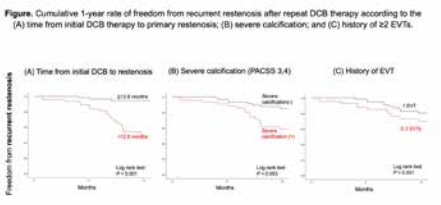


Figure. Cumulative 1-year rate of freedom from recurrent restenosis after repeat DCB therapy according to the (A) time from initial DCB therapy to primary restenosis; (B) severe calcification; and (C) history of ≥2 EVTs.

MO-83 Association of lipoprotein (a) and major adverse cardiovascular events in patients with peripheral artery disease

○Shigeyasu Tsuda
Kita-Harima Medical Center

【What's known?】
Lipoprotein(a) (Lp(a)) is known to be increased in patients with atherosclerotic disease compared to healthy controls. Higher levels of Lp(a) are associated with the increased risk of cardiovascular disease.

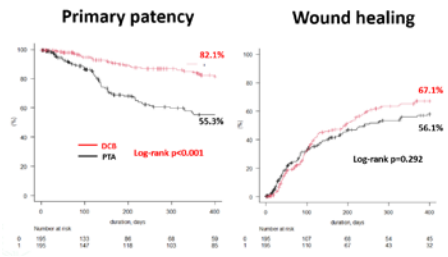
【What's new?】
The association of the Lp(a) and major adverse cardiovascular events (MACE) in PAD patients is not well understood.A total of 113 patients who underwent EVT from April 2020 to March 2022 for 2 years in our hospital were enrolled. Mean age was 68.4 years old. Rutherford 2-3 were 41.6% (N=47), Rutherford 4 was 7% (N=8), Rutherford 5 was 37.2% (N=42), and Rutherford 6 was 14.2% (N=16). The percentage of all-cause mortality was 18.6% (N=21), myocardial infarction was 12.4% (N=14), and hospitalization for heart failure was 23.9% (N=27). When the cutoff value of Lp(a) defined as 30 mg/dL, there was no significant difference in MACE incidence between the high and low Lp(a) groups (54.9% vs. 41.9%), but when the cutoff was 50 mg/dL, the incidence of MACE was significantly higher in the high Lp(a) group compared to the low Lp(a) group (66.6% vs. 38.5%, $p<0.05$).
In PAD patients with higher levels of Lp(a), aggressive lipid lowering therapy or introduction of cardioprotective drugs may be necessary.

MO-84 The clinical impact of endovascular treatment with drug-coated balloon for femoropopliteal lesion in patients with chronic limb threatening ischemia

○Haruya Yamane[1)], Yosuke Hata[2)], Osamu Iida[3)], Taku Toyoshima[3)], Motoki Yasunaga[3)], Hiroaki Nohara[4)], Akito Kawamura[4)], Kuniyasu Ikeoka[1)], Toshiaki Mano[2)], Yohei Sotomi[5)], Yasushi Sakata[5)]
[1)] National Hospital Organization Osaka National Hospital, [2)] Kansai Rosai Hospital, [3)] Osaka Keisatsu Hospital, [4)] Osaka Rosai Hospital, [5)] Osaka University Graduate School of Medicine

【What's known?】
The clinical benefit of endovascular therapy (EVT) with drug-coated balloons (DCBs) for femoropopliteal (FP) lesions in chronic limb-threatening ischemia (CLTI) patients remain unknown.

【What's new?】
This is a sub-analysis of the multicenter, retrospective, observational study. CLTI patients with tissue loss who underwent EVT for FP lesion with either DCBs or standard percutaneous transluminal angioplasty (PTA) were enrolled. Patients were classified into DCB or PTA group. Clinical outcomes were assessed by primary patency and wound healing using propensity score matching. A total of 701 limbs in 522 CLTI patients were included in this study. After propensity score matching, 195 limbs were assigned to each group. The 1-year primary patency was higher in DCB group than in PTA group (82.1% vs. 55.3%; hazard ratio [HR]: 0.45; 95% confidence interval [CI]: 0.30-0.66, $p<0.001$). However, wound healing rate were not significantly difference between two groups (67.1% vs. 56.0%; HR: 1.16; 95% CI: 0.89-1.52, $p=0.29$). Interaction analysis showed DCB use was particularly beneficial in patients with severe wound grades in Wound, Ischemia, and foot Infection classification (P for interaction=0.01). In conclusion, DCB use improved primary patency but did not affect overall wound healing rates. DCBs may be beneficial for patients with severe wounds.



MO-85 Comparison Between Full-Covered Stenting and Combination of Drug-Eluting stent and Drug-Coated Balloon for Femoropopliteal Chronic Total Occlusions

○Narumi Taninobu

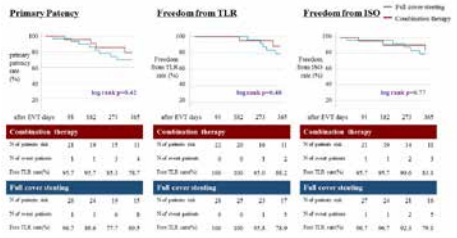
Kurashiki Central Hospital

【What's known?】

The clinical outcome of combination therapy using drug-eluting stent (DES) and drug-coated balloon (DCB) remains unclear.

【What's new?】

We aimed to estimate of clinical outcomes of full-covered stenting (FCS) using DES and combination therapy using DES and DCB with intraluminal wiring for femoropopliteal (FP) chronic total occlusion (CTO) lesions.
We included 60 patients who underwent endovascular treatment (EVT) using DES and DCB for FP CTO lesions between January 2019 and October 2023. We divided the patients into two groups: FCS and combination therapy group. The primary outcomes was the cumulative incidences of primary patency, freedom from target lesion revascularization (TLR) and in-stent occlusion (ISO) at 1 year after EVT.
Of the 60 patients, 27 patients were in FCS. All cases were assessed by intravascular ultrasound, all guidewires passed through intraplaque. The primary outcomes was shown in Figure. The rate of aneurysmal degeneration was not significantly different between the two groups (FCS group 6.3% vs. combination therapy 3.7%. p=0.657). The rates of primary patency and freedom from TLR and ISO at 1 year after EVT was not significantly different between the FCS group and the combination therapy group in FP CTO lesions.



MO-86 Three-year clinical outcomes of drug-coated balloons versus drug- eluting stents for femoropopliteal artery lesions

○Kazunori Mushiake

Kurashiki Central Hospital

【What's known?】

Methods: Between January 2019 and June 2021, 149 consecutive patients undergoing initial EVT for femoropopliteal artery lesions were retrospectively analyzed. They were classified into those who received DES and those who underwent only DCB treatment.
The primary endpoint was a composite of all-cause death, Bleeding Academic Research Consortium type 3 or 5 bleeding and target lesion revascularization (TLR) within 3 years of EVT.
Result: Of 149 patients, 17 (12%) were divided into the DES group. There was no significant difference in the composite endpoint among the two groups (44.1% vs 64.9%, log-rank p=0.345). The cumulative incidence of all cause death and bleeding were respectively similar in the two groups. (27.7% vs 22.2% log-rank p=0.51: 10.8% vs 0% log-rank p=0.21)
Conclusion: The DES treatment are not associated with higher all cause death, major bleeding, and but the TLR rate was significantly higher than the DCB group.

【What's new?】

Recently, DES has become available for the treatment of SFA, and the duration of antiplatelet therapy tends to be prolonged. While the risk of bleeding is expected to increase, there are very few date regarding the clinical outcome, including its safety.

MO-87 Mid-term clinical outcomes of drug coated balloon versus scaffold in patients with chronic total occlusion of the femoropopliteal artery

○Natsumi Yanaka, Yotaro Fujii, Atsuya Murai, Yusuke Setonaga, Toshihiko Kishida, Tomoya Fukagawa, Kohei Yamaguchi, Masakazu Tsutsumi, Shinsuke Mori, Norihiro Kobayashi, Yoshiaki Ito

Saiseikai Yokohama City Eastern Hospital

【What's known?】

In a preceding study, it was reported that short-term results of DCB were comparable with scaffold for treatment of chronic total occlusion (CTO) of femoropopliteal lesions.

【What's new?】

This study was aimed to compare mid-term results of DCB and scaffold for treatment of femoropopliteal lesions with chronic total occlusion.

Method

We performed retrospective, single center and observational study. Between January 2018 and December 2021, 95 femoropopliteal lesions with CTO were treated by DCB or scaffold. 53 lesions were treated by DCB, and 42 lesions were treated by scaffold. Primary endpoint was primary patency at 3 years. Secondary endpoints were freedom from re-occlusion and freedom from target lesion revascularization (TLR) at 3 years.

Result

Patient characteristics and lesion characteristics were similar between the groups. Primary patency at 3 years were 52% in DCB and 68% in scaffold group (p=0.06) without significant difference. There was no significant difference in re-occlusion rate at 3 years (83% vs. 83%, p=0.80). Freedom from TLR (61% vs. 84%, p=0.014) were better in scaffold group.

Conclusion

Primary patency and freedom from re-occlusion at 3 years were comparable between DCB and scaffold for treatment of CTO of the femoropopliteal artery. However, freedom from TLR were better in scaffold group.

MO-88 Appropriate PSVR values as an assessment of recurrence after the Balloon/DCB treatment for femoral popliteal artery lesions

○Ryoko Nakamura, Kunihiko Nishian, Machiko Nishimura, Reiko Fujiwara, Masashi Fukunaga, Daizo Kawasaki

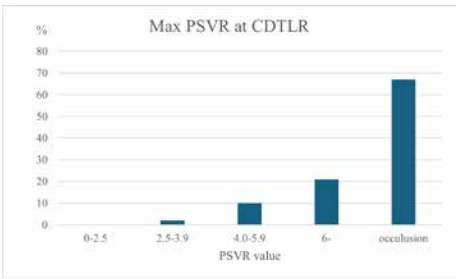
Morinomiya Hospital

【What's known?】

The peak systolic velocity ratio (PSVR) value obtained by duplex examination has been used in various clinical trials as an indicator of patency after endovascular treatment (EVT) of femoral popliteal artery (FPA) lesions. However, the PSVR values clinically may meet the criteria for restenosis without worsening clinical symptoms or reduction in ABI. In recent years, EVT using Drug-coated balloon without stent has been the main strategy of EVT for FPA lesions, and it is not clinically appropriate to use a PSVR of 2.4 or higher, which has been used as an indicator of restenosis for stent strategy.

【What's new?】

In the present study, we investigated to find the appropriate PSVR value as an index of recurrence after EVT without stent for FPA lesions. We retrospectively analyzed 1005 patients who underwent EVT for FPA lesions at MORINOMIYA hospital between January 2021 and December 2023. Of the 524 patients who did not meet the exclusion criteria, 68 patients underwent clinically driven target lesion revascularization (CD-TLR). We examined the distribution of PSVR values at the time of CD-TLR in 52 patients, excluding 16 who did not undergo duplex examination. The results are presented in the table, and further statistical discussion is reported.

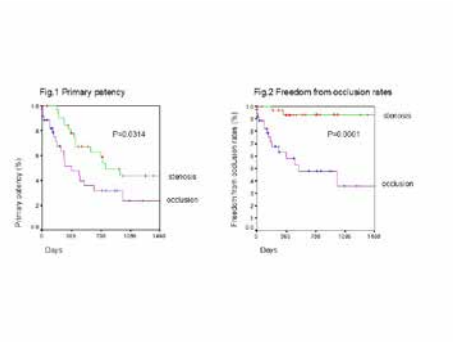


MO-89 Clinical outcomes of revascularization for in-stent restenosis and occlusion after drug eluting stent implantation

○Ayaka Yu, Kenji Suzuki, Kyosuke Hosokawa, Kentaro Matsubara, Hirohisa Harada
Tokyo Saiseikai Central Hospital

【What's known?】
In-stent restenosis (ISR) and occlusion (ISO) after stenting is an important problem. The course of revascularization after drug-eluting stent (DES) implantation is unclear.

【What's new?】
We retrospectively analyzed 71 patients underwent revascularization after DES implantation between 2017 and 2021 from BEASTARS registry.
The mean age was 74.1 years old, 44 cases (62.0%) were male. Forty-five cases (63.4%) received Eluvia implantation and 26 cases (36.6%) received Zilver PTX implantation. The mean lesion length was 221.4 mm, 35 cases (49.3%) were stenotic and 36 cases (50.7%) were occluded. Figure shows the primary patency and the freedom from occlusion rates in stenotic and occluded cases: the primary patency up to 4 years was higher in stenotic cases (44% vs 24%, p=0.0314). Larger significant differences in freedom from occlusion rates were observed between the two groups. (93% vs 36%, p=0.0001).
Not only the primary patency but also the freedom from occlusion rates was significantly different between ISR and ISO after DES implantation. It may be better to consider bypass surgery in ISO cases instead of repeat EVT.



MO-90 Predictive value of Lp (a) for clinical driven target lesion revascularization after endovascular therapy

○Takeo Horikoshi, Toshiki Takei, Toru Yoshizaki, Tsuyoshi Kobayashi, Akira Sato
University of Yamanashi

【What's known?】
Background: Lipoprotein(a) [Lp(a)] is linked to atherosclerotic diseases, but its effect on outcomes after endovascular therapy (EVT) for lower extremity artery disease (LEAD) is limited. This investigation assessed the influence of Lp(a) on clinically driven target lesion revascularization (CD-TLR) in patients undergoing EVT.
Methods: This study included 209 consecutive LEAD patients who underwent EVT at the University of Yamanashi Hospital between 2011 and 2024, followed for 2 years or until an event. The primary endpoint was CD-TLR. Inverse probability weighting (IPW) analysis adjusted for patient characteristic differences between TLR and non-TLR groups.
Results: After weighting adjustment, 436 patients were analyzed. During follow-up, 210 events occurred post-weighting adjustment. Multivariable analysis with weighting correction showed Lp(a) as an independent predictor of CD-TLR (HR: 1.021, 95% CI: 1.008-1.033, p=0.001).
Conclusions: Elevated Lp(a) levels independently predicted future CD-TLR after EVT in patients, suggesting Lp(a) as a useful biomarker for risk stratification and management in EVT patients.

【What's new?】
This study evaluated the impact of Lp(a) on clinically driven target lesion revascularization (CD-TLR) in LEAD patients undergoing endovascular therapy (EVT). Inverse probability weighting (IPW) analysis adjusted for characteristic differences between TLR and non-TLR groups. Multivariable analysis with weighting correction identified Lp(a) as an independent predictor of CD-TLR.

MO-91 Impact of a Hybrid Vascular Service on Endovascular Intervention: Preliminary Data from a Regional Health Service

○Shahzad Sadiq[1,2], Hansraj Riteesh Bookun[3]

[1] University Hospital Geelong, Barwon Health, Victoria, Australia.,
[2] School of Medicine, Deakin University, Victoria, Australia,
[3] Ballarat Base Hospital, Grampians Health, Victoria, Australia

【What's known?】
Historically, patients in regional areas, such as Ballarat, requiring complex endovascular interventions faced delays in care due to the need for referrals to metropolitan tertiary care centres. These delays arose from a lack of advanced infrastructure and personnel in regional health services, which limited their ability to provide timely, advanced vascular procedures locally.

【What's new?】
This retrospective observational study showcases the establishment of a hybrid vascular service in a regional setting, addressing long-standing challenges in access to advanced vascular care. By enabling complex procedures to be performed locally, such as endovascular aortic repairs and pedal reconstructions, the service significantly reduced referrals to metropolitan centres. It demonstrated improved patient outcomes, including reduced wait times, shorter lengths of stay, and lower complication rates and 30-day mortality. The study also highlights the broader benefits of decentralised care, such as fostering skill development, enhancing multidisciplinary collaboration, and strengthening emergency readiness. This initiative marks a significant step toward equitable healthcare delivery in regional settings, demonstrating the potential of strategic investments in infrastructure and training to transform patient care in underserved areas.

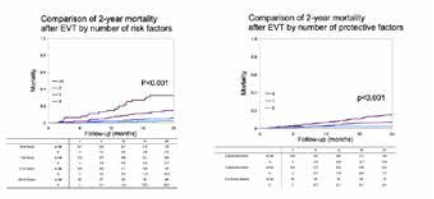
MO-92 Prognostic Factors Associated with 2-year Mortality in Patients with Intermittent Claudication Treated with Endovascular Therapy for Femoropopliteal Lesions: LEADers-FP Study

○Tatsuro Takei[1], Takahiro Tokuda[2], Naoki Yoshioka[3], Kenji Ogata[4], Shunsuke Kojima[5], Tatsuya Nakama[5]

[1] Tenyoukai Central Hospital, [2] Nagoya Heart Center, [3] Ogaki Municipal Hospital,
[4] Miyazaki Medical Association Hospital, [5] Tokyo Bay Urayasu Ichikawa Medical Center

【What's known?】
Few studies have evaluated the midterm prognosis of patients with intermittent claudication who underwent endovascular therapy (EVT) for femoropopliteal lesions. Therefore, we aimed to assess 2-year mortality and prognostic factors in these patients.

【What's new?】
We retrospectively analyzed 947 patients who underwent EVT for intermittent claudication between January 2018 and December 2021 at eight Japanese cardiovascular centers. Kaplan–Meier survival analysis was performed for mortality, and prognostic factors were analyzed using the Cox proportional hazards regression model. Patient backgrounds and medications were included in the investigation of prognostic factors. Notably, 79 deaths occurred during the mean follow-up period of 20.9 ± 6.2 months. The 2-year mortality rate was 9.1%. In multivariate analysis, body mass index (BMI) <18.5kg/m^2 ($p<0.001$), coronary artery disease (CAD) ($p<0.001$), dialysis ($p<0.001$), and ankle-brachial pressure index (ABI) <0.6 ($p=0.012$) were risk factors. Statins and cilostazol were protective factors ($p=0.014$ and $p=0.036$, respectively). When the study population was stratified based on the number of these risk factors, the mortality rate was highest (32.5% at 2 years) in patients with at least three risk factors. However, when stratified according to protective factors, the mortality rate was lowest in patients with two protective factors (2.1% at 2 years).



MO-93 Impact of balloon type for of vessel preparation on procedural outcomes in drug-coated balloon angioplasty for long femoropopliteal lesions

○Masanaga Tsujimoto, Takuya Haraguchi, Tsutomu Fujita
Sapporo Cardio Vascular Clinic

【What's known?】
Drug-coated balloon (DCB) angioplasty has shown favorable outcomes in femoropopliteal lesions. However, previous studies have reported that longer lesions are associated with a higher bailout stenting rate in DCB angioplasty. Successful vessel preparation is crucial for DCB angioplasty but the optimal balloon type for vessel preparation in long lesion remains unclear.

【What's new?】
This retrospective single-center observational study enrolled 315-patients (429-limbs). The patients underwent DCB angioplasty combined with specialty balloon (148-patients, 211-limbs) or non-compliant balloon (167-patients, 218-limbs) without the use of bailout stenting and atherectomy devices for long femoropopliteal lesions (lesion length ≥150-mm [TASCII C,D]). The primary endpoint was technical success (residual stenosis ≤50 % and dissection ≤Type C following vessel preparation) and the secondary endpoint was procedural success (residual stenosis ≤30 %, dissection ≤Type C, and no perioperative complications following DCB angioplasty). No significant differences were observed between both groups in terms of patient and lesion characteristics. The specialty balloon group demonstrated significantly higher technical success rate (80.6 % vs. 72.0 %, p=0.041) and procedural success rate (82.5 % vs. 71.6 %, p=0.008) compared to the non-compliant balloon group. The specialty balloon showed superior effectiveness in vessel preparation for DCB angioplasty of long lesions, compared to the non-compliant balloon.

MO-94 Predictors of Wound Recurrence after Wound Healing in Patients with Chronic Limb-Threatening Ischemia

○Kazuho Ukai[1)], Haruya Yamane[1)], Kuniyasu Ikeoka[1)], Yosuke Hata[2)], Taku Toyoshima[3)], Motoki Yasunaga[3)], Hiroaki Nohara[4)], Akito Kawamura[4)], Toshiaki Mano[3)], Yohei Sotomi[5)], Osamu Iida[3)], Yasushi Sakata[5)]

[1)] National Hospital Organization Osaka National Hospital, [2)] Kansai Rosai Hospital,
[3)] Osaka Keisatsu Hospital, [4)] Osaka Rosai Hospital,
[5)] University Graduate School of Medicine , Department of Cardiovascular

【What's known?】
Introduction: Chronic limb-threatening ischemia (CLTI) patients who achieved wound healing often suffer wound recurrence. However, there are few reports that showed the risk factors of wound recurrence. The aim of this study is to assess the predictors of wound recurrence in CLTI patients.

【What's new?】
Method: This multicenter, retrospective study included 1106 limbs with tissue loss in 887 CLTI patients who underwent endovascular treatment and achieved wound healing between April 2010 and March 2023. The primary endpoint was wound recurrence. We analyzed the relationship between baseline characteristics and the incidence of primary endpoint using Cox proportional hazard model.
Result: The overall rate of wound recurrence was 28%. The median time to wound recurrence after initial wound healing was 498 days. Multivariate analysis revealed the time to wound recurrence was independently associated with hemodialysis (HR:1.82;95%CI:1.39-2.37;p<0.001),non-ambulatory (HR:1.41;95% CI :1.09-1.84; p=0.009), isolated below-the-knee legion (HR:1.50;95% CI :1.16-1.94; p=0.002), post ankle-brachial index (HR:0.32;95% CI :0.09-0.62; p=0.004), and GLASS (the Global Limb Anatomic Staging System) infrapopliteal grade 4 (HR:1.49;95% CI :1.01-2.20; p=0.006). Risk stratification into three groups based on the number of these factors showed the wound recurrence rate was higher in higher risk groups.
Conclusion: We identified some predictors of wound recurrence in CLTI patients.

MO-95 Identifying the true no-option anatomic pattern of chronic limb-threatening ischemia: endovascular therapy outcomes in Global Limb Anatomical Staging System P2 modifier

○Shuko Iwata[1)], Yoshifumi Mizuguchi[2)], Riho Suzuki[3)], Yuichiro Hosoi[4)], Michinao Tan[1)], Kazushi Urasawa[1)]

[1)] Caress Memorial Hospital, [2)] Hokkaido University, [3)] Sapporo City General Hospital, [4)] Sapporo Higashi Tokushukai Hospital

【What's known?】
Among patients with chronic limb-threatening ischemia (CLTI), the Global Limb Anatomical Staging System (GLASS) P2 modifier is considered indicative of a no-option anatomic pattern. While some studies have reported successful endovascular therapy (EVT) in patients with the GLASS P2 modifier, the predictors of EVT outcomes in this high-risk population remain unclear.

【What's new?】
This multicenter, retrospective, non-randomized observational study included 160 limbs from 151 patients with CLTI who underwent EVT for de novo inframalleolar occlusions with the GLASS P2 modifier between January 2016 and December 2023. In the multivariate logistic regression model, pedal medial arterial calcification (pMAC) severity (mild/moderate/severe) and the absence of target vessel outflow were identified as independent predictors of procedural failure. Notably, when severe pMAC and no target vessel outflow coexisted, procedural failure occurred in 35 of 41 cases (85.4%), with deterioration of infrapopliteal blood flow post-procedure observed in 9 of 41 cases (22.0%).
In conclusion, among patients with CLTI presenting with the GLASS P2 modifier, severe pMAC and the absence of target vessel outflow were not only indicative of a true no-option anatomic pattern but were also associated with an increased risk of worsening infrapopliteal blood flow post-procedure.

MO-96 Impact of high-pressure balloons in patients with lower extremity artery disease who underwent endovascular therapy using drug-coated balloons for femoropopliteal lesions

○Takehiro Yamada[1)], Takahiro Tokuda[2)], Naoki Yoshioka[3)], Akio Koyama[4)], Ryusuke Nishikawa[5)], Kiyotaka Shimamura[5)], Takuya Tsuruoka[5)], Hiroki Mitsuoka[5)], Yusuke Sato[5)], Kotaro Takahashi[5)], Takuma Aoyama[1)]

[1)] Central Japan International Medical Center, [2)] Nagoya Heart Center, [3)] Ogaki Municipal Hospital, [4)] Toyota Memorial Hospital, [5)] Kyoto University Hospital, Osaka Red Cross Hospital, Ichinomiya Municipal Hospital, Aichi Medical University Hospital, University of Fukui Hospital, and Shizuoka General Hospital

【What's known?】
Efficacy of high-pressure balloons (HPBs) during drug-coated balloon (DCB) treatment for femoropopliteal lesions has not been well studied.

【What's new?】
This retrospective multicenter observational study enrolled 291 consecutive patients with lower extremity artery disease who underwent endovascular therapy with DCBs for femoropopliteal lesions between January 2018 and December 2021. Patients were classified into two groups: HPB or non-HPB use. Primary patency (PP), freedom from clinically driven target lesion revascularization (CD-TLR) at 24 months were investigated. Recurrence predictors at 24 months were also assessed. Of 291 patients, 179 were in HPB group, and 112 were in non-HPB group. HPB group had tendency of a better PP rate than non-HPB group at 24 months, whereas freedom from CD-TLR rates at 24 months were similar between two groups. Multivariate analysis showed that chronic limb-threatening ischemia, residual stenosis ≥50%, HPB use, and Lutonix™ use were independent predictors of PP loss at 24 months. HPBs can be associated with a better PP rate.

MO-97 One-Year Clinical Outcome of Jetstream Atherectomy: A Single-Center Experience

○Shinya Ichihara, Naoki Hayakawa, Hiromi Miwa, Yasuyuki Tsuchida, Shunsuke Maruta, Shunichi Kushida

Department of Cardiology, Asahi General Hospital

【What's known?】

Background: Although Jetstream is now available, and we have experienced cases in which it was useful, the clinical results of Jetstream in real-world settings are unclear.

Objective: To demonstrate the clinical outcome of Jetstream use in Asahi General Hospital.

Method: This retrospective, single-center observational study was conducted to evaluate the clinical outcome of Jetstream use.

Result: We investigated 42 consecutive patients with Jetstream use from January 2023 through December 2023. The primary endpoint was primary patency and clinical-driven target lesion revascularization (CD-TLR) through one year. The secondary endpoints were procedural complications (vessel perforation, distal embolization).

Result: The age is 73.9 years old. SFA was confirmed for 89% of cases. Lesions were 31% chronic total occlusion. Intravascular ultrasound use was 100%. Distal protection filter and popliteal compression by the manchette were used in 29% and 51% of cases. The 1-year primary patency and CD-TLR were 87% and 11%. Major vessel perforation and distal embolization incidence rates were both 0%.

【What's new?】

Conclusion: Jetstream use had acceptable clinical outcomes even in a Japanese real-world setting. Our procedural innovations and the results of this analysis are discussed and reported.

MO-98 Prognostic value of HELT-E_2S_2 score in patients with lower extremities artery disease: insight from the I-PAD NAGANO registry

○Yoshiteru Okina[1)], Yasushi Ueki[1)], Masatoshi Minamisawa[1)], Tamon Kato[1)], Takashi Miura[2)], Yushi Oyama[3)], Naoto Hashizume[4)], Daisuke Yokota[5)], Tatsuya Saigusa[1)], Soichiro Ebisawa[1)], Koichiro Kuwahara[1)]

[1)] Shinshu University School of medicine, [2)] Nagano Municipal Hospital, [3)] Shinonoi General Hospital, [4)] Nagano Red Cross Hospital, [5)] Iida Hospital

【What's known?】

The HELT-E_2S_2 score is a newly developed risk stratification score for stroke in patients with atrial fibrillation. We aim to validate the availability of the HELT-E_2S_2 score for patients with LEAD.

【What's new?】

Patients undergoing EVT for symptomatic LEAD from August 2015 to August 2016 were enrolled into the I-PAD NAGANO registry, a prospective, multicenter, observational registry. The primary endpoint was a major adverse cardiovascular event (MACE), defined as a composite of all-cause death, non-fatal myocardial infarction, and stroke at 5 years. Patients were divided into 2 groups according to their HELT-E_2S_2 score at baseline (low score group: 0-1 point, high score group: score ≥2 points). A total of 218 patients (59.9%) were in the high score group. The high score group had a higher prevalence of history of heart failure, chronic limb-threatening ischemia, more frailty, and a low albumin and hemoglobin level compared with the low score group. The incidence of MACE was significantly higher in the high-score group (43.7% vs. 22.8%, $P<0.001$). The COX multivariable analysis demonstrated that the high HELT-E_2S_2 level emerged as a significant predictor for MACE at 5 years (HR 1.87, 95%CI 1.22-2.89, $P=0.004$). The HELT-E_2S_2 score can indicate risk for cardiovascular events, including ischemic stroke.

MO-99 The prognosis of “hidden” asymptomatic lower extremity artery disease patients incidentally diagnosed on abdominal CT

○Mayuka Masuda, Koji Kuroda, Wataru Fujimoto, Makoto Takemoto, Soichiro Yamashita, Junichi Imanishi, Masamichi Iwasaki, Takafumi Todoroki, Masanori Okuda

Department of Cardiology, Hyogo Prefectural Awaji Medical Center

【What's known?】

Even asymptomatic lower extremity artery disease (LEAD) has higher risk of atherosclerotic cardiovascular disease (ASCVD) and needs appropriate medical therapies for cardiovascular risk reduction, whereas when patients with no history of ASCVD are diagnosed with asymptomatic LEAD for the first time, it is frequently overlooked without intervention. Asymptomatic LEAD patients involving iliac artery lesions, with no history of ASCVD, are often diagnosed incidentally on abdominal computed tomography (CT) in daily clinical practice; however, the prognosis of these patients remains unclear.

【What's new?】

This single-center retrospective study enrolled consecutive patients without history of ASCVD who underwent abdominal contrast-enhanced CT from January 2015 to March 2021. Primary endpoint was the incidence of major adverse cardiovascular event (MACE); defined as a composite of cardiovascular death, nonfatal stroke, nonfatal myocardial infarction and any revascularization during 5-year clinical follow-up.

Among 3132 patients, 62 patients were diagnosed with hidden asymptomatic LEAD with iliac artery lesions and the remains were not. The patients asymptomatic hidden LEAD had significantly higher incidence of MACE (22.6% vs. 3.0%; $p<0.001$).

Patients with incidentally diagnosed with hidden asymptomatic LEAD with iliac artery lesions on abdominal CT had reasonable cardiovascular risk and may require appropriate risk management despite no history of ASCVD.

MO-100 Predictors and Clinical Course of Hemodynamic Failure after Endovascular Therapy for Chronic Limb-Threatening Ischemia

○Hiroaki Nohara[1)], Yosuke Hata[2)], Osamu Iida[3)], Taku Toyoshima[3)], Motoki Yasunaga[3)], Akito Kawamura[1)], Haruya Yamane[4)], Kuniyasu Ikeoka[4)], Yasuyuki Egami[1)], Masami Nishino[1)], Yohei Sotomi[5)], Yasushi Sakata[5)]

[1)] Osaka Rosai Hospital, Division of Cardiology, [2)] Kansai Rosai Hospital, Cardiovascular Center,
[3)] Osaka Keisatsu Hospital, Division of Cardiology,
[4)] Cardiovascular division, National Organization Osaka National Hospital,
[5)] Osaka University Graduate School of Medicine, Department of Cardiovascular Medicine

【What's known?】

Skin perfusion pressure (SPP) after endovascular therapy (EVT) has been reported to be associated with wound healing in chronic limb-threatening ischemia (CLTI).However, the predictors of low postprocedural SPP, hemodynamic failure, and its clinical course have not been adequately investigated.

【What's new?】

This multicenter and retrospective study included 924 CLTI patients with tissue loss who underwent EVT between April 2010 and March 2023, with SPP measured pre- and post-procedure. Hemodynamic failure was defined as a postprocedural SPP of less than 40 mmHg. Hemodynamic failure was observed in 52.2 % of patients (482/924). Multivariable analysis demonstrated that the pre-procedural SPP < 40 mmHg and wound blush were significantly associated with hemodynamic failure. Kaplan-Meier analysis showed a significantly lower wound healing rate 54.5% in patients with hemodynamic failure compared to those without hemodynamic failure (64.6 %). Reintervention rate and wound recurrence were also significantly higher in patients with hemodynamic failure compared to those without. Multivariable analysis revealed that age > 75 years, ambulatory status, hemodialysis, hemodynamic failure, WIfI clinical stage 4, and wound blush were significantly associated with wound healing. Consequently, hemodynamic failure after EVT was significantly associated with delayed wound healing, reintervention, and wound recurrence.

MO-101 Prognostic significance of sarcopenia identified by psoas muscle computed tomography value on patients with critical life-threatening ischemia after endovascular therapy

○Yuki Sakamoto, Takayoshi Toba, Hiroyuki Kawamori, Takashi Hiromasa, Yoichiro Sugizaki, Hiromasa Otake

Division of Cardiovascular Medicine, Department of Internal Medicine, Kobe University Graduate School of Medicine

【What's known?】
Sarcopenia is frequently observed in patients with critical life-threatening ischemia (CLTI). In terms of imaging assessment for sarcopenia, it is well-known that reduced muscle mass is associated with a poor prognosis in patients with CLTI after endovascular therapy (EVT), while the prognostic impact of muscle quality remains unclear.

【What's new?】
This single-center retrospective study investigated 80 consecutive patients with CLTI who underwent EVT and preprocedural contrast-enhanced computed tomography (CT) between January 2014 and December 2023. Psoas muscle CT value was manually measured at the level of the third vertebral body. The primary endpoint was amputation-free survival (AFS). Within a median follow-up period of 454 days, 39 patients experienced loss of AFS. Psoas CT values were significantly lower in patients with loss of AFS than in patients without. Multivariate analysis identified a lower psoas muscle CT value as an independent predictor of AFS loss. Patients with low psoas CT values (<45.5 Hounsfield Unit) had approximately 2.5 times higher AFS rates. Adding low psoas CT values to traditional risk factors and psoas CT volume improved the predictive and reclassification abilities of loss of AFS. This result suggests that assessment of muscle quality could enhance risk stratification in patients with CLTI after EVT.

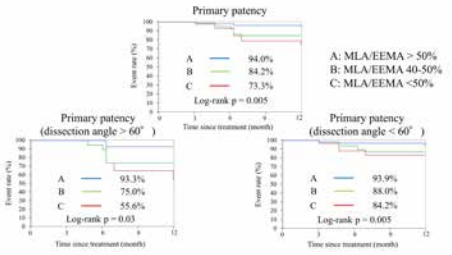
MO-102 Impact of post procedural intravascular ultrasound findings using drug-coated balloon for femoropopliteal chronic total occlusion lesions

○Yuki Shima

Kurashiki Central Hospital

【What's known?】
Drug-coated balloon (DCB) are commonly used for endovascular therapy (EVT). Indicators of restenosis factors such as dissection angle and minimum lumen area (MLA) as assessed by intravascular ultrasound (IVUS) are also becoming more common. However, vessel diameters vary from case to case, and there is no uniformly defined index. We aimed to evaluate the predictors of restenosis after DCB treatment assessed by IVUS.

【What's new?】
This study was conducted as a single-center, retrospective cohort study. Images for 42 femoropopliteal de-novo CTO lesions treated by EVT between 2021 and 2023 were used for analysis. IVUS images after guidewire passage and those after DCB were evaluated at 3cm intervals. Cross sectional images were obtained (n=263) and divided into three groups based on MLA/external elastic membrane area (EEMA) ratio: MLA/EEMA>50%, MLA/EEMA 40-50%, and MLA/EEMA<40%. The primary outcome was restenosis 1 year after EVT. All guidewires passed through intraplaque. The Kaplan-Meier curve was shown in the Figure. In cross sections with a dissection angle of more than 60 degrees, the patency rate was lower in the group with MLA/EEMA<50%. Regardless of the angle of dissection, if MLA/EEM >50, the patency rate was good. MLA/EEMA ratio and dissection angle are important factor for primary patency.



MO-103 The association of calcium channel blocker treatment with adverse limb events in patients underwent endovascular treatment

○Daisuke Ueshima[1)], Rumi Nakamura[1)], Akira Nakashima[1)], Kazunari Mitsuishi[1)], Eho Shibata[1)], Tomoya Shinozaki[1)], Shogo Kameda[2)], Takuya Kawakami[1)], Ryota Maeno[1)], Kenji Yoshioka[1,2)]

[1)] Kameda Medical Center, [2)] Awa Regional Medical Center

【What's known?】
EVT for LEAD has become a standard strategy; however standard medical therapy has not been established. Calcium channel blockers (CCBs) can alleviate the symptoms of LEAD, but few studies have evaluated this.

【What's new?】
We investigated the relationship between CCBs therapy and post-EVT outcomes.
A retrospective, single-center study examined 372 consecutive endovascular treatments (175 patients received CCBs vs. 197 did not) from 2020 to 2023. The primary limb event was defined as a composite of all-cause mortality, major amputation, and acute limb ischemia at 1-year after EVT.
The baseline characteristics between received CCB vs. not received CCB were differed in WIfI fI, post-procedural ABI, aorto-iliac lesion EVT rate, pre-procedural serum CRP, albumin levels, and EF. At 1-year follow up, received CCB demonstrated a better primary outcome (event free rate at 1 year 0.826 vs. 0.694, p=0.005). The trend remained after baseline adjustment (HR 0.33, 95% CI 0.14-0.75, p=0.008). The advantage was also observed in the CLTI cohort (0.757 vs. 0.575, p=0.005), but not in the claudication cohort (0.946 vs. 0.963, p=0.66).
The use of CCBs was associated with a reduction in adverse events among patients who underwent EVT, with this trend remained in the CLTI cohort.

MO-104 The Difference of Predictors for Re-occlusion after Endovascular Therapy (EVT) in Femoropopliteal Artery Disease between Drug-coated Balloons (DCB) and Drug-eluting Stents (DES)

○Naho Ito, Kazunori Horie, Hiromasa Okada, Hiroaki Akai, Akiko Tanaka, Norio Tada

Sendai Kousei Hospital

【What's known?】
Background: Re-occlusion after EVT is still a serious concern in the current era. Paclitaxel-based devices are the main-stream in femoropopliteal artery disease; however, the risk factors of re-occlusion have not been well evaluated between DCB and DES.

【What's new?】
Methods: This single center, retrospective study analyzed consecutive 820 femoropopliteal lesions treated with DCB (n=659) or DES (n=161) between 2017 and 2023. We investigated the incidence rate of re-occlusion and evaluated its predictors between DCB and DES.
Results: During a median follow-up of 15.7 months, re-occlusion occurred in 8.6% of DCB group and 10.6% of DES group. Cox proportional hazards multivariate analysis showed that re-occlusion related to DCB was associated with CLTI, longer lesion length, bilateral calcification and residual stenosis after DCB dilatation, whereas that related to DES were non-ambulatory condition and P2/3 segment involvement. Incidence of ALI due re-occlusion was not significantly different between the DCB and DES group (21.0% vs. 29.4%).
Conclusion: The risk factors of re-occlusion were different between DCB and DES. The incidence of re-occlusion might be owing to patient and lesion characteristics after DES implantation; however, the procedural endpoint might also affect the re-occlusion in DCB treatment.

MO-105 The impact of peak systolic velocity at proximal femoral artery using duplex ultrasound on 2 years primary patency after endovascular therapy for femoropopliteal artery

○Takeaki Kudo, Keisuke Yamamoto, Kenji Ogata, Yoshisato Shibata
Miyazaki Medical Association Hospital

【What's known?】
The impact of peak systolic velocity (PSV) measured by duplex ultrasound (DUS) on primary patency after endovascular therapy for femoropopliteal artery lesion has not been unknown.

【What's new?】
Consecutive 212 patients who underwent EVT for de novo FP lesion and for whom DUS was performed at single center from 2019 to 2022 were retrospectively analyzed. Two years of primary patency (PP), defined as the target vessel remaining patent without restenosis, was evaluated using Kaplan-Meier analysis. 78 patients with PSV < 100 cm/s and 141 patients with PSV ≥ 100 cm/s were divided. The median age was 74 years. Male patients comprised 141 (67 %) and the median follow-up period was 580 days. 2 years PP occurred in 49 (62.8 %) of patients with PSV < 100 cm/s and 107 (80.0 %) of patients with PSV ≥ 100 cm/s, respectively (log-rank p=0.0001). Multivariate Cox proportional hazard analysis revealed that PSV < 100 cm/s and popliteal artery involvement was associated with PP (hazard ratio [HR] 1.75, 95% confidence interval [CI] 1.01-3.06; HR 2.16, 95% CI 1.24-3.79, respectively), which was adjusted for atrial fibrillation, hemodialysis, and number of below-the-knee runoff vessels. PSV at proximal femoral artery after EVT was associated with 2 years primary patency.

MO-106 Using the Body Composition Analyzer to Assess the Impact of Lower Extremity Arterial Disease on Skeletal Muscle

○Hiroto Aikawa, Hideo Amano, Ryo Okubo, Takayuki Yabe, Yousuke Komatsu
Toho University Medical Center Omori Hospital

【What's known?】
The prevalence of frailty in patients with lower extremity arterial disease(LEAD) has been documented in numerous studies. However, the effect of LEAD on skeletal muscle mass remains unclear.

【What's new?】
The aim of this study was to determine the correlation between LEAD patients and skeletal muscle mass using the Body Composition Analyzer(Inbody).
This observational study included 178 patients who underwent Inbody and ankle brachial index(ABI) measurements between 2020 and 2023. Patients were divided into two groups: a control group with normal ABI values(N=145) and a study group with LEAD(N=31). The LEAD group was defined as patients with an ABI of less than 0.9 in at least one leg. Patient background, nutritional status by blood test, and skeletal muscle mass were compared between the two groups using Inbody. Pearson's correlation coefficient analysis was also performed between the two groups. Albumin levels and skeletal muscle mass were significantly lower in the LEAD group. Examination of Pearson's correlation coefficient showed that skeletal muscle mass decreased with age in the normal ABI group, but there was no correlation between skeletal muscle mass and age in the LEAD group. Our study suggests that LEAD and other comorbidities may cause age-inappropriate sarcopenia.

MO-107 Impact of Anemia on Prognosis in CKD Patients with Lower Extremity Artery Disease: A 5-Year Analysis from the I-PAD Registry

○Tamon Kato
Shinshu University Hospital

【What's known?】
CKD significantly impacts the prognosis of patients with LEAD. Additionally, anemia has been shown to slightly delay healing and increase the likelihood of major amputation. In recent years, treatment options for renal anemia, such as HIF-PH inhibitors, have expanded, making interventions more accessible.

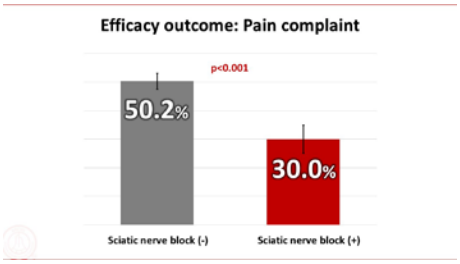
【What's new?】
In this study, we investigated the impact of anemia on CKD patients with LEAD. We analyzed the 5-year MACE incidence in 117 patients with CKD grade 3 ($30 \leq eGFR < 60$) among the 366 LEAD patients registered in the I-PAD registry. Among these 117 patients, 41 had anemia, and 76 did not. The anemia group included a higher proportion of women (48% vs. 21%) and had a lower mean hemoglobin level (11.3 g/dL vs. 14.6 g/dL).
Using the Kaplan-Meier method, the 5-year MACE incidence was significantly higher in the anemia group than in the non-anemia group (47.8% vs. 22.4%, $p = 0.003$). Multivariate analysis identified hemoglobin concentration as a significant predictor of MACE, with an HR of 0.05 (95% CI: 0.01–0.12, $p = 0.001$).
In conclusion, anemia is a critical factor affecting the prognosis of CKD patients with LEAD, and interventions targeting anemia may improve outcomes.

MO-108 Impact of Sciatic Nerve Block on Pain Relief during Endovascular Therapy in Patients with Chronic Limb-threatening Ischemia

○Yosuke Hata[1)], Sumie Hamaguchi[2)], Masaharu Masuda[1)], Shin Okamoto[1)], Takayuki Ishihara[1)], Kiyonori Nanto[1)], Takuya Tsujimura[1)], Hiroyuki Uematsu[1)], Sho Nakao[1)], Masaya Kusuda[1)], Wataru Ariyasu[1)], Toshiaki Mano[1)]
[1)] Cardiovascular Center, Kansai Rosai Hospital, [2)] Nursing Department, Kansai Rosai Hospital

【What's known?】
Endovascular therapy (EVT) for chronic limb-threatening ischemia (CLTI) involves long and painful procedures. Regional anesthesia with sciatic nerve block is a less invasive pain management, however, its effectiveness and safety have not been statistically investigated.

【What's new?】
This study was a single center retrospective study, including the consecutive 421 patients with CLTI patients undergoing EVT for lower limb arteries between January 2022 and September 2024. Efficacy outcome was the incidence of pain complaint during EVT, and safety outcomes were incidence of hypotension (< 90 mmHg in systolic pressure), hypoxia (SpO_2< 90%), mortality, and major amputation rate. The incidence of pain complaint EVT were 50.2% and 30.0% in patients with sciatic nerve block and those without, respectively ($p<0.001$). The incidence of hypotension, hypoxia, mortality, and major amputation rate were not significantly different between two groups. After multivariate analysis, sciatic nerve block (Odds ratio 0.46, 95% confidence interval 0.28-0.77, $p=0.003$) was detected as a negative predictor of pain complaint during EVT.



MO-109 Dialysis-associated steal syndrome as a rare complication of arteriovenous fistula angioplasty

○Fang Nian Joanne Lim
Yong Loo Lin School of Medicine, National University of Singapore

MO-110 Skills and efforts on cyanoacrylate closure for incompetent saphenous veins

○Tong Xiaoning
Osaka Vein Clinic

MO-111 Effects of Statin Therapy in Patients Treated with Drug-Eluting and Drug-Coated Stents for Femoropopliteal Lesions: STAR-FP Study Outcomes

○Tatsuro Takei
Tenyoukai Central Hospital

MO-112 A challenging case of calcified popliteal CTO intervention with ARCADIA technique, Jetstream atherectomy and proximal protection technique

○Yuta Azumi, Makoto Kinoshita, Yutaka Furukawa

Kobe City Medical Center General Hospital, Cardiovascular Medicine

【Case overview】

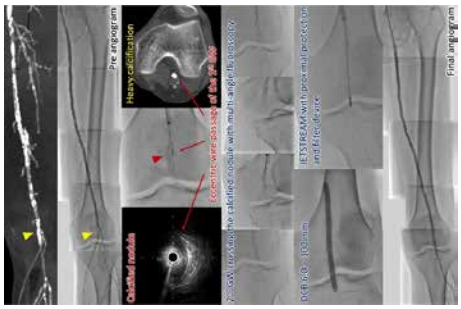
A 68-year-old man was referred for rest pain. CT and angiography confirmed calcified severe stenosis of the proximal to mid SFA and CTO of the popliteal artery with severe calcification. Two-staged EVTs were planned.

【Procedure summary】

At the first treatment, recanalization of the SFA was performed with DCB. At the second, 0.014-inch Gladius crossed the popliteal occlusion with loose tissue tracking technique. However, AnteOwl WR IVUS system revealed eccentric wire passage due to calcified nodules. In consideration of long-term patency, it might be better to debulk the calcified nodules.

Therefore, the 2nd guide wire, Crosslead penetration (0.014-inch, tapered, hydrophilic, 60g tip-load) was advanced into and crossed the calcified nodules and returned to the distal true lumen with the guidance of IVUS and multi angulation fluoroscopy. Atherectomy (Jetstream 1.8mm and 2.4mm) was performed with proximal protection using OPTIMO EPD balloon-equipped guiding catheter, and a distal protection filter device.

The lesion was treated with DCB. Final angiography confirmed good patency.



【Clinical time course and implication (or perspective)】

After the treatments, the symptom disappeared.

Some techniques make it possible to perform intra-calcification wiring in severely calcified CTO lesions. Additionally, by achieving stop flow using proximal protection system, debulking with Jetstream may be performed more safely even for lesions where significant embolization is expected.

MO-113 HDL-mediated Cholesterol Efflux Capacity Predicts All-cause Mortality Following Endovascular therapy in Patients with Peripheral Artery Disease

○Sayaka Funabashi

Kyorin university

MO-114 HUVECs-derived exosomes increase neovascularization and decrease limb necrosis in hindlimb ischemia

○Muhamad Taufik Ismail

Department of Cardiology and Vascular Medicine, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada