

## MP-1 The use of EndoAnchors in endovascular aortic aneurysm repair for challenging proximal aortic neck : Songklanagarind hospital

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### 【What's known?】

The factor related to successful EVAR is the suitable anatomy of aorta, especially hostile aortic neck because of high risk of type Ia endoleak, stent migration and mortality rate. In the present, the Heli-FX EndoAnchors system is designed to be applied with EVAR for securing the aortic wall to the graft fabric. However, in the long-term after EVAR, remodeling of aortic neck could still cause aortic neck dilatation which results in loss of proximal sealing zone. The aim of this study is data collection of aortic neck dilatation after EndoAnchors implantation in single center (Songklanagarind hospital) to evaluate the natural disease and also design the surveillance protocol for planning of treatment.

### 【What's new?】

18 patients with AAA undergoing EVAR with EndoAnchor implantation in elective setting were collected between December 2015 and April 2024 and computed tomography imaging was used to evaluate pre and postoperatively at 1 month, 6 months, 12 months, 18 months, 24 months, 30 months and 48 months. From the study, we found that the aortic neck dilatation could potentially occur after EndoAnchors implantation at 30 months. However, EndoAnchors fixation might be protection against early aortic neck dilatation. Most patients also had no EndoAnchors related death.

## MP-2 NR4A1 Deficiency Exacerbates Carotid Vulnerable Plaque by activating integrated stress response via Targeting Bcat1

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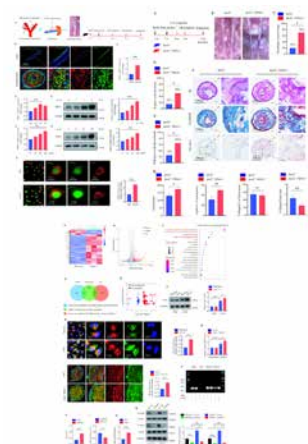
### 【What's known?】

**Background:** Rupture of vulnerable carotid atherosclerotic plaque is one of the leading causes of ischemic stroke. However, the mechanisms driving the transition from stable to vulnerable plaques have not yet been elucidated. NR4A1 is an orphan nuclear receptor that functions in various inflammatory diseases. This study aims to explore the role of NR4A1 in vulnerable plaques and to clarify the underlying mechanisms.

### 【What's new?】

**Results:** Our research revealed that NR4A1 deficiency significantly worsened the pathology of vulnerable plaque, increasing intraplaque hemorrhage, rupture with thrombus, and the occurrence of multilayer with discontinuity. NR4A1 deficiency exacerbated macrophage infiltration, inflammation, and oxidative stress. Mechanistically, we identified Bcat1 as the target of NR4A1. NR4A1 modulated the integrated stress response (ISR) in macrophages by transcriptionally inhibiting Bcat1, thus influencing the progression of vulnerable plaque. ISR inhibitor GSK2606414 or Bcat1 inhibitor ERG240 significantly ameliorated atherosclerotic plaque formation and increased plaque stability. Notably, supplementation with Celastrol, a herbal extract, stabilized atherosclerotic plaques in mice.

**Conclusion:** Our studies suggest that NR4A1 deficiency exacerbates vulnerable plaque by activating ISR via targeting Bcat1. The NR4A1/Bcat1/ISR axis is therefore an important therapeutic target for stabilizing atherosclerotic plaque.



## MP-3 Extensive Long Segment Spinal Dural Arteriovenous Fistula presented with mild thoracic myelopathy

○Gee Jin Ng

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【What's known?】

Describe a case of extensive spinal DAVF.

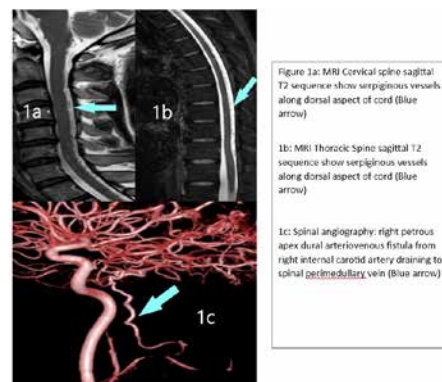
【What's new?】

A 62-year-old male presented with a 7-month history of progressive right lower limb (RLL) weakness, reduced muscle bulk. Examination revealed asymmetric thigh circumference (RLL 39 cm vs. LLL 40.5 cm), hyperreflexia and clonus in the RLL, hyporeflexia in the LLL, and diminished cold sensation with a T10 sensory level. No other neurological deficit. Magnetic resonance Imaging (MRI) (figure 1a-1b): serpiginous vessels along the dorsal thoracic cord (T9-T11). Spinal angiography (figure 1c): a right petrous apex dural arteriovenous fistula (DAVF) with venous drainage to spinal perimedullary veins and a falco-tentorial DAVF with cortical venous reflux. Gamma knife surgery successfully treat the DAVF.

Discussion:

The presentation and imaging strongly suggest spinal dural arteriovenous fistula (DAVF). DAVFs cause venous hypertension that can lead to progressive myelopathy. Serpiginous vessels on MRI are a hallmark feature and confirmation through spinal angiography. The myelopathy sign and loss of right thigh muscle bulk suggest that chronic venous congestion-induced myelopathy. Endovascular embolization or surgical ligation are effective treatments, both preventing further neurological decline. Long-term monitoring with serial imaging is essential to detect recurrence.

In conclusion, a prompt neuroimaging and clinical correlation in diagnosing DAVF and early treatment prevent the disease progression.



## MP-4 The clinical outcome of mechanical aspiration thrombectomy with Indigo™ system in patients with acute limb ischemia

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【What's known?】

Background: Acute limb ischemia (ALI) is a condition that requires immediate revascularization. The mechanical aspiration thrombectomy device (Indigo™; Penumbra Inc.) is now in clinical use for the treatment of ALI.

【What's new?】

Method: This single center and retrospective study evaluated 41 patients with ALI who underwent Indigo™-supported endovascular therapy (EVT) between December 2023 and December 2024. The outcome measures were TIPI (Thrombo-aspiration In Peripheral Ischemia) flow at completion angiography and 30-day amputation-free survival (AFS).

Result: The mean age of the patients was  $75.3 \pm 10.0$  years, and 58.5% were male. The baseline ischemic severity was classified as Rutherford I in 11.3%, Rutherford IIa in 40.9%, and Rutherford IIb in 36.3%. The mean procedure time was  $88 \pm 36$  minutes, and the mean amount of bleeding were  $84 \pm 68$  ml. TIPI flow III at completion angiography was achieved in 88.6% of cases. 30-day AFS was 95.1%.

Conclusion: The current study revealed Indigo™-supported EVT resulted in favorable clinical outcomes for ALI.

## MP-5

### Tirzepatide Reduces 2-Year Amputation Rates Compared to Semaglutide in PAD Patients Without Diabetes: A TriNetX Analysis

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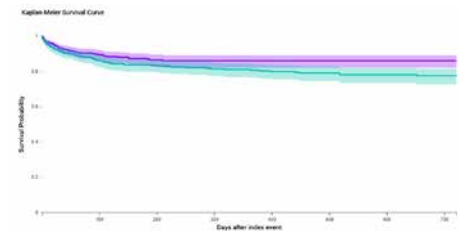
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#### 【What's known?】

Peripheral artery disease (PAD) frequently leads to amputations due to progressive atherosclerosis. GLP-1 receptor agonists (GLP-1 RA) have shown benefits in reducing atheroma and cardiovascular risk, even in patients without diabetes. Tirzepatide, a novel dual GIP/GLP-1 RA, has higher GLP-1 receptor affinity compared to semaglutide, potentially offering superior vascular benefits. Whether tirzepatide can reduce amputation rates more effectively than semaglutide in non-diabetic PAD patients remains unclear.

#### 【What's new?】

This study, using the TriNetX database, compared 2-year amputation rates in non-diabetic PAD patients treated with tirzepatide versus semaglutide. After propensity score matching (464 patients per group), amputation rates were significantly lower in the tirzepatide group (54/464) compared to the semaglutide group (86/464;  $p = 0.0465$ ). These findings suggest tirzepatide may provide greater protection against amputations in this population. Limitations include the inability to assess medication adherence, dosage, and non-PAD amputation causes.



## MP-6

### EVT is effective for graft stenosis after distal bypass

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#### 【What's known?】

Bypass including Distal bypass is undoubtedly a powerful method for CLTI, along with EVT, and is an indispensable method for treating CLTI. Bypass, with its overwhelming blood flow, can treat even lesions that are difficult to treat with EVT. However, it is only effective if patency is maintained. As with EVT, there is a certain probability of restenosis after bypass. In the past, revision surgeries such as jump bypass/interposition/patch plasty were performed for stenosis after bypass.

#### 【What's new?】

Of course, these are useful and are still performed, but in recent years, EVT has been found to be very useful for bypass restenosis, especially for anastomotic stenosis and intragraft stenosis. It is minimally invasive and, surprisingly, can maintain patency. This is probably because the mechanism is different from EVT for pure arteriosclerosis. It would be ideal if the bypass could maintain long-term patency, and there is a possibility of realizing CLTI-free. Furthermore, if DCB could be used for this treatment, the results could be even better. The usefulness of EVT in maintaining bypass patency will be discussed with examples.

## MP-7

### Impact of MAC and SAD Scores on major amputation in Chronic Limb-Threatening Ischemia patients with Inframalleolar artery disease

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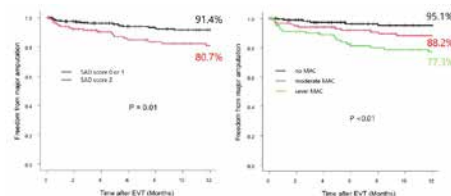
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#### 【What's known?】

CLTI is known to be associated with a high risk of limb loss. The SAD score and MAC score have been reported as reliable predictors for limb outcomes in such patients. However, their clinical significance remains insufficiently studied in Japan, particularly in cases with inframalleolar lesions.

#### 【What's new?】

This multicenter retrospective study analyzed 401 limbs from 318 patients with CLTI classified as Rutherford category 5–6, with inframalleolar disease, who underwent endovascular therapy for below-the-knee arteries between January 2018 and August 2022 across four cardiovascular departments in Hokkaido. MAC scores were categorized as no MAC (0–1), moderate MAC (2–3), and severe MAC (4–5). The primary objective was to evaluate the impact of SAD and MAC scores on major amputation rates. The twelve-month freedom from major amputation rates were 91.4% for patients with SAD scores 0–1 and 80.7% for those with SAD score 2 (log-rank  $P=0.01$ ). For MAC groups, rates were 95.1% (no MAC), 88.2% (moderate MAC), and 77.3% (severe MAC) (log-rank  $P<0.01$ ). Multivariate analysis identified WIFI stage 4 (hazard ratio [HR]: 2.796, 95% confidence interval [CI]: 1.523–5.134,  $p<0.01$ ), SAD score 2 (HR: 1.808, 95% CI: 1.004–3.255,  $p=0.0483$ ), and severe MAC (HR: 2.106, 95% CI: 1.133–3.916,  $p=0.0186$ ) as independent predictors of major amputation.



## MP-8

### Six-month outcomes of pulsatile intravascular lithotripsy in patients with moderate and severely calcified superficial femoral and popliteal arteries: Update on the POWER-PAD1 study

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#### 【What's known?】

Severe calcification within stenotic peripheral arterial lesions increases the complexity of treatment and the risk of poor outcomes. Pulsatile intravascular lithotripsy (PIVL; AVS, Inc., Boston, MA, USA) is a novel approach to IVL that has been shown to produce full-thickness fractures in intimal, medial, circumferential, and eccentric calcium with simultaneous expansion of the lumen and reduction in stenosis. The objective of the POWER PAD I clinical study was to evaluate the acute and long-term safety and performance of PIVL for the treatment of calcified femoropopliteal arteries in patients with multiple, real-world lesions (NCT05192473).

#### 【What's new?】

Nine patients (median age 76.2 years, 56% male) underwent PIVL treatment of 20 lesions (95% severely calcified; 20% totally occluded). Average total treated calcified lesion length per patient was  $195 \pm 144$  mm. Average calcium length per lesion was  $89 \pm 40$  mm. After treatment, stenosis was reduced from 77% to 28% (absolute reduction 48.5% (95% CI -51% to -46%; relative reduction 64%). Acute luminal gain was  $2.5 \pm 1.1$  mm ( $1.3 \pm 1.0$  mm to  $3.8 \pm 0.5$  mm) with no  $\geq$  grade D dissections. Freedom from clinically driven target-lesion revascularization was 100% out to 6 months. All lesions were patent ( $\geq 50\%$  stenosis) at 30 days and 94% at 6 months.

## **MP-9 Clinical outcomes of repeat endovascular therapy after inframalleolar balloon angioplasty in patients with critical limb-threatening ischemia**

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<sup>3)</sup>Sapporo Higashi Tokushukai Hospital, <sup>4)</sup>Sapporo Kosei General Hospital

### **【What's known?】**

The association between the number of reinterventions of the inframalleolar lesions and clinical outcome in chronic limb-threatening ischemia (CLTI) patients is unknown.

### **【What's new?】**

We conducted a retrospective, multicenter, nonrandomized analysis of 230 patients, 255 limbs (mean age, 73.4 ± 10.8 years; male, 70.0%; diabetes mellitus, 71.7%; dialysis, 58.3%, Rutherford 5, 73.0%; Rutherford 6, 27.0%) who had chronic limb-threatening ischemia and underwent revascularization of IM lesions between January 2018 and August 2022. Patients were divided into three groups: group A had no reintervention, group B had one reintervention, and group C had ≥2 reinterventions. Of the 255 limbs, 171 had no reintervention, 54 had one reintervention, and 30 had two or more reinterventions before wound healing. Wound healing rate was significantly higher in group A than the other groups (group A vs B vs C: 83.7% vs 63.2% vs 25.3%,  $P < 0.01$ ). However, limb salvage was not significantly different between groups (92.1% vs 95.8% vs 81.0%,  $P = 0.18$ ). Even after wound healing, 13.5% of group A, 18.5% of group B, and 13.3% of group C required reintervention due to another wound recurrence ( $P = 0.64$ ). Although wound healing of CLTI patients requiring repeat EVT were poor, limb salvage was acceptable.

## **MP-11 Association between left ventricular ejection fraction and wound healing rates in chronic limb-threatening ischemia patients with ischemic wound**

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Masaru Nagase, Daiju Ono, Keita Suzuki, Makoto Yamaura, Takahisa Ido,  
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Central Japan International Medical Center

### **【What's known?】**

Association between left ventricular ejection fraction (EF) and wound healing rates in chronic limb-threatening ischemia (CLTI) patients with ischemic wound is still unclear.

### **【What's new?】**

This retrospective, single-center, observational study enrolled 174 consecutive CLTI patients with ischemic wound who underwent endovascular therapy of infrainguinal lesions between March 2011 and March 2023. Patients were classified into two groups based on ejection fraction: preserved EF, and non-preserved EF groups. The primary outcome measure was wound healing (WH) rate at 12 months. The secondary outcome measure was amputation free survival (AFS) rate at 24 months. Predictors of WH at 12 months were also investigated. In total, 136, and 38 patients were classified into preserved EF and non-preserved EF groups, respectively. Preserved EF group had a significantly higher WH rate at 12 months than non-preserved EF group. There were no significant differences in AFS rate at 24 months. Multivariate analysis showed that non-preserved EF, Clinical Frailty Scale grade 6 to 8, and Wifi stage IV were the independent predictors of worse WH rate. Preserved EF was associated with a higher WH rate in midterm phase in CLTI patients with ischemic wound.



## MP-12 Outcomes of drug-coated balloon angioplasty in patients with dyslipidemia in the BIOLUX P-III registry: A subgroup analysis

○Bernardette Lee<sup>1)</sup>, James E Dodd<sup>1)</sup>, Joseph Hanna<sup>1)</sup>, Marianne Brodman<sup>2)</sup>, Jonathan Golledge<sup>3)</sup>, Thomas Zeller<sup>4)</sup>, Matej Moscovic<sup>5)</sup>, Johannes Dahm<sup>5)</sup>, Nicola Troisi<sup>5)</sup>, Gunnar Tepe<sup>5)</sup>, Jacqueline Wong<sup>1)</sup>, Bibombe P Mwipatayi<sup>1)</sup>

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<sup>5)</sup>Department of Angiology, Institute of Cardiovascular Diseases, Kosice, Slovakia, and others.

### 【What's known?】

This study is a subgroup analysis from the BIOLUX-III registry comparing the outcomes associated with endovascular revascularization with those associated with Passeo-18 lux DCBs in patients with and without dyslipidemia. Although there is a known link between dyslipidemia and adverse events related to PAD, there have been no studies comparing the medium- to long-term outcomes of DCB angioplasty in patients with and without dyslipidemia.

### 【What's new?】

A total of 876 patients with symptomatic PAD who underwent peripheral revascularization with DCBs and had information on their dyslipidemia status were included; 588 of those patients had dyslipidemia. There was no difference in the proportion of patients free from MAEs between the groups. The percentages of patients who were 6, 12 and 24 months free from CD-TLR were significantly lower in the dyslipidemia group than in the nondyslipidemia group (86.3% vs 91.9% at 2 years,  $p = .0183$ ). Similarly, the percentage of patients free from target vessel revascularization was lower in the dyslipidemia group at all timepoints (83.3% vs 89.3% at 2 years,  $p = .0203$ ). There was no difference in mortality or major or minor limb amputation rates. Other secondary outcomes were similar between the groups.

## MP-13 Twenty-Four-Month Outcomes of Drug-Coated Balloon in Diabetic Patients in the BIOLUX P-III Registry: A Subgroup Analysis

○Gabrielle Stratford<sup>1)</sup>, Bibombe P Mwipatayi<sup>1)</sup>, Ian P Barry<sup>1)</sup>, Marianne Brodman<sup>2)</sup>, Thomas Zeller<sup>3)</sup>, Ramon L Varcoe<sup>4)</sup>, Matej Moscovic<sup>5)</sup>, John Chian<sup>5)</sup>, Johnny K Christensen<sup>5)</sup>, Shaiful A Yahaya<sup>5)</sup>, Olufemi A Oshin<sup>1)</sup>, Gunnar Tepe<sup>5)</sup>

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### 【What's known?】

The present study is a 24-month subgroup analysis of patients with diabetes mellitus having infringuinal lesions treated with the Passeo-18 Lux DCB. The present study reports the outcomes from a pre-specified subgroup analysis of patients with diabetes mellitus, which is associated with greater severity and more diffuse peripheral artery disease (PAD) when compared to non-diabetics. This is reinforced by several studies highlighting worse outcomes for diabetics undergoing endovascular intervention, especially as distal run off diminishes

### 【What's new?】

Of the 882 patients in the registry, 418 had diabetes (516 lesions). Freedom from MAEs was 90.5% (95% CI: 87.2-93.0) at 6 months, 85.4% (95% CI: 81.5-88.6) at 12 months and 80% (95% CI: 75.5-83.8) at 24 months. Freedom from CD-TLR was 95.9% (95% CI: 93.8-97.4), 91.6% (95% CI: 88.7-93.8), and 87.1% (95% CI: 83.5-89.9) at 6, 12, and 24 months, respectively. All-cause mortality at 24 months in diabetics was 16.0% (95% CI: 12.6-20.2), and major target limb amputation was 6.1% (95% CI: 4.1-8.9), which was significantly higher than in non-diabetics (8.4% (95% CI: 6.0-11.6),  $P = 0.0005$  and 1.2% (95% CI: 0.5-2.9),  $P < 0.0001$ , respectively). At 24 months, 82.0% of patients had improved by  $\geq 1$  Rutherford class.

## **MP-14 Predictors of Re-occlusion of Femoropopliteal Lesions after Treatment by Drug-Coated Balloon**

○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?】**

Re-occlusion of femoropopliteal lesions after drug-coated balloon (DCB) is sometimes observed and clinically significant since it often ends in re-occlusion once again.

### **【What's new?】**

This study was aimed to show predictive factors of re-occlusion of femoropopliteal lesions after endovascular therapy (EVT) by DCB.

**Method**  
It is multicenter (LANDMARK registry population from 5 hospitals in Kanagawa prefecture), retrospective and observational study. From December 2017 to June 2020, 373 de novo femoropopliteal lesions were treated by DCB. We had 23 re-occlusions (6%). We analyzed patient and lesion characteristics, and relationship of them with re-occlusion of the lesions.

### **Result**

In the studied group, mean age was  $75 \pm 9$  years. Rates of diabetes mellitus and hemodialysis were 62% and 39% respectively. Aspirin, thienopyridine and cilostazol intake were 79%, 87%, and 41% respectively. Mean occlusion length was  $3.8 \pm 8.2$  cm. Multivariate Cox proportional hazard analysis showed cilostazol intake was a negative predictor of re-occlusion (HR 0.36, CI 0.13-0.98,  $p=0.04$ ). It also showed occlusion length more than 5 cm was an independent predictor (HR 2.97, CI 1.29-6.55,  $p=0.01$ ) of re-occlusion.

### **Conclusion**

Cilostazol intake was a protective factor, and occlusion length more than 5cm was a risk factor of re-occlusion of femoropopliteal lesion after treatment by DCB.

## **MP-15 Revascularization in patients with femoropopliteal arterial disease using a combination of Drug-Eluting Stent and Drug-Coated Balloon**

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### **【What's known?】**

Revascularization procedures for FP lesions are currently dominated by drug-eluting technologies, including drug-eluting stents (DES) and drug-coated balloons (DCB). Among these, full-coverage DES is considered one of the options for achieving long-term patency. However, due to factors such as length, cases may arise where combination therapies, such as "proximal DES + distal DCB" or "proximal DCB + distal DES," must be employed. This study aims to evaluate the outcomes of these combination therapies, including the restenosis rate.

### **【What's new?】**

Approximately half of the lesions were total occlusions, and the full-coverage DES (DES + DES) group had a slightly higher CTO rate. Since IVUS was not used, the wire crossing location cannot be discussed. Kaplan-Meier analysis of primary patency at 12 months showed the following: Group A (full-coverage DES) had a patency rate of 95%, Group B (proximal DES + distal DCB) had a rate of 90% (A vs. B;  $p = 0.90$ ), while Group C (proximal DCB + distal DES) had a significantly lower rate of 72% (A vs. C;  $p = 0.04$ ). Freedom from clinically driven target lesion revascularization exceeded 90% at 12 months across all three groups, but it dropped to approximately 65% in Group C at 24 months.

# MP-16 Use of Intravascular Ultrasound (IVUS) in Lower Limb Angioplasty: A Single Centre Experience

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## 【What's known?】

Digital subtraction angiography (DSA), the gold standard for endovascular imaging, has limitations in precision and safety. Intravascular ultrasound (IVUS) provides greater accuracy with detailed cross-sectional images, especially for guiding percutaneous revascularization. However, research on IVUS application in lower limb procedures, particularly in Asian populations, remains limited.

## 【What's new?】

A retrospective study analyzed IVUS-guided lower limb angioplasty data from 65 Asian patients with Rutherford 4 and above in Singapore (January 2022–June 2023). It compared mean arterial diameters (MAD) and reference vessel diameters (RVD) from European populations, locally derived RVDs, and post-intervention measurements. Below-the-knee (BTK) arteries were significantly smaller than European RVDs: anterior tibial artery (3.25 mm vs. 3.37 mm,  $p = .031$ ), peroneal artery (2.74 mm vs. 3.03 mm,  $p = .001$ ), and posterior tibial artery (2.79 mm vs. 3.10 mm,  $p < .001$ ). Above-the-knee arteries, including the common femoral (7.8 mm vs. 6 mm,  $p < .001$ ) and popliteal (5.43 mm vs. 4 mm,  $p = .043$ ), were larger than local RVDs. Multivariate analysis identified associations between arterial diameters and factors such as race, gender, smoking, coronary artery disease, diabetes, and hypertension. The findings highlight regional and demographic variations in arterial dimensions.

Comparison of IVUS-MAD with RVD				
Artery	Mean Artery Diameter (mm, SD, N)	Reference Vessel Diameter (mm, SD, N)		P value
Common Femoral Artery	7.80 (0.487) (55)	6.97 (1.249) (409)		<.001
Superficial Femoral Artery	6.38 (1.77) (39)	5.82 (0.892) (409)		<.001
Popliteal Artery	5.43 (0.822) (36)	5.22 (0.790) (409)		.425
Anterior Tibial Artery	3.25 (0.34) (40)	3.37 (0.291) (409)		.031
Peroneal Artery	2.74 (0.547) (11)	3.03 (0.291) (409)		.001
Posterior Tibial Artery	2.79 (0.574) (22)	3.10 (0.349) (409)		<.001

Comparison of IVUS-MAD with Local RVDs				
Lower Limb Vessel	Mean Artery Diameter (mm, SD, N)	Local Reference Vessel Diameter (mm)	P value	P value
Common Femoral Artery	7.80 (0.487) (55)	6	2.75	<.001
Superficial Femoral Artery	6.38 (1.77) (39)	5	1.06	.143
Popliteal Artery	5.43 (0.822) (36)	4	1.72	.043
Anterior Tibial Artery	3.25 (0.34) (40)	3	0.465	.528
Peroneal Artery	2.74 (0.546) (11)	3	0.565	.518
Posterior Tibial Artery	2.79 (0.581) (11)	3	0.477	.517

# MP-17 Short-term treatment outcomes of trans radial Artery endovascular for the Iliac Artery

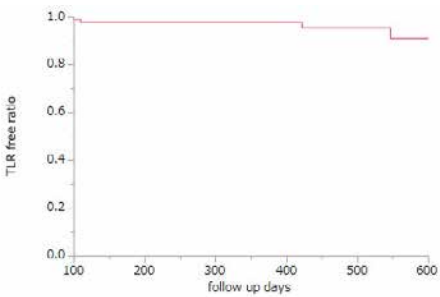
○Jun Nakamura, Mitsutoshi Asai, Takahisa Yamada, Takashi Morita, Masato Kawasaki, Atsushi Kikuchi, Takumi Kondo, Tsutomu Kawai, Masahiro Seo, Takeshi Fujita, Masatake Fukunami  
Osaka General Medical Center

## 【What's known?】

The radial artery is the most frequently selected PCI, and more recently, the radial artery is increasingly being selected for endovascular therapy (EVT) of the iliac artery. In recent years, several radial-specific endovascular devices have become clinically available.

## 【What's new?】

This was a single-center, retrospective study. From December 2017 to March 2024, we analyzed 89 iliac cases treated with TRA. Clinical data were analyzed retrospectively. The primary endpoint was clinical success. The secondary endpoints were the 12-month freedom from clinically driven target lesion revascularization (CD-TLR). Average patient age was  $73 \pm 9$  years; 74% were male; average height was  $160 \pm 8$  cm. Diabetes mellitus, hypertension, dyslipidemia, and smoking habit were present in 32 (35.9%), 80 (89%), 60 (67.4%), and 59 (66.3%) patients, respectively. TACS2 C/D lesions were 75% and chronic occlusion were 42%. The clinical success rate of the procedure was 98% and access site complications occurred only one case. The femoral artery was additionally punctured in 10 (11%) of cases. There were no radial artery occlusions, target lesion revascularization, or complications 1 month later. 12-month freedom from CD-TLR was 92.1% and all cause death was 3%. We suggested that treatment of iliac lesion by radial artery approach was feasible.





## MP-18 The Adjunctive Use of 3D Printing and Augmented Reality in Perioperative General Surgical Planning: Lessons learnt from Endovascular Surgery

○Yung-Hsin Hsueh, Riteesh Bookun  
Ballarat Base Hospital

### 【Case overview】

**Background:** Advanced imaging and modeling technologies, including 3D rendering and 3D printing, are transforming surgical planning. At Ballarat Base Hospital, 3D reconstructions of CT angiograms and printed models of vascular pathology have been instrumental in enhancing procedural precision and minimising risk in vascular surgery. These innovations are now being adapted to general surgery for complex operative planning.

### 【Procedure summary】

**Methods:** We present two cases: a pregnant patient with splenic artery aneurysms requiring endovascular coiling and a patient with an iliac artery aneurysm associated with a horseshoe kidney. In both cases, 3D-printed models of the pathology were created, providing crucial anatomical detail for perioperative planning and intraoperative navigation.

### 【Clinical time course and implication (or perspective)】

**Results:** The use of 3D modeling minimised intraoperative radiation exposure in the splenic artery aneurysms case, while facilitating meticulous preoperative strategy formulation in the iliac aneurysm with a horseshoe kidney. Inspired by these successes, our general surgical team has integrated 3D printing and augmented reality into planning for complex bowel resections, improving precision and multidisciplinary collaboration in high-stakes surgeries.

**Conclusion:** These cases highlight the transformative potential of 3D printing and augmented reality in modern surgical workflows, underscoring their value in advancing surgical outcomes in both vascular and general surgery.



Figure 1: 3D printed anatomical models. (A, far left) Illustrating splenic aneurysms in a pregnant patient. (B) Complex bowel 3D printed anatomical model for preoperative planning inspired by vascular's innovative approach. (C, far right) Specimen removed intraoperatively as comparison.

## MP-19 A case of type 1a endoleak following EVAR due to severe angulated neck treated additional EVAR with reverse chimney technique

○Kazuomi Iwasa<sup>1)</sup>, Keita Odashiro<sup>2)</sup>

<sup>1)</sup> Kyushu Central Hospital Vascular Surgery, <sup>2)</sup> Kyushu Central Hospital Cardiology

### 【Case overview】

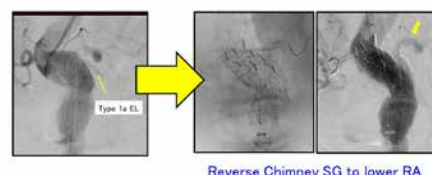
80s female who underwent endovascular aortic repair using AORFIX for an abdominal aortic aneurysm with severe angulated neck. Postoperative enhanced CT demonstrated no type 1 and 3 endoleak, but revealed type 2 endoleak from IMA. Though, the aneurysm had no enlargement after the surgery for three years. Enhanced Ct taken 3 years after the first surgery revealed enlargement of the aneurysm, due to type 1a endoleak. with the diagnosis of type 1a endoleak, a second surgery was performed.

### 【Procedure summary】

At first, proximal cuff was placed at the same level of mainbody for reinforce expansion power, but type 1a endoleak was remained. So, reverse chimney stentgraft was inserted to lower renal artery and additional cuff was deployed at the level of higher level of renal artery. After kissing ballooning was done, type 1a endoleak was disappeared. Final angiography was shown in Figure.

### 【Clinical time course and implication (or perspective)】

Intraoperative completion angiography and postoperative enhanced CT confirmed the disappearance of type 1a endoleak.



Reverse Chimney SG to lower RA

## MP-20 Regional Challenges in Complex Aneurysm Management with Horseshoe Kidney: Collaborative General Surgery and Vascular Surgery Approaches

○Yung-Hsin Hsueh, Riteesh Bookun

Ballarat Base Hospital

### 【Case overview】

The management of aneurysms in patients with horseshoe kidney (HSK) presents challenges due to complex vascular anatomy. This case highlights a 65-year-old male with a 7 cm right common iliac artery aneurysm complicated by a central HSK with multiple aberrant renal arteries from the abdominal aorta and iliac arteries. Pre-operative computed tomography angiography and three-dimensional (3D) anatomical rendering provided critical visualization to guide surgical planning.

### 【Procedure summary】

In the absence of a hybrid operating theatre or advanced endovascular resources at Ballarat Base Hospital, a multidisciplinary team opted for open surgical repair. The HSK was mobilized carefully, and a straight Dacron graft was anastomosed between the right common iliac artery and the iliac bifurcation. Care was taken to preserve accessory renal arteries and the isthmus of the HSK. General surgeons provided valuable guidance on safe abdominal entry, while vascular surgeons performed the aneurysm repair. This collaboration was essential as modern vascular training emphasizes endovascular techniques, reducing exposure to open abdominal procedures.

### 【Clinical time course and implication (or perspective)】

This case underscores the limitations of endovascular aneurysm repair in complex anatomy, reaffirming the importance of open surgery. Multidisciplinary collaboration between general and vascular surgeons is vital to preserving shared expertise, fostering skill development, and delivering high-quality care as endovascular techniques evolve.



## MP-21 A rare Intracranial stenting for severe intracranial arterial stenosis

○Gee Jin Ng

National Neuroscience Institute

### 【Case overview】

A 58-year-old man with diabetes mellitus and hyperlipidemia has recurrent left middle cerebral artery watershed strokes due to severe intracranial atherosclerotic disease (ICAD).

He presented with right upper limb weakness during first stroke. Imaging revealed severe bilateral intracranial carotid artery (ICA) stenosis, worse on the left. Despite optimum medical therapy (dual antiplatelet therapy), he had 3 stroke subsequently from symptomatic left ICA stenosis. Left ICA stenting was performed to address recurrent ischemic events.

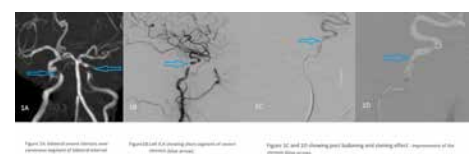
### 【Procedure summary】

Vascular sheath accessed the right common femoral artery for angiography of the bilateral ICAs. Severe stenosis with post-stenotic dilatation was noted in both ICAs, more significant on the left. Angioplasty stenting were performed on the left ICA with good luminal gain. Post-procedure, significant improvement in blood flow was noted.

### 【Clinical time course and implication (or perspective)】

With optimum medical therapy and left ICA stenting, there was no recurrent of stroke for the next 3 months.

Aggressive medical management still the main treatment for ICAD. Intracranial stenting is a treatment option for symptomatic ICAD, particularly when medical therapy fails. Stringent patient selection, experience procedurist, and procedure advancement, intracranial stenting may have a role in carefully chosen cases.



## MP-22 The effect of aggressive lipid-lowering therapy on plaque stabilization of nontarget lesion in femoropopliteal disease detected by near-infrared spectroscopy-intravascular ultrasound

○Yusuke Sato, Yuya Matsunaka

University of Fukui

### 【Case overview】

The effects of aggressive lipid-lowering therapy with proprotein convertase subtilisin/kexin type 9 (PCSK9) inhibitor on the lipid-rich plaques in nontarget lesions in femoropopliteal arteries remain unknown.

A 74-year-old man who presented with intermittent claudication had undergone endovascular therapy for femoropopliteal disease.

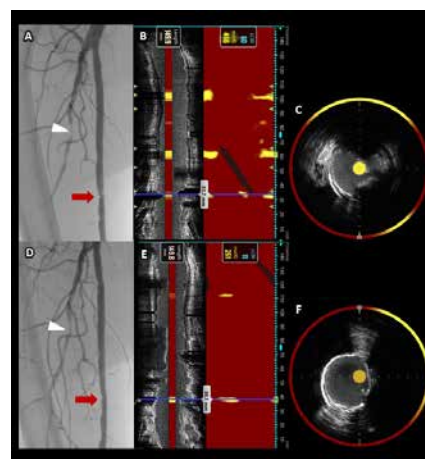
### 【Procedure summary】

Angiography and Intravascular ultrasound (IVUS) images showed a mild stenotic lesion in the proximal superficial femoral artery (arrows, A and C). Near-infrared spectroscopy-intravascular ultrasound (NIRS) images revealed lipid-rich plaques in nontarget lesions with a maximum lipid-core burden index ( $\text{max LCBI}_{4\text{mm}}$ ) of 466 (B). The low-density lipoprotein cholesterol level was 110 mg/dL, even using a high-intensity statin. We prescribed aggressive lipid-lowering therapy with evolocumab and assessed the nontarget lesion 15 months later.

### 【Clinical time course and implication (or perspective)】

Angiography displayed plaque regression of the mild stenosis in proximal SFA and deep femoral artery (arrows and arrowheads, A and D). The value of  $\text{max LCBI}_{4\text{mm}}$  remarkably decreased to 261 in the NIRS assessment (B and E). The IVUS findings demonstrated significant luminal enlargement from 12.5 mm<sup>2</sup> to 17.7 mm<sup>2</sup> in the nontarget lesion (C and F).

The current case suggests that aggressive lipid-lowering therapy with a PCSK9 inhibitor may lead to plaque regression and stabilization of the lipid-rich plaque in nontarget lesions in the femoropopliteal artery.



## MP-23 A nightmare case of Ao-Iliac region dissection and false lumen formation caused by a Fogarty balloon catheter bailed out by IVUS-guide wiring

○Yuta Tajiri, Hiroyuki Miyagawa

Tokyo Shinagawa Hospital

### 【Case overview】

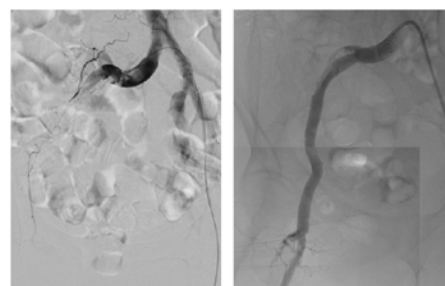
A case of acute limb ischemia. The patient was an 85-year-old woman, she suddenly developed pain in her right lower limb while walking. At the time of admission, she had cyanosis in her right lower limb and a marked cold sensation. Arterial ultrasound and contrast CT scans revealed thrombus formation from the right common iliac artery (CIA) to the femoropopliteal artery.

### 【Procedure summary】

A hybrid therapy with vascular surgery was chosen, anticipating thrombus removal using a Fogarty balloon catheter. A Radifocus guidewire knuckle advanced from the cut-down site through the iliac artery occlusion into the abdominal aorta. Attempts to remove the thrombus by inflating the Fogarty balloon were unsuccessful, as no thrombus could be retrieved. At this point, a sense of unease led to angiography, which revealed arterial dissection extending from the aorta to CIA. A contralateral approach via the left femoral was added, and IVUS-guide wiring and wire pull-through were performed to successfully access the true lumen. A bare metal stent was deployed as a bailout procedure. In retrospect, stent grafts would have been preferable. We report on the case of “acute on chronic” including points for reflection.

### 【Clinical time course and implication (or perspective)】

The patient's status was dramatically improved. Fortunately, the dissection had been repaired.



## **MP-24      A Case of trans-ankle intervention combined with Fracking technique for a common femoral artery lesion with limited access options**

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

### **【Case overview】**

An 86-year-old male presented with left leg intermittent claudication for six months due to severe calcified stenosis of the left common femoral artery (CFA) and was referred for endovascular treatment. He had a history of stent-graft placement from the terminal aorta to the bilateral common iliac arteries. Additionally, due to severe calcification in both upper limbs, neither the crossover approach nor upper limb access was feasible.

### **【Procedure summary】**

We attempted trans-ankle intervention (TAI) via the left anterior tibial artery. After the successful guidewire crossing, balloon dilation was performed on the lesion, but sufficient lumen gain was not achieved. Therefore, we decided to use the Fracking technique. This method involves balloon dilation at the lesion combined with needle insertion into the calcification from the outside, applying hydraulic pressure through the needle to modify deep calcification. Following the procedure, a minimal lumen area of 21.5 mm<sup>2</sup> from intravascular ultrasound image was achieved, and sufficient blood flow was restored without complications.

### **【Clinical time course and implication (or perspective)】**

He was discharged on the second day with improved symptoms following treatment, and patency was maintained at the 6-month follow-up. The combination of TAI and the Fracking technique for the calcified CFA lesion with limited access sites was safe and effective.

## **MP-25      Challenging approach case: trans-superficial-femoral artery intervention after failed trans-ankle intervention**

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

### **【Case overview】**

An 80-year-old male had complained of left claudication, and duplex ultrasonography showed stenosis at the left popliteal artery.

### **【Procedure summary】**

The patient had undergone endovascular repair for an abdominal aortic aneurysm, which made it impossible to perform the contra-lateral approach. Moreover, bilateral common femoral arteries were aneurysmal dilation to 10mm, probably due to the cut-down and subsequent repair. Therefore, we performed trans-ankle intervention (TAI), treating the lesion with a drug-coated balloon. The symptoms improved, and he received follow-ups in the outpatient clinic. However, 10 months after the index EVT, he had acute-onset left leg pain. Duplex ultrasonography showed thrombotic occlusion of the left popliteal and left below-the-knee arteries. Thus, we planned TAI again to rescue his foot. The second EVT succeeded in revascularizing by implanting an interwoven stent in the left popliteal artery. However, the day after the second procedure, the ultrasound confirmed thrombotic occlusion of the popliteal and the below-the-knee arteries. Because the dorsal artery occluded with a thrombus, we decided to perform a thrombectomy via the ipsilateral left superficial femoral approach using an 8-Fr Indigo aspiration system. We finally obtained vessel flow in the popliteal, anterior tibial, and peroneal arteries.

### **【Clinical time course and implication (or perspective)】**

The symptoms at rest have recovered after the procedure.

## **MP-26      The BADFORM Technique Using the New Fiber-based, Over-the-wire, Non-compliant Balloon Catheter Demonstrates Strong Pushing Force**

○Yuji Ono

Japanese Redcross Narita Hospital

### **【Case overview】**

A 50s male who had undergone a distal bypass surgery two years earlier presented with an infected ulcer on his right foot.

### **【Procedure summary】**

We immediately made an incision to ensure drainage and decompression. Angiography revealed the patent bypass to the plantar artery, with severe stenosis of the anterior tibial artery. We tried to dilate the lesion using a cutting balloon. However, this balloon became trapped. We introduced another balloon along the lesion to resolve the entrapment. Unfortunately, this second balloon also became entrapped. We then tried to insert a sheath from the dorsalis pedis artery (DPA), but this was not feasible because of severe calcification. The “BADFORM technique,” using a microcatheter inserted via the DPA, also failed. Ultimately, we could push and retrieve the cutting balloon by inserting a fiber-based, over-the-wire (OTW) balloon from the DPA without a sheath and performing BADFORM. Although a broken tip of the second balloon catheter remained, the OTW balloon catheter successfully dilated the distal calcified lesion and made it possible to insert a sheath from the DPA. We eventually retrieved the broken tip using a snare.

### **【Clinical time course and implication (or perspective)】**

The patient’s wound improved after the treatment. The BADFORM, using a fiber-based balloon catheter, enabled complex entrapped balloon retrieval.

## **MP-27      A case of a CTO lesion in the SFA with severe calcification that was successfully treated by Jetstream debulking with the pull-through system**

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

Department of Cardiology, Asahi General Hospital

### **【Case overview】**

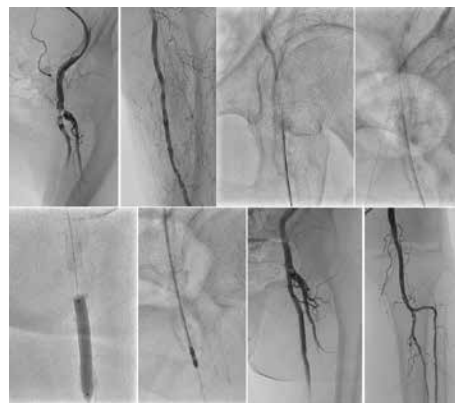
The Jetstream Atherectomy is useful for lesions with severe calcification, but there is a risk of distal embolism. The patient was an 87-year-old woman whose chief complaint was intermittent claudication on her left side. After diagnosis by imaging tests, we performed EVT on a severe calcified CTO lesion in her left SFA.

### **【Procedure summary】**

We attempted antegrade wiring using a hard wire via a contralateral approach, but the wire advanced out of the vessel and could not pass through, so we punctured the PopA and introduced Parent 5082 sheath to perform retrograde approach, and succeeded in intra-calc wiring. We established a pull-through system, and the wire bias and distribution of calcification were assessed using IVUS. After lesion modification by the Wingman 35, the PopA was occluded with a balloon to prevent distal embolization, and debulking was performed using the Jetstream XC 24/34. By adjusting the bias of the pull-through wire, calcification could be safely and effectively debulked. After the debulking, the proximal portion of the balloon blockade was aspirated to suck out the debris. After the DCB dilation, the final angiography showed good antegrade flow.

### **【Clinical time course and implication (or perspective)】**

In this case, we report that Jetstream was used safely and effectively with a pull-through system.





## MP-28      **A case of aortic stent placement failure in Lurisch syndrome, with stent displacement corrected using a large-diameter balloon**

○Yuta Tajiri, Hiroyuki Miyagawa  
Tokyo Shinagawa Hospital

### 【Case overview】

A 51-year-old woman had been experiencing intermittent claudication in both lower limbs. During treatment for acute myocardial infarction, attempts to pass a wire via the groin approach were unsuccessful, and iliac artery occlusion was noted on angiography. Subsequent contrast-enhanced CT confirmed the diagnosis of Leriche syndrome.

### 【Procedure summary】

The procedure was initiated using a left radial approach and bifemoral approach. With the aid of IVUS-guide wiring, the wire successfully crossed the Ao-Iliac occlusion. Based on the characteristics of the occlusion, organized thrombus and plaque were suspected. Low-pressure dilation of the aorta was performed with a 5.0 mm balloon, followed by the deployment of an E-Luminexx 14/60 mm stent via the right femoral approach. Special attention was given to the lumbar artery bifurcation, which provided significant collateral circulation to the lower limbs. However, during stent placement, a small portion of the stent became jailed within the common iliac artery. As this could pose a risk for complications during subsequent kissing stent placement, a bailout was required. Using a large-diameter balloon (Atlas Gold 12 mm), the stent was successfully pushed upward into the aortic direction.



### 【Clinical time course and implication (or perspective)】

Her claudication improved dramatically. Follow-up ultrasound confirmed that the stent remains patent.

## MP-29      **Serial Assessment of Vascular Healing Using Multimodality Imaging Following Novel Cilostazol-coated Biomimic-3D Helical Stent Implantation in Femoropopliteal Artery Lesion**

○Taku Toyoshima, Osamu Iida, Hitoshi Minamiguchi, Yasuhiro Ichibori,  
Kei Nakamoto, Naoki Mori, Takashi Kanda, Mikio Shiba, Yuma Hamanaka,  
Motoki Yasunaga, Daichi Yoshii, Yoshiharu Higuchi  
Osaka Keisatsu Hospital

### 【Case overview】

A 72-year-old man presented with intermittent claudication in his right leg. His medical history included hypertension and smoking. He was on dual antiplatelet therapy with aspirin and clopidogrel. Duplex ultrasound revealed severe stenosis in the right superficial femoral artery (SFA).

### 【Procedure summary】

Initial angiography demonstrated focal severe stenosis in the right distal SFA, and endovascular therapy was performed with successful deployment of a novel Cilostazol-coated Biomimic-3D helical stent (CLZ-BM3D 6.0mm\*60mm, Otsuka Medical Devices Co., Ltd.). Serial follow-up evaluations were conducted at 3, 6, 9 and 12 months with multimodalities, including intravascular ultrasound (IVUS), optical frequency domain imaging (OFDI) and intravascular angioscopy (Zemporshe™, OVALIS).

### 【Clinical time course and implication (or perspective)】

No angiographic restenosis was observed throughout the follow-up period. OFDI and IVUS demonstrated progressive neointimal thickening until 6 months, which stabilized at 9 and 12 months. Intravascular angioscopy revealed Grade 2 neointimal coverage (stent struts visible but embedded in neointima) at 3 months, progressing to Grade 3 (stent struts fully embedded and no longer visible) at 6, 9, and 12 months. Small amount of thrombus was observed at 3 months but disappeared after 6-month follow-up. This case demonstrates the favorable vascular healing process following implantation of the novel Cilostazol-coated Biomimic-3D helical stent, as evaluated by multimodality imaging.

## MP-30

### Infrainguinal Angioplasty Assisted by Popliteal Endarterectomy: The ultimate Solution for Failed Reconstructions

○Sara Mokhtari<sup>1)</sup>, Jiyoung Shin<sup>2)</sup>, Saebeom Hur<sup>3)</sup>, Sanghyun Ahn<sup>2)</sup>

<sup>1)</sup> Mohammed VI University Hospital, Oujda, Morocco,

<sup>2)</sup> Vascular Surgery and Transplantation Department, Seoul National University Hospital. Seoul, South of Korea,

<sup>3)</sup> Interventional Radiology Department. Seoul National University Hospital. Seoul, South of Korea

#### 【Case overview】

A 78 male with diabetes, ischemic cardiopathy, hemodialysis, and bilateral critical limb ischemia. He was admitted for non-healing wounds of his left foot. The CT scan showed patent kissing stents in the common iliac arteries, GLASS IV lesions of the left lower limb arteries.

#### 【Procedure summary】

The procedure consisted of 3 consecutive stages: An endarterectomy of femoral tripod arteries, and an attempted angioplasty of the ipsilateral arterial axis. An exclusive use of endovascular option wasn't possible due to the impossibility of recanalizing distal SFA even though a retrograde pathway was attempted. Thus, an open endarterectomy of the proximal popliteal artery was performed, and the guidewire was oriented, under sight, into the distal part of PA. As the heavy calcification was surgically removed and the guidewire was well placed distally, a pre-dilatation of the long SFA obstruction was performed using a POBA (5mm) followed by drug eluting stents. The final angiography showed patent stents with a runoff mostly collateral. The immediate postoperative period was uneventful.

#### 【Clinical time course and implication (or perspective)】

Open popliteal endarterectomy combined with angioplasty reconstruction is a safe and effective revascularization procedure; that can be a limb-saving in selected patients; in desperate cases where neither endovascular approach nor open repair can make a win situation

## MP-31

### Endovascular management of traumatic popliteal artery dissection in a young patient: A case report

○Yuki Matsumoto<sup>1,2)</sup>, Yuya Oshikiri<sup>2)</sup>, Hidemi Morioka<sup>2)</sup>

<sup>1)</sup> Tokai University School of Medicine,, <sup>2)</sup> Iwate prefectural Ofunato hospital

#### 【Case overview】

A 24-year-old male sustained a traumatic popliteal artery injury following a fall from height. On presentation, he exhibited significant swelling and elevated creatine kinase levels. Enhanced CT angiography revealed his popliteal artery obstructed.

#### 【Procedure summary】

Endovascular intervention was attempted via the femoral artery but was unsuccessful. A retrograde approach through the dorsalis pedis artery was utilized to access the lesion. Thrombectomy was performed, followed by balloon angioplasty to restore blood flow.

#### 【Clinical time course and implication (or perspective)】

Post-procedure imaging demonstrated successful revascularization. However, given the rarity of traumatic popliteal artery injuries in young patients and the challenges associated with endovascular treatment in this population, surgical intervention remains the standard of care in most cases.