

MO-1 Poor Clinical Outcome and Indicators of Endovascular Therapy for Aortoiliac Artery In-stent Restenosis Lesions

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【What's known?】

Favorable results of endovascular therapy (EVT) for aortoiliac artery (AIA) lesions were reported. However, there were few data of additional EVT for in-stent restenosis (ISR) of AIA lesion.

【What's new?】

This study was a single-center, cohort study. Between January 2010 to June 2018, we treated 957 de novo AIA lesions by EVT. Fifty of them needed additional EVT due to ISR and we studied these 50 ISR lesions. Mean follow up period was 1,216 days. Eight lesions were in-stent occlusion (ISO) and 42 were non-ISO. Thirty-two lesions were performed adjunctive stenting. Thirty-four lesions were external iliac artery (EIA). During follow-up period, 8 lesions needed repeat revascularization in the treated vessel (TVR). Freedom rates from TVR, comparing with the 957 de novo lesions, were significantly poor (log-rank $p=0.0012$, show in the Fig). Predictors of TVR were ISO ($p=0.005$) and small diameter of primary stent ($< 8\text{mm}$) ($p=0.024$). Overall, Adjunctive stenting was not affected to TVR ($p=0.376$). However, limited to the non-ISO lesions, adjunctive stenting avoided TVR (0/24 vs 4/18, $p=0.019$). Furthermore, in non-adjunctive stenting lesions, EIA lesion showed high TVR rates comparing with common iliac artery (4/15 vs 0/3, $p<0.001$).

MO-2 Clinical Outcomes of endovascular treatment for isolated internal iliac artery aneurysm

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【What's known?】

Once endoleak occurs, re-intervention is quite challenging in the endovascular treatment of isolated internal iliac artery aneurysms (IIAA). We believe embolization of all branches from the aneurysm is indispensable for endovascular management of IIAs.

【What's new?】

The study subjects were 17 patients who had undergone endovascular treatment for isolated IIAA in our hospital since 2007. Distal coil embolization was performed by ipsilateral or contralateral femoral artery approach. The cohort was divided into two groups according to the proximal occlusion, coil embolization group ($n=9$) and stent-graft group ($n=8$).

The technical success rate was 100% with no endoleak. There was significant difference ($P<0.0001$) in regard to cost between coil embolization and stent-graft group about proximal occlusion. During follow up period (mean 56.2 months), no aneurysmal enlargement was observed. In 2 cases, additional iliac stent-graft was needed due to proximal coil compaction and migration.

Endovascular treatment for isolated IIAA showed excellent outcomes, when embolization of all branches was performed completely. In proximal occlusion, stent-graft is reasonably recommended in terms of treatment cost and durability.

MO-3 The efficacy of lumbar artery embolization with or without patent IMA during endovascular abdominal aneurysm repair

○Masami Shingaki

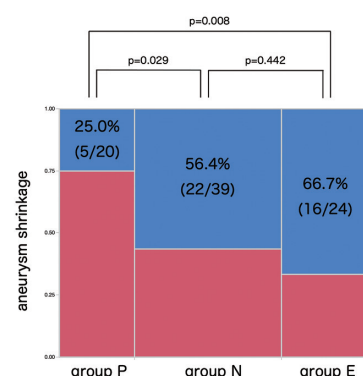
Hakodate Municipal hospital

【What's known?】

Whether lumbar artery embolization would suppress type 2 endoleak (T2EL) and contribute to aneurysm shrinkage.

【What's new?】

We estimated 103 cases, which were divided into 3 groups, patent IMA: group P (n=22), occluded IMA without LAE (n=50): group N, occluded IMA with LAE: group E (n=31). Mean age was 76.9+8.3 y/o, male was 79 (76.7%) cases. There was no significant difference in operation time between 3 groups (P: 106.1+35.3 min., N: 112.2+42.2 min. and E: 121.4+31.2 min.; p=0.330). T2EL one week after EVAR had the tendency of reduction but no significant difference around groups (P: 6/22 (27.3%), N: 8/50 (16.0%) and E: 3/30(10.0%); p=0.283). AAA diameter 12 months after EVAR had significant reduction between group P and N (25.0% (5/20) vs 56.4% (22/39); p=0.029). We could not show the efficacy of LAE but could obtain the tendency of diameter reduction between group N and E (56.4% (22/39) vs 66.7% (16/24); p=0.442).



MO-4 Importance of Distal Sealing During Endovascular Aneurysm Repair Using Aneurysmal Common Iliac Artery as Landing Zone

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【What's known?】

Although the use of aneurysmal CIA as the landing zone during EVAR remains an essential procedure, this procedure may increase the risk of late complications such as ongoing CIA dilatation and type Ib endoleak (CIA-related complications).

【What's new?】

We hypothesized that incomplete sealing of the aneurysmal CIA segment during EVAR could increase the incidence of CIA-related complications. In this study, we evaluated the midterm results of EVAR with aneurysmal CIA used as the landing zone and assessed the importance of distal sealing in this procedure. Consequently, use of aneurysmal CIA as landing zone increases the risk of CIA-related complications. However, maximum sealing of the aneurysmal CIA segment could prevent these complications.

MO-5 Acute Thoracic Aortic Occlusion Case

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【Case overview】

A 76-year-old man was admitted emergently due to cardiac pulmonary arrest. His deteriorated hemodynamic status was improved by basic life support. He was diagnosed congestive heart failure caused by afterload mismatch.

Nevertheless previous contrast-enhanced CT image showed thoracic aortic stenosis, CT image on arrival showed aortic occlusion. It seemed that an acute thoracic aortic occlusion caused adverse afterload mismatch and cardiac arrest, therefore, emergent TEVAR was performed.

【Procedure summary】

The thoracic aortic total occlusion lesion was crossed by 0.014 wire, subsequently, IVUS was performed and that showed atherosclerotic plaque or thrombus, not aortic dissection. However Zenith TX stent graft was deployed in descending thoracic aorta, the graft did not expand well. Thus, another Zenith TX was deployed and dilated using large size balloon. However symmetric expansion of stent graft was not achieved, the blood pressure gradient between upper and lower half of the body had disappeared finally.

【Clinical time course and implication (or perspective)】

On postoperative day 3, heart failure was improved. The follow up CT image on day 7 showed more symmetric expansion of stent graft at descending thoracic aorta compared to immediately after TEVAR. On day 30, the patient was discharged. In conclusion, TEVAR was effective for improving heart failure caused by acute thoracic aortic occlusion without dissection.

MO-6 Percutaneous endoluminal anatomical bypass (PEA pass) technique for patients with external iliac artery occlusion after failed conventional endovascular recanalization

○Makio Muraishi, Tatsuya Nakama

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【Case overview】

A 76-year-old hemodialysis male, with a history of colostomy was admitted to our hospital with chronic limb ischemia (toe gangrene) due to left EIA and below-the-knee (BTK) occlusion. During previous colostomy, his left EIA was accidentally ligated. Conventional endovascular therapy was performed but failed because any guidewire couldn't pass the ligated EIA, and femoral-femoral (F-F) bypass was performed as an alternative therapy. His gangrene was improved but few weeks later, surgical site infection (SSI) was occurred, which was uncontrollable with antibiotics. Before infected graft removal, Percutaneous Endoluminal Anatomical Bypass (PEApass) procedure was demonstrated.

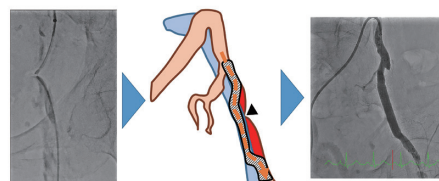
【Procedure summary】

In the distal, arterial-venous (AV) fistula was created using re-entry device. In the proximal, AV fistula was created using a 0.014-inch guidewire. Proximal 0.014-inch guidewire was snared using retrograde snare at the inside of iliac vein. An 8.0x100mm stentgraft was implanted at proximal to distal iliac artery through the iliac vein. In final angiogram, occluded iliac artery flow was completely restored without any complications.

【Clinical time course and implication (or perspective)】

After the PEApass procedure, infected graft was removed. Complete wound (gangrene and SSI) healing was achieved at about 1 month. A novel PEApass technique is a feasible option for uncrossable iliac occlusions.

Image
Percutaneous Endoluminal Anatomical Bypass (PEApass) technique for ligated left EIA



MO-7

Successful revascularization with culotte technique for an occluded stent placed in a subintima of iliac artery

○Hideto Sangen¹⁾, Chika Uesugi¹⁾, Shin Sakai¹⁾, Tokuhiro Kimura¹⁾, Kazuki Sugawara¹⁾, Yasushi Asakura¹⁾, Kunio Tanaka¹⁾, Hiroshi Ando²⁾

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【Case overview】

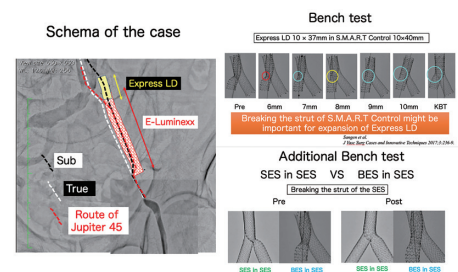
A 73-year-old man was admitted for left claudication. Seven years ago, he underwent EVT for Lt CIA and EIA CTO. Express and E-Luminexx stent was implanted, however, they occluded after the procedure. In this time, EVT was performed again.

【Procedure summary】

EVT was performed with bidirectional approach. (4.5Fr 98cm sheath: left brachial artery, 6Fr 25cm sheath: left femoral artery.) Vassallo G14 wire with Ichibanyari/CX was passed from left FA to aorta via implanted stents. IVUS revealed the guidewire was passed through stent strut, and implanted stents were placed in subintimal lumen. Because the guidewire was crossed to aorta at too far proximal site, we re-crossed a Jupiter 45 wire from implanted stent to aorta via true lumen. After balloon dilation, Express LD was deployed at CIA ostium and SMART Control was deployed from CIA to EIA. Both of them were implanted through a cell of E-Luminexx stent with culotte technique. The final angiogram showed successful revascularization.

【Clinical time course and implication (or perspective)】

After the procedure, Lt ABI and his symptom improved. We applied the culotte technique in the present case, based on a previous successful clinical case and bench testing. In this presentation, results of additional bench testing will be shown.



MO-9 Comparison of Limb and Cardiovascular Outcome following Endovascular Therapy between Patients Receiving Hemodialysis and not Receiving Hemodialysis: Results from the Toma-Code Registry

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【What's known?】

Background: Although patients receiving hemodialysis have significantly different backgrounds, including a history of progressive atherosclerotic disease, compared with those not receiving hemodialysis, there are no studies evaluating the risks for limb and cardiovascular outcome.

【What's new?】

Aims: To demonstrate outcome of limb and cardiovascular in hemodialysis and non-hemodialysis Japanese patients with peripheral artery disease (PAD). Methods: The Tokyo taMA peripheral vascular intervention research COMraDE (Toma-Code) Registry is a Japanese prospective cohort of 2321 consecutive patients with PAD treated by EVT in 34 hospitals in the Kanto and Koshin'etsu regions from August 2014 to August 2016. Results: Freedom from major adverse limb events (MALE) and major adverse cardiocerebrovascular events (MACCE) were significantly lower on hemodialysis group (MALE; 90% vs 96%; $p < 0.001$, MACCE; 59% vs 87%; $p < 0.001$). On the other hand, freedom from MALE for claudication was similar and freedom from MECCE for claudication was lower on hemodialysis (MALE; 98% vs 99%; $p = 0.54$, MACCE; 81 vs 98%; $p < 0.001$). In CLI group, freedom from MALE and MACCE was lower on hemodialysis group. Conclusion: Cardiovascular outcome on hemodialysis is worse but limb outcome on hemodialysis is similar compared with non-hemodialysis after EVT for claudication.

MO-10 Clinical outcome of drug-coated balloon versus scaffold devices in patients with superficial femoral artery chronic total occlusion: A real-world single-center experience

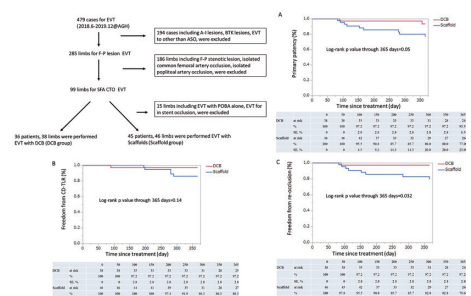
○Naoki Hayakawa, Noriyuki Ishibashi, Yuhei Kasai, Masataka Arakawa, Satoshi Hirano, Sandeep Shakya, Kotaro Miyaji, Syunichi Kushida, Junji Kanda
Asahi General Hospital

【What's known?】

Several clinical trials reported Drug-coated balloon (DCB)s improve 12-month clinical results of femoropopliteal occlusive disease. However, few studies have compared DCB and scaffold devices in chronic total occlusion (CTO) of the superficial femoral artery (SFA). Furthermore, use of a DCB for CTO, has a relatively high rate of using bailout stents, and the results of using only DCB for these lesions are unclear.

【What's new?】

This single-center retrospective study ($n=84$) compared the 12-month clinical results between DCBs (DCB, $n=38$) and stent or stent-graft (Scaffold, $n=46$) for SFA CTO. Patients' and lesions' characteristics were similar between the groups. Rates of bailout stent was 0% and intraplaque angioplasty was 100% in the DCB group. Rates of 12-month primary patency and CD-TLR by Kaplan-Meier estimate tended to be higher in the DCB group than in the scaffold group (primary patency: 93.5% vs. 77.0%, $p=0.05$; freedom from CD-TLR: 97.2% vs. 86.3%, $p=0.14$). The 12-month freedom from re-occlusion rate was significantly less in the Scaffold group than in the DCB group (97.2% vs. 79.6%, $p=0.032$). In treatment for CTO of the SFA, a DCB with intraplaque angioplasty tends to lead to better patency and TLR rates, and less re-occlusion, even without a bailout stent, compared with scaffold.



MO-11 Drug-Coated Balloon vs. Conventional Balloon Angioplasty in Dialysis Patients With Femoropopliteal Disease

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【What's known?】

Background: Recent randomized trials have shown the treatment benefits of use of a drug-coated balloon (DCB) over conventional percutaneous transluminal angioplasty (PTA) in patients with femoropopliteal (FP) disease. However, the effectiveness of DCB for dialysis patients remains unclear.

Method: This was single center observational study. Between 2016 and 2019, consecutive 97 dialysis patients, who underwent PTA (n=61) or DCB (n=36) for femoropopliteal disease, were assessed retrospectively. The primary endpoint is primary patency at 12 months.

Result: There was no significant difference in patient background, limb, and lesion background between 2 groups. Patients treated with DCB had significantly higher rates of primary patency (80% vs. 60%, P=0.04). Cox proportional analysis showed that treatment with DCB was independently associated with primary patency (hazard ratio 2.6, P=0.04).

Conclusions: This study suggested superior 1-year outcome using DCB compared with PTA in dialysis patients with femoropopliteal disease in HD patient.

【What's new?】

This study suggested superior 1-year outcome using DCB compared with PTA in dialysis patients with femoropopliteal disease in HD patient.

MO-12 Comparison of ultrasound-guided versus angiography-guided endovascular treatment for femoropopliteal artery occlusive disease

○Takahiro Tokuda¹⁾, Shinsuke Mori²⁾, Yasuhiro Oba¹⁾, Yoriyasu Suzuki¹⁾,
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¹⁾Nagoya heart center, ²⁾Saiseikai Yokohama City Eastern hospital

【What's known?】

Purpose: This study aimed to compare the efficacy of ultrasound-guided approach for femoropopliteal (FP) artery occlusive disease.

Methods: A retrospective analysis was performed using the data collected regarding patients that underwent endovascular treatment (EVT) for FP artery occlusive disease between January 2010 and April 2018 at two centers. A total of 221 consecutive de novo lesions were analyzed. Propensity score-matched analysis was performed to compare clinical outcomes of recanalization methods. The prognostic value was analyzed based on the number of guidewires, wire-cross time, distal-puncture rate, radiation-exposure, amount of contrast media, primary patency, and clinically driven-target lesion revascularization (CD-TLR) at 1 year.

【What's new?】

Results: A total of 44 matched pairs of patients were analyzed after propensity score-matched analysis. The number of guidewires, distal-puncture rate, wire passage time, radiation exposure, and amount of contrast media were significantly lower in ultrasound-guide group, with 3.4 vs. 4.7, 9.1% vs. 54.5%, 47 min vs. 83 min, 207 mGy vs. 821 mGy, 66 ml vs. 109 ml, respectively (p < 0.01), but there were no significant differences in terms of primary patency and CD-TLR.

Conclusions: The ultrasound-guided EVT significantly reduced the number of guidewires, wire cross time, the rate of distal-puncture, radiation-exposure, and amount of contrast media.

MO-13 Outcomes of drug coating balloon angioplasty in superficial femoral artery calcified lesion

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【What's known?】

A correlation between drug-coated balloon (DCB) and calcification severity in the superficial femoral artery (SFA) has been reported (as assessed by intravascular ultrasound and computed tomography).

【What's new?】

We examined the relationship between PACSS and the clinical course of DCB for SFA lesion.

This study was a single center retrospective study. From April 2018 to December 2019, 89 de novo SFA lesions in 78 patients were treated with DCB. We divided into two groups, the A group (PACSS class 0,1,2: 48 lesions, 42 patients) and the B group (PACSS 3,4: 41 lesions, 36 patients), and compared the primary patency and clinically driven target lesion revascularization (CD-TLR) at one year after endovascular therapy between the two groups. The primary patency at 1 year was significantly lower in the group B than the group A (68% vs. 79%, $p < 0.05$). Freedom from CD-TLR at 1 year was similar between two groups (Group A 92% vs. Group B 91%, $P = 0.36$).

Conclusion:

There was a statistically significant difference in primary patency after 1 year between groups and PACSS class 3 or 4 is associated with restenosis after DCB angioplasty. Assessment of calcification using PACSS is useful for prediction of restenosis after DCB angioplasty for SFA lesion.

MO-14 Clinical outcomes of drug-eluting stent versus stent-graft implantation for patients with peripheral artery diseases presenting femoropopliteal arterial lesions

○Takuya Tsujimura, Osamu Iida, Mitsutoshi Asai, Masaharu Masuda, Shin Okamoto, Takayuki Ishihara, Kiyonori Nanto, Takashi Kanda, Yasuhiro Matsuda, Yosuke Hata, Toshiaki Mano
Kansai Rosai Hospital

【What's known?】

Clinical outcomes of Eluvia drug-eluting stent (DES) versus Viabahn stent-graft (SG) for patients with peripheral artery disease (PAD) presenting the femoropopliteal (FP) arterial lesions in real-world clinical setting have not been systematically studied.

【What's new?】

This study was single center, retrospective and observational study, enrolling 184 lesions in 167 patients with PAD presenting FP lesions who underwent endovascular therapy (EVT) using Eluvia DES or Viabahn SG between June 2012 and October 2019. We compared 55 lesions after Eluvia DES implantation from 53 patients with 129 lesions SG after Viabahn implantation from 114 patients. The primary outcome was 1-year primary patency, while the secondary outcomes were 1-year freedom from target-lesion revascularization (TLR) and freedom from stent thrombosis. One-year primary patency in Eluvia DES group was comparable to that in Viabahn SG group (91.5% versus 87.8%, $P = 0.45$). Similarly, 1-year freedom from TLR (93.8% versus 90.3%, $P = 0.74$) as well as freedom from stent thrombosis (96.0% versus 92.7%, $P = 0.43$) were not significantly different between Eluvia DES group and Viabahn SG group. Consequently, One-year clinical outcome after Eluvia DES implantation was comparable to that after Viabahn SG implantation for FP arterial lesions.

MO-15 Safety of 4Fr Sheath-less Stenting of Endovascular Treatment in Femoro-popliteal Lesion

○Tomoki Aruga

Department of Cardiovascular Medicine, Shinshu University School of Medicine

【What's known?】

Bleeding concerned femoral artery puncture is one of the major complications of endovascular treatment (EVT), and occasionally it could be fatal. Ipsilateral approach of EVT is often applied due to its superiority of wiring and device delivery.

【What's new?】

This is single center retrospective study. Study period from July 2015 to September 2020. Total of 350 case stenting for femoro-popliteal lesion and we excluded crossover approach 195 case. We investigate 155 case ipsilateral. Patients were divided into 2 groups according to the sheath size; the 4Fr sheath group (n=85) and the 6Fr sheath group (n=70). From those groups, we extracted bleeding complications, which were defined as the BARC score of 2 or higher. The primary endpoint was occurrence of bleeding complication, and secondary endpoint was hemostasis time. In our study cohort (median age, 75[range 71-81]), the primary outcome occurred in 6 patients, all of whom were 6Fr sheath group patients. The incidence of bleeding complications was lower in the 4Fr sheath group, off course (p=0.002). The secondary endpoint was shorter in 4Fr sheath group (15.31 ± 0.58 sec vs 18.31 ± 0.65 sec, p<0.001). Composition of each group was not different significantly in sex, BMI, or hemodialysis introduction.

MO-16 Optical frequency domain images of three unique femoral artery stents at 5 months after implantation

○Jun Yoshimura, Masayoshi Kimura, Fumiaki Ito, Yosuke Kirii, Daisuke Ito, Akiteru Kojima, Yusuke Nakagawa, Eigo Kishita, Jun Shiraishi, Masayuki Hyogo, Takahisa Sawada

Japanese Red Cross Kyoto Daiichi Hospital

【Case overview】

A 75-year-old-female on hemodialysis had undergone fixation of the whole left SFA subcutaneously 25 years ago for hemodialysis access. She suffered from recurrent claudication because of meandering SFA occlusion, and endovascular therapy (EVT) was performed several times.

【Procedure summary】

Since angiography revealed severe SFA restenosis, EVT was performed again, with implantation of a 7.0/120 mm drug-eluting stent (Eluvia) in the old bare-metal stent, a 6.0/60 mm interwoven stent (Supera) in the subcutaneous binding site, and a 6.0/50 mm stent-graft (VIABAHN) in the ruptured site after balloon dilation. The final angiogram showed optimal blood flow and no residual stenosis. After 5 months later, clinically driven vessel revascularization for the SFA was performed and angiography showed tandem restenosis in the old BMS only. OFDI showed neointimal proliferation in the interwoven stent, fibrin deposition in the stent-graft, and moderate endothelialization in the Eluvia stent.

【Clinical time course and implication (or perspective)】

A wide variety of stents for the SFA are currently available, including drug-eluting stents, interwoven stents, and covered stents. In the use of these stents, reduction of restenosis and stent thrombosis are the major concerns. We report these informative images from OFDI because they may be useful to predict the incidence of stent thrombosis and patency for the different stents.

MO-17 Pseudo-aneurysm caused by stent fracture in the “sub-acute” phase after endovascular therapy for in-stent restenosis lesions

○Keisuke Nakabayashi, Manabu Murakami, Shinya Hata, Yuta Terabe, Nobuhito Kaneko, Akihiro Matsui, Kazuhiko Tanaka, Hiroshi Ando

Kasukabe Chuo General Hospital

【Case overview】

70s male with critical limb ischemia. He had had endovascular therapy (EVT) for his right superficial femoral artery (SFA) using OUTBACK and SMART stent 2 years before current admission. His wound got worse due to the in-stent restenosis of the SFA.

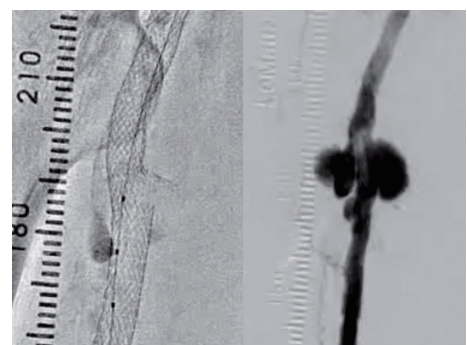
【Procedure summary】

We succeeded the EVT to the right SFA using drug-coated balloon (IN.PACT Admiral 6.0x150, 6.0x120mm). No stent fracture was seen in the final angiography. The follow-up echocardiography 3 weeks after previous EVT indicated no in-stent restenosis, but a saccular aneurysm (26x18x16mm) in the proximal stent site. Though the patient had no significant symptom, D-dimer and fibrin degradation products were high level. The angiography also confirmed a large pseudo-aneurysm with severe stent fracture. VIAVAHAN 6.0x100mm was deployed from proximal stent site to the proximal SFA to completely cover the aneurysm.

【Clinical time course and implication (or perspective)】

No restenosis nor recurrent of an aneurysm were observed; however, the patient suffered from poor control of the foot ulcer and infection. Finally, he died of pneumonia and acute respiratory distress syndrome.

A dilatation of the stent implanted 2 years ago using a drug-coated balloon causes sub-acute stent fracture, which also induces a pseudo-aneurysm. (DOI: [org/10.1016/j.jccase.2020.03.006](https://doi.org/10.1016/j.jccase.2020.03.006))



MO-18 Successful endovascular treatment of renal artery aneurysm using stentgraft and NBCA: a case report

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Sumitomo Hospital

【Case overview】

An 82-year-old woman was found to have a left renal artery aneurysm (RAA) incidentally. A contrast enhanced CT showed a sacciform aneurysm of approximately 2cm diameter arising from the left main renal artery. It was partially thrombosed and associated with a retroperitoneal hematoma which suggested sealed rupture.

【Procedure summary】

We planned to treat RAA using stentgraft-assist N-butyl cyanoacrylate (NBCA) embolization because we were afraid of endoleak using only stentgraft.

For this purpose, 2 catheters were used. The first catheter was used to deploy the stentgraft (VIABAHN 7mm x 50mm). The microcatheter in the second catheter was advanced into the aneurysm to perform NBCA embolization. The stentgraft was deployed to cover the aneurysm neck. The balloon was inflated in the stentgraft and the aneurysm was filled with 20% NBCA from the microcatheter. We saved the renal blood flow, and successfully embolized RAA.

【Clinical time course and implication (or perspective)】

Stentgraft patency and aneurysm exclusion were confirmed at 1, 3, 6 and 12 months.

We discussed that coil-packing of RAA might cause compaction of coil and reperfusion of aneurysm due to thrombosed aneurysm. We planned to embolize RAA using stentgraft to save renal blood flow. Stentgraft-assist embolization with NBCA is effective in the treatment of renal thrombosed aneurysm of main renal artery.

MO-19 Restenosis at Invagination of Interwoven Nitinol Stent in the Femoropopliteal Artery: Multiple Imaging Modality Findings

○Takamasa Tanaka, Kojiro Miki, Hirokuni Akahori, Takahiro Imanaka,
Toshio Kimura, Nagataka Yoshihara, Koji Yanaka, Masanori Asakura,
Masaharu Ishihara
Hyogo College of Medicine

【Case overview】

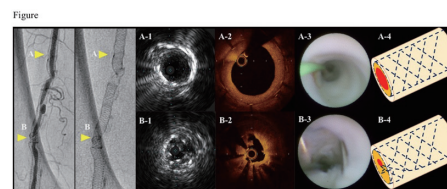
A 72-year-old woman with an ischemic ulcer in the right lower limb was received a Supera (5.5×150.0mm) stent implantation to the severely calcified, right femoropopliteal artery. Stent invagination was occurred at mid portion of the stent during deployment. Final angiography revealed acceptable blood flow to the below knee and the ulcer was completely healed at 2-month. After 6 months, however, she recurred an ulcer in the right limb. And then, she performed re-intervention.

【Procedure summary】

We evaluated restenosis at the stent invagination using intravascular ultrasound, optical coherence tomography and angioscopy. Adequately deployed struts of the stent were covered with intermediate amounts of neointimal tissue, without significant luminal loss. Whereas, struts presented “spider’s web” appearance at stent invagination, which almost totally covered with large amounts of neointimal having luminal loss.

【Clinical time course and implication (or perspective)】

This suggests that stent invagination accelerates neointimal proliferation and can be a risk for loss stent patency.



MO-20 DCB treatment terminated insistent recurrent restenosis

○Takashi Shimonaga, Takumi Sakai, Ayano Kashiwabara, Yoji Sumimoto,
Haruyuki Kinoshita, Ori Ichikawa, Toshiharu Oka, Hiroshi Sugino
Kure Medical Center

【Case overview】

The case was an 81-year-old man who had repeated endovascular treatment (EVT) nine times in the past four years for stent re-occlusion in the right superficial femoral artery (SFA). One week before the visit, he had rest pain in his right lower limb and visited our hospital. The ankle-brachial index (ABI) was 0.43 on the right and 0.68 on the left, and ultrasonography showed stent occlusion in the right SFA. Therefore, we performed EVT on the right SFA.

【Procedure summary】

Thrombus aspiration and plain old balloon angioplasty (POBA) was performed for stent occlusion of the right SFA, and blood flow was successfully improved. In the previous EVT, 25% residual stenosis was observed in the hunter's tube part in the final angiography, which was considered to be the cause of re-occlusion. With this treatment, drug-coated balloon (DCB) dilation was performed for the first time in the residual stenosis of the hunter's tube.

【Clinical time course and implication (or perspective)】

Two years have passed since then, and stent patency has been confirmed by ultrasonography without relapse of subjective symptoms or decrease in ABI. We report a case in which repeated restenosis was improved by DCB treatment.

MO-21 A case with true deep femoral artery aneurysm who successfully underwent restoration using stent-grafts

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Daisuke Ito, Akiteru Kojima, Yusuke Nakagawa, Eigo Kishita, Jun Shiraishi,
Masayuki Hyogo, Takahisa Sawada
Japanese Red Cross Kyoto Daiichi Hospital

【Case overview】

An 81-year-old male with partial remitted stage 4 lung cancer was referred to our department for treating the left true aneurysm of deep femoral artery (t-DFAA) with trend of enlargement. Since surgical treatment was impossible for his decreased respiratory function, we decided to treat t-DFAA by endovascular treatment.

【Procedure summary】

An 8Fr sheath was inserted via the right common femoral artery (CFA) to the left CFA contralaterally. Firstly, we embolized the deep femoral artery (DFA) branch flowing into the aneurysm using coils and vascular plug to prevent type 2 end-leak. Secondly, an 8.0/100mm VIABAHN was implanted in the distal DFA and implanted an 8.0/59 VBX in the proximal DFA with adequate overlapping. As the proximal diameter of DFA was 14mm, post dilatation was performed with a 14mm balloon. Just after the procedure, the two stents were completely separated caused by shortening VBX stent by post dilatation. Therefore, we additionally deployed an 8.0/59mm VBX between them with overlapping. Angiogram showed Type 1 end-leak in the proximal side of the DFA. Subsequently, a SMART stent was added in the proximal DFA. The final angiogram revealed optimal blood flow without any complications.

【Clinical time course and implication (or perspective)】

He keeps good patency in his left DFA after the procedure.

MO-22 SUPERA stent implantation for CFA non-stenting zone

○Yuya Nakagawa

Hakodate Medical Association Hospital

【Case overview】

Case is 73 years old male with R-3 claudication. Target is right CFA to proximal SFA and DFA occluded lesion with severe calcification.

【Procedure summary】

6Fr Parent system is inserted from left CFA, contralateral crossover approach. Astato9-12g guidewire is passed occluded site antegradely. IVUS and 4.0mm scoring balloon catheter cannot cross the lesion due to heavy calcification. Finally, I managed to perform sufficient vessel preparation (6mm for CFA to proximal SFA and 4.0mm for DFA), put SUPERA6.5/40mm stent without covering DFA ostium. IVUS shows optimal lumen diameter and round shape expansion and the final result is excellent.

【Clinical time course and implication (or perspective)】

SUPERA stent has high compression resistance from external pressure, so may be suitable for CFA severe calcified lesion even if CFA is non-stenting zone. The VMI-CFA trial data confirms the safety and feasibility of SUPERA stent for CFA.

In addition, repeatable CFA stent site puncture, guiding sheath insertion and manual compression for additional interventional procedures are possible after CFA SUPERA stent implantation. Good visibility of puncture site is also advantage. But we need to pay attention for SUPERA stent migration during puncture procedures.

MO-23 A successful case of “temporary endoluminal bypass technique” using a guide extension catheter during thrombolysis for acute limb ischemia in the non stenting zone

○Haruya Yamane, Yasunori Ueda, Tatsuhisa Ozaki, Shumpei Kosugi,
Tsuyoshi Mishima, Haruhiko Abe, Mотор Date, Masaaki Uematsu,
Yukihiro Koretsune

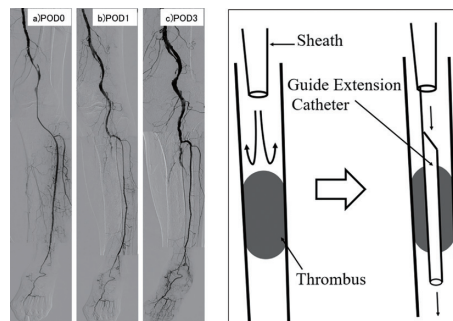
NHO Osaka National Hospital

【Case overview】

An 83-year-old female was admitted and diagnosed as ALI in her left leg.

【Procedure summary】

The angiogram showed a thrombotic obstruction of the left popliteal artery. Aspiration and dilation by angioplasty could not revascularize. Although Fogarty thrombectomy can be applicable, we avoided it because of its risk of complications and performed a temporary endoluminal bypass technique. After evaluating the occluded lesion by IVUS, we delivered a guide extension catheter to fully cover it. Because it played the role of an endoluminal bypass, the blood flow to the distal tibial arteries could be confirmed in the angiogram. A thrombolytic drug was administered intra-arterially for the whole day, and the angiogram showed a reduction of the thrombus on postoperative day (POD) 1. On POD 2, the blood flow was maintained without flow limitation even after removing the catheter.



【Clinical time course and implication (or perspective)】

Finally, she was discharged without any complications. This technique might be an alternative in cases of failed conventional treatments for ALI although further investigation needs to be undertaken.

MO-24 Making a puncture site via popliteal artery is useful for the patient with limited access site

○Hiroshi Mikamo, Masakazu Tsubono, Shunsuke Todani, Takuro Ito, Shuji Sato,
Takuo Iizuka

Toho university sakura medical center

【Case overview】

An 82-year-old gentleman with a history of severe claudication. Comorbidities included hypertension, smoking. He had undergone prior bilateral external iliac artery (EIA) and common iliac artery (CIA) stenting. He was found to have right common femoral artery (CFA)-mid popliteal artery (POP) disease.

【Procedure summary】

Right CFA lesion made it difficult to puncture. On the other, crossover approach from the contralateral femoral was difficult due to kissing stent in bilateral CIA. Left brachial was also difficult due to subclavian artery stenosis. 6Fr Glide sheath was inserted into right POP in an ipsilateral retrogradely. 4Fr ST and CXI and Jupiter FC was passed to aorta. After the lesion in CFA-mid SFA was pre-dilated a Sterling6.0x150mm, a SUPERA6.0x150mm was deployed. It was so difficult to put stent in distal SFA-mid POP that the sheath was too close the lesion. As dilating right CFA enabled to puncture, it was used as an approach site with 6Fr Destination45cm. The distal right SFA to POP were pre-dilated with a SHIDEN HP4.0x150mm and stented with a SUPERA5.5x150mm. Finally, hemostasis of right POP was done with a SHIDEN HP4.0x150mm.

【Clinical time course and implication (or perspective)】

In cases there is no usual access site, making a puncture site from POP is one of the useful options.

MO-25 Acute limb ischemia in a 12-year-old boy

○Shinnosuke Nomura, Hirooki Higami, Kazuaki Kaitani
Japanese Red Cross Otsu Hospital

【Case overview】

A 12-year-old boy admitted emergently due to acute left leg paralysis while playing football.

Contrast-enhanced CT angiography (CTA) revealed an occlusion of the left common iliac artery (CIA) and a low CT index mass in the left atrium.

It seemed that embolization from the left atrium caused acute limb ischemia, therefore, emergent surgical embolectomy was planned.

【Procedure summary】

Surgical embolectomy was performed from left groin.

The arterial embolus could not be retrieved using Fogarty catheter, EN Snare® (Endovascular Snare System). Subsequently, ALN Vena Cava Filter removal kit was tried, however it failed. However, ALN Vena Cava Filter removal kit could move the arterial embolus to terminal aorta. Finally, the embolus was retrieved successfully from the right side using Fogarty catheter.

【Clinical time course and implication (or perspective)】

The retrieved mass was confirmed the myxoma, not a cancer, by histopathological diagnosis. Therefore, urgent resection surgery for the left atrial tumor was performed. The patient had improved smoothly, and discharged on postoperative day 12.

MO-26 A successful bail out case of retroperitoneal hemorrhage using local thrombin injection

○Takashi Miwa, Kazushi Urasawa, Yusuke Satou, Taichi Hayashi, Michinao Tan
Tokeidai Memorial Hospital

【Case overview】

Patient was a 62-year-old woman with diabetes mellitus, hyperlipidemia and hypertension complained intermittent claudication, Rutherford grade 3. Lower limb ultrasound showed Left SFA stenosis, and right SFA occlusion.

【Procedure summary】

First, EVT for left SFA stenosis was performed from ipsilateral approach. When left CFA puncture, we used ultrasound and fluoroscopy assistance. After balloon preparation, we got successful revascularization using 5.0x120mm In.PACT admiral. We used hemostatic device, Exoseal. About 1 hours after EVT, the patient complained left lower abdominal pain. Plain abdominal CT revealed retroperitoneal hemorrhage, so angiography was done from left radial artery approach. Destination 6F 128cm was delivered to left iliac artery. Angiography showed bleeding from Left EIA. After crossing 0.014inch wire, inflated 7.0mm balloon at bleeding point. During balloon inflation, we injected thrombin around bleeding point percutaneously. After 10 minutes ballooning, angiography didn't show contrast leakage.

【Clinical time course and implication (or perspective)】

4 units RBC transfusion was given to the patient, her Hb level didn't get worse. One day after EVT, Plain CT didn't show expansion of hemorrhage. She discharged two day after EVT.

MO-27 A case of the effectiveness of vascular access from the ipsilateral occluded CFA in EVT for a highly calcified occlusion extending from the EIA to the POPA with failed FP bypass

○Tomonari Takagi, Akira Miyamoto, Yoshinori Yoshida, Takashi Maruyama, Ryouji Kuhara, Takako Akita, Masahiro Fukuda, Yasutaka Yamauchi
Takatsu General Hospital

【Case overview】

The case was a 73-year-old female on dialysis with the left leg resting pain. She underwent FP bypass surgery for the left SFA CTO 9 years ago, but bypass graft was early occluded. The imaging examination revealed severe stenosis in the EIA, CTO with severe calcification from the CFA to the POPA and totally occluded FP bypass graft. The first EVT was performed via the crossover and ipsilateral POPA approaches but was failed because the occluded CFA had such severe calcification that guidewires could not pass.

【Procedure summary】

In the second EVT, we firstly punctured the left occluded CFA antegradely using long 20G needle and advanced the needle to the proximal SFA while cracking the calcified plaques in the CFA. This maneuver allowed 4Fr. sheath to be easily inserted into the CFA. We added the ipsilateral POPA approach and succeeded wire passage of the SFA CTO. Another guidewire passed the occluded EIA to reach CFA via the crossover approach. The retrograde wire from the POPA crossed the whole occlusion after reverse CART was done in the CFA. Finally, we covered the whole lesion with SMART and SUPERA stents and obtained good results.

【Clinical time course and implication (or perspective)】

After EVT, her left leg resting pain improved to prominent.

MO-28 A case with chronic total occlusion in the superior mesenteric artery who was successfully treated using covered stent

○Yosuke Kirii, Masayoshi Kimura, Jun Yoshimura, Fumiaki Ito, Daisuke Ito, Akiretu Kojima, Yusuke Nakagawa, Eigo Kishita, Jun Shiraishi, Masayuki Hyogo, Takahisa Sawada
Japanese Red Cross Kyoto Daiichi Hospital

【Case overview】

A 62-year-old male was referred to our hospital for treating uncontrollable abdominal angina which arose during dialysis.

【Procedure summary】

Contrast-enhanced CT revealed chronic total occlusion (CTO) with severely calcified nodules in the ostium of the superior mesenteric artery (SMA). Firstly, we tried to perform antegrade guidewire crossing via the right brachial artery. Because the brachial approach could provide better backup force, considering the bifurcation angle of the SMA orifice. The guidewire could not penetrate into the calcified CTO lesion, subsequently, the retrograde approach through his celiac artery via the right femoral artery was performed. The retrograde wire was managed to cross the CTO lesion toward the abdominal aorta. Then, the antegrade guidewire was able to pass through the CTO according to the retrograde guidewire guidance. After evaluating the lesion characteristics by intravascular ultrasound (IVUS), the culprit lesion was pre-dilated using 6/40 mm balloon. And finally, 7.0/38 mm covered stent was implanted in the severely calcified CTO lesion in order to anticipate optimal dilatation, avoiding vessel rupture, and preventing calcified nodule invasion beyond the stent.

【Clinical time course and implication (or perspective)】

We herein firstly reported successful revascularization of the SMA-CTO employing bi-directional approach and VBX stent via the brachial artery approach.

MO-29 Factor analysis of restenosis after EVT for PACCS grade 4 severe calcified femoral popliteal artery lesions

○Hidenobu Seo, Amane Kozuki, Yoichi Kizima, Ryozi Nagoshi, Ryudo Fuziwara, Hiroyuki Shibata, Atushi Suzuki, Fumitaka Soga, Tomohiro Miyata, Yuki Sakamoto, Masahiro Shimizu, Junya Shite
Osaka Saiseikai Nakatsu Hospital

【What's known?】

Background

The poor patency and prognosis of severe calcified lesion has been reported, however, the factor of restenosis in those lesions are unknown.

Methods

We investigated the de novo PACCS grade 4 femoropopliteal artery lesions underwent successful EVT from 2012 to 2018. In addition to patient, lesion, and procedure characteristics, IVUS images are analyzed. The primary end point was 1-year primary patency.

【What's new?】

Results

Among 698 de novo FP lesion underwent successful EVT during study period, 79 lesion (11.4%) were PACCS grade 4. 48 lesions completed 1-year duplex ultrasound follow-up enrolled in the present study. The average lesion length was 117 mm, 37.7% was CTO. The 1-year primary patency rate was 43%, occlusion rate was 9.4%, and target lesion revascularization rate was 43%. Comparison of parameters between restenosis and non-restenosis group are shown in table.

Multivariate analysis was performed and revealed that CLI (HR 0.16, $p=0.006$) and CTO (HR 0.22, $p=0.03$) were the independent factors of 1 year loss of patency.

Conclusions

CLI and CTO were the factors of loss of patency after EVT for PACCS grade 4 severe femoropopliteal artery lesions. Neither pre nor post IVUS findings predicted patency at present study.

	restenosis N=19	non-restenosis N=29	p value
Age	72.9±9.5	71.2±10.8	0.56
Hemodialysis(%)	31.6	41.4	0.49
CLI(%)	73.7	24.1	0.001
Lesion length(mm)	240.0±107.2	146.1±73.7	0.017
CTO(%)	68.4	20.7	0.001
SFA only(%)	27.3	72.7	0.02
Pop involve(%)	66.7	33.3	0.27
BTK runoff	1.5±0.9	1.8±1.0	0.27
Finalize strategy			
full stent(%)	60.8	62	0.89
spot stent(%)	15	17.2	
POBA(%)	26.7	13.6	
IVUS parameter (pre intervention)			
prox. reference lumen area (mm ²)	17.0±7.4	21.1±9.8	0.27
dist. reference lumen area (mm ²)	15.2±6.8	18.0±6.9	0.31
Presence of calcified nodule (%)	55.6	76.2	0.15
Maximum angle of calcium (degree)	349.6±20.5	359.1±4.14	0.2
calcium angle>180 extend >half of the lesion (%)	44.4	61.9	0.37
IVUS parameter (post intervention)			
MSA/MLA (mm ²)	13.6±4.2	16.1±4.4	0.1

MO-30 Paclitaxel-Eluting Stent Versus Paclitaxel-Eluting Balloon Revascularization in Femoropopliteal Arterial Disease

○Kaori Abe, Yoshiaki Itou, Masahiro Yamawaki, Norihiro Kobayashi, Mana Hiraishi, Shinsuke Mouri, Masakazu Tutumi, Yousuke Honda, Kenji Makino, Shigemitsu Sirai, Masahumi Mizusawa, Kouhei Yamaguchi
Saiseikai Yokohamashi Tobu Hospital

【What's known?】

Background: It has been recently reported about marvelous clinical outcomes after paclitaxel-eluting stent (Eluvia stent) deployment and drug-coated balloon (DCB) angioplasty for femoropopliteal lesion. Recently study showed patency rates at 12 months suggest comparable effectiveness and safety of DES (Zilver PTX) versus DCB plus bailout stenting in femoropopliteal interventions.

【What's new?】

There is no study of comparing the outcome of Eluvia stent and DEB. This study compared DES (Eluvia) and DEB all over the lesion in femoropopliteal artery. We enrolled 129 patients (139 lesions) who underwent EVT from April 2018 to Mar 2020. Of this cohort, 94 patients (102 lesions) received DCB treatment and 29 patients (31 lesions) with Eluvia. Evaluation items were primary patency, clinically driven target lesion revascularization (TLR) and the rate of major adverse event (MAE), defined as all-cause death, clinically driven TLR, major target limb amputation and thrombosis. At six-month follow-up, there were no significant difference between Eluvia and DCB in the primary patency (Eluvia vs DCB: 0.0% vs. 9.3%, $p=0.16$), the rate of TLR (0.0% vs. 3.2%, $p=0.37$), and the rate of MAE. (12.6% vs. 6.9%, $p=0.34$). Short-term clinical outcomes between DES and DCB for femoropopliteal artery lesions were similar.

MO-31 The comparison of 2-years clinical outcomes of Drug Coated Balloon and Drug Coated Stent for Femoropopliteal Lesions

○Kenji Ogata, Yoshisato Shibata
Miyazaki Medical Association Hospital

【What's known?】

Background

Some clinical trials have shown the clinical efficacy of drug coated balloon (DCB) for femoropopliteal (FP) lesions. However, the long-term clinical outcomes of DCB have been still unknown in real world.

【What's new?】

Purpose

To compare the clinical efficacy of DCB and drug coated stent (DCS) at 2-years.

Methods

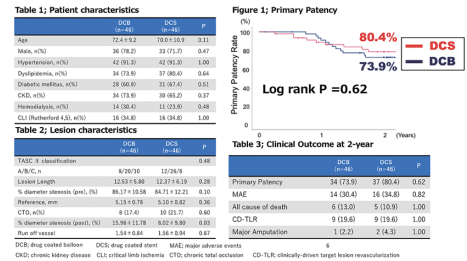
The present study was a retrospective observational study. Patients who had symptomatic (Rutherford classification 2 to 5) de novo lesions in the FP artery (TASC2 classification A to C) were enrolled. The primary endpoint was primary patency at 2-years. Secondary endpoint was compromised major adverse events; all cause of death, major amputation and clinically driven target revascularization.

Results

92 patients were enrolled (DCB, 46 patients; DCS, 46 patients). Patients and lesions characteristics were shown in the table. Primary and secondary outcomes were shown in the figure.

Conclusions

The primary and secondary outcomes of DCB were similar to DCS for FP lesions at 2-years. DCB would be beneficial to avoid stent-related complications after the procedure.



MO-32 Angioplasty with Drug-coated Balloon Versus Conventional Balloon for Long Lesions at Femoropopliteal Arteries

○Masafumi Mizusawa, Shinsuke Mori, Takahide Nakano, Kohei Yamaguchi, Shikemitsu Shirai, Kenji Makino, Yosuke Honda, Masakazu Tsutsumi, Mana Hiraishi, Norihiro Kobayashi, Masahiro Yamawaki, Yoshiaki Ito
Saiseikai Yokohama-city Eastern Hospital

【What's known?】

Many studies from home and abroad suggested the efficacy of drug-coated balloon (DCB) for femoropopliteal artery disease. In foreign countries, DCB had a certain evaluation for treatment of long and complex lesions, while bailout stenting was often required. In Japan, we can't use both DCB and stents for some lesions by medical reimbursement system, and therefore effectiveness of DCB for lon lesion was uncertain.

【What's new?】

Our retrospective study was conducted examining 68 patients (40 males, mean age 74 ± 9 years) undergoing endovascular therapy (EVT) for 76 lesions with DCB or conventional balloon for de-novo long lesions (>25cm) of femoropopliteal arteries. These subjects were divided into DCB group (17 patients, 18 lesions) and conventional balloon group (51 patients, 58 lesions). The primary outcome was primary patency of the target lesion at 12 months. Also, we estimated safety endpoints.

There was no difference in patient and lesion characteristics between two groups. Kaplan-Meier analysis demonstrated that primary patency rate was significantly higher among DCB group (58% vs. 29%, p=0.03, log-rank). Conversely, amputation free survival rate was similar (80% vs. 84%, p=0.79, log-rank).

Among patients with long lesion at femoropopliteal artery, DCB achieved higher primary patency rate. Moreover, DCB was noninferior with respect to safety.

MO-33 Twelve-month outcomes of drug-coated balloon for the treatment of femoropopliteal lesions in hemodialysis patients with peripheral artery disease

○Naoko Higashino, Osamu Iida, Mitsutoshi Asai, Masaharu Masuda, Shin Okamoto, Takayuki Ishihara, Kiyonori Nanto, Takashi Kanda, Takuya Tsujimura, Yasuhiro Matsuda, Yosuke Hata, Toshiaki Mano

Kansai Rosai Hospital Cardiovascular Center

【What's known?】

Hemodialysis (HD) patients with peripheral artery disease (PAD) generally have complex femoropopliteal (FP) lesions including severe calcification. There is a plausible agreement that calcium represents a barrier to optimal drug absorption after the treatment of drug-coated balloon (DCB). Whether the performance of DCB would attenuate due to this complexity has not been clearly established.

【What's new?】

Methods: This was comprised of single-center retrospective study participating 115 FP lesions in 74 HD patients who underwent endovascular therapy using DCB. The primary outcome was 12-months primary patency. Risk factors for loss of primary patency was evaluated using a Cox hazards regression model.

Result: Fifty-four (73.0%) patients were male, and the mean age was 76.0 ± 9.4 years old. Diabetes mellitus was observed in 71.6% (53/74). Regarding limb status, chronic life-threatening ischemia was 75.7%. The median lesion length was 150mm (52mm- 260mm) and chronic total obstruction (CTO) lesion was present in 10.4% of all lesions. Vessel calcification was observed in 91.3% of lesions. The 12-months primary patency rate was 80.7%. Lesion length, severe calcification and chronic total obstruction were not associated with loss of patency.

Conclusion: Twelve-month outcomes of DCB for the treatment of FP lesions in HD patients with PAD were clinically acceptable.

MO-34 Pressure wire-guided EVT reduces the total dose of paclitaxel applied to patients with diffuse tandem lesion of the superficial artery

○Shigeyasu Tsuda, Shinichiro Yamada, Toru Tagashira, Naokazu Miyamoto, Kojiro Awano

Kita-Harima Medical Center

【What's known?】

Paclitaxel-coated balloon (PCB) angioplasty is an effective treatment associated with long-term durability of patency for superficial artery (SFA) disease. However, recent meta-analysis demonstrated the increased risk of mortality after PCB treatment. One of the suspicious mechanisms of increased mortality is much high dose of paclitaxel released during PCB treatment.

【What's new?】

We hypothesized that PW-guided EVT would be superior to angiography (AG)-guided EVT in patients with SFA diffuse tandem lesion in evaluating functional ischemia.

Among 24 patients with angiographically diffuse tandem lesion of the SFA, 12 patients each were treated by PW-guided EVT and AG-guided EVT, respectively. There was no significant difference between the two groups in the pre-treatment ankle-brachial pressure index (0.61 vs. 0.57).

In the AG-guided EVT, DCB was used in the angiographically stenotic lesion after pre-dilatation. In the PW-guided EVT group, only the stenotic sites that had pressure gradients > 10 mmHg were treated with DCB after pre-dilatation.

The total dose of paclitaxel applied was significantly lower in the PW group (4.6mg vs. 8.8mg; $P < 0.05$).

Post-treatment ABI showed no significant difference between the two groups (0.99 vs. 0.96).

In patients with diffuse tandem lesion of the SFA, PW-guided EVT can reduce a total dose of paclitaxel applied.

MO-35 Comparison of Clinical Outcome of Drug-Coated-Balloon, Stent and Standard-Balloon for the Treatment of Superficial Femoral Artery Chronic Total Occlusion Lesion

○Takahide Nakano, Yoshiaki Ito, Masahiro Yamawaki, Norihiro Kobayashi, Mana Hiraishi, Shinsuke Mori, Masakazu Tsutsumi, Yohsuke Honda, Kenji Makino, Masafumi Mizusawa, Shigemitsu Shirai, Kohei Yamaguchi
Saiseikai Yokohama city Eastern Hospital

【What's known?】

Background: In endovascular therapy (EVT) for SFA CTO lesion, the benefit of the DCB angioplasty remains uncertain.
Methods: This study was a single center retrospective study. From April 2018 to September 2019, 74 patients with SFA CTO lesion were included. We classified them into three groups, DCB-group, stent-group, and standard-balloon-group, and compared them. There were 28 patients in DCB-group, 18 patients in stent-group and 28 patients in standard-balloon-group. We assessed clinical outcome at 12 months after EVT. Evaluation items were the rate of primary patency.

【What's new?】

Results: The standard-balloon-group tended to have more CLI patients (DCB 21.4% vs. stent % 11.1vs. balloon 46.4%, $P=0.025$). Other patient and lesion background were almost similar among three groups. The rate of primary patency was 89.2% in the DCB-group, 83.3% in the Stent-group, and 60.3% in the standard-balloon-group. The primary patency between the DCB-group and the stent-group were almost similar ($P=0.66$). On the other hand, the primary patency of the standard-balloon-group was significantly worse than that of the others.
Conclusion: At 12 months of follow-up, DCB angioplasty for SFA CTO lesion was similar to that of stent deployment. Furthermore, DCB angioplasty was superior to that of standard balloon angioplasty.

MO-36 Echososeal technique~A novel procedure to achieve hemostasis after common femoral artery puncture~

○Yohsuke Honda, Shinsuke Mori, Takahide Nakano, Kouhei Yamaguchi, Shigemitsu Shirai, Kenji Makino, Masakazu Tsutsumi, Norihiro Kobayashi, Masahiro Yamawaki, Masafumi Mizusawa, Yoshiaki Ito
Saiseikai Yokohama-City Eastern Hospital

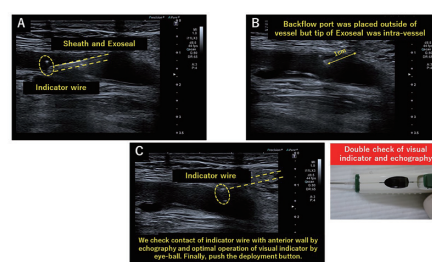
【What's known?】

Exoseal was a completely extra-vascular hemostatic device. Though, device failure could happen due to defect of device or operator's mistake. We considered Echo-guided Exoseal use (Echososeal technique) was helpful to prevent device failure.

【What's new?】

The current study assessed the safety and efficacy of Echososeal technique. Consecutive 52 patients (age: 78 ± 13 , male; 35 patients) (57 puncture site) underwent Echososeal technique. Exoseal for 6Fr and 7Fr were used for 37 sites (65%) and 15 sites (35%). First step of Echososeal technique was echo-guided puncture to penetrate only anterior wall without calcification. Next step was confirmation of Exoseal system operation intra-vessel by echography and visual confirmation of optimal operation in visual indicator. In this step, echography and manipulation of Exoseal were performed by another person. Final step was compression with echo-probe and check the hemostasis by color Doppler imaging. If failed hemostasis was confirmed, we could perform prompt and optimal compression supported with echography. No access site complications or distal embolization were observed in this cohort. In 1 case, Echososeal technique detected malfunction of Exoseal and prevented complications.

Echososeal technique was helpful for hemostasis using Exoseal. Visual confirmation of Exoseal operation intra-vessel and complete hemostasis with echography were the keywords in this technique.



MO-37 A novel strategy for a common femoral artery iatrogenic pseudoaneurysm: Manual compression with pseudoaneurysm decompression by ultrasound-guided puncture and aspiration

○Daisuke Ueshima

Kameda Medical Center

【Case overview】

Case 1 was an 87-year-old woman who underwent transfemoral transcatheter aortic valve implantation (TAVI) 2 weeks previously from the right common femoral artery (CFA). A pseudoaneurysm at the left CFA was detected 2 days after TAVI; a 6 Fr sheath was inserted in to the left CFA during the TAVI procedure.

Case 2 was a 68-year-old man with an iatrogenic pseudoaneurysm in the right CFA after endovascular treatment for right critical limb ischemia with a 6 Fr sheath inserted antegradely from the right CFA.

Case 3 was a 71-year-old man, who was being treated by hemodialysis, underwent coronary angiography from the right CFA (5 Fr). A pseudoaneurysm were detected 10 days after the coronary angiography.

【Procedure summary】

In all cases, we punctured and aspirated the pseudoaneurysm to decompress it under ultrasound guidance. Next, we compressed the pseudoaneurysm manually from the skin surface.

【Clinical time course and implication (or perspective)】

In all cases the pseudoaneurysms were all occluded with only 20 min compression. No complications were observed during the procedures. This strategy is superior to conventional strategies, as it does not require any special medication or device and seems to be effective.

MO-38 Terrible Perforation of Below the Knee Site due to Long Balloon

○Kazuki Tobita, Hirokazu Miyashita, Futoshi Yamanaka, Shigeru Saito

Shonan Kamakura General Hospital

【Case overview】

It was reported that a long balloon decrease severe dissection in femoro-popliteal lesions. The long balloon was used even for below the knee (BK) lesions.

A 90-year old man admitted for critical limbs ischemia (Rutherford class 6). Lower limbs angiography showed lesions was below the knee only. We performed EVT for these lesions with ipsilateral approach.

【Procedure summary】

At first, we dilated posterior tibial artery, however, the flow was insufficient due to occlusion of planter artery. So we touched anterior tibial artery (ATA). But any guide wire could not be passed obstruction of dorsal artery. We try to dilate ATA. A short balloon could be passed lesion, but a long balloon had some friction. When I pushed more, bended balloon split the ATA a lot. Balloon tamponade was not effective, and we deployed stent-grafts for coronary artery. Still there was oozing, so I made a tamponade with over the wire balloon and shed the heparin to dorsal artery. However, occlusion from proximal ATA to dorsal artery was confirmed next day.

【Clinical time course and implication (or perspective)】

Our strategy was changed to dry necrosis, and he discharged 2 months later.

There are few reports of trouble of a long balloon. We reveal detail of the complication in this report.

MO-39 A case of novel drug eluting stent occlusion observed by multiple intravascular imaging modalities

○Kotaro Higuchi, Amane Kozuki, Junya Shite, Yoichi Kijima, Ryoji Nagoshi, Ryudo Fujiwara, Hiroyuku Shibata, Atsushi Suzuki, Fumitaka Soga, Tomohiro Miyata

Osaka Saiseikai Nakatsu hospital

【Case overview】

The case was 76-year-old male with Rutherford class 5 CLI. EVT for SFA occlusion was performed. Two drug-eluting stents (Eluvia stent) were implanted at the center of the lesion, from mid to distal portion of SFA. Both end, proximal SFA and P1, were finished with balloon angioplasty. The ulcer healed after EVT, however, rest pain relapsed 3 months later.

【Procedure summary】

Angiography showed occlusion from the orifice of SFA. After wire passage and manual thrombus aspiration, IVUS showed thrombus at both end of DES, however, patent lumen without thrombus was observed at the body of DES. Two additional DES were implanted to cover thrombus and good flow was obtained. High-resolution angioscopy and OFDI revealed thin white layer covering DES implanted 3 months without thrombus attachment.

【Clinical time course and implication (or perspective)】

The inside of the occluded stent is often filled with thrombus in case of DES occlusion at early phase or stent graft occlusion. The present case of Eluvia showed different feature. This might be due to anti-thrombotic polymer of Eluvia stent.

MO-40 Different ways of successful bail out from thrombotic occlusion of VIABAHN stents implanted in SFA CTO lesion

○Masao Yamasaki

Department of cardiovascular Medicine, NTT Medical Center Tokyo

【Case overview】

A 67 years old female presented with left intermittent claudication for several weeks. MRA showed complete occlusion of two 5.0/150mm VIABAHN stents implanted in left SFA CTO lesion 3 months ago.

【Procedure summary】

We performed thrombolysis with urokinase bolus injection followed by urokinase infusion for 3 days. Then we confirmed disappearance of thrombus inside two VIABAHN stents, and added balloon dilatation to both VIABAHN stents and left POP lesion. The patient discharged with no symptoms after procedures, but she presented again with same symptoms 16 months later. Echography showed complete occlusion of two VIABAHN stents. We performed thrombus aspiration, following thrombolysis with urokinase bolus injection followed by urokinase infusion for 2 days. Angiography revealed still complete thrombus occlusion of two VIABAHN stents. Then we performed thrombus aspiration, and thrombectomy using 4mm dilated balloon like Fogarty catheter. Finally we succeeded complete thrombus removal.

【Clinical time course and implication (or perspective)】

The patient discharged with neither any symptoms nor complications. We report two different ways of successful bail out technique (thrombolysis and thrombectomy) for thrombotic occlusion of VIABAHN stents implanted in SFA CTO lesion in the same patient. We must continue careful follow up after VIABAHN stent implantation, and treat quickly with appropriate procedures when VIABAHN stent is occluded.



MO-41 Feasibility of Balloon Backed-up microcatheter techniQue (BBQ) for superficial femoral artery occlusion under extra-vascular ultrasound guidance via radial access

○Shinsuke Mori, Masahiro Yomawaki, Takahide Nakano, Kohei Yamaguchi, Shigemitsu Shirai, Masafumi Mizusawa, Kenji Makino, Yohsuke Honda, Masakazu Tsutsumi, Mana Hiraishi, Norihiro Kobayashi, Yoshiaki Ito
Saiseikai Yokohama City Eastern Hospital

【Case overview】

The case was 60's male. He suffered from intermittent claudication on his right foot. Lower extremity angiography showed chronic total occlusion (CTO) in superficial femoral artery (SFA).

【Procedure summary】

A 7-Fr SlenGuide 120 cm was inserted from the right radial artery to the right common femoral artery. A 0.035-inch rapid exchange balloon catheter (Metacross) advanced into the stump of SFA ostium along a 0.014-inch soft guidewire. Next, a microcatheter advanced into monorail lumen of Metacross along the guidewire. Then, we exchanged the guidewire to Astato XS 9-40 and balloon dilatation was performed in the ostium of SFA at 18 atm. After that, Astato XS 9-40 could pass CTO easily and safely under extra-vascular ultrasound guidance antegradely. Balloon dilatation and stent placement was performed and good blood was obtained finally.

【Clinical time course and implication (or perspective)】

This technique is named BBQ (Balloon Backed-up microcatheter techniQue) which strengthens the backup and keeps the torque response of the guidewire because balloon anchor is performed by Metacross and microcatheter is trapped by the inside of monorail lumen of Metacross without crushing a lumen of microcatheter. In endovascular therapy for SFA-CTO via radial access, poor backup and torque response of guidewire often become problems. BBQ seems effective to overcome these problems.

MO-42 A case of chronic limb-threatening ischemia due to compressed true lumen caused by idiopathic external iliac artery dissection

○Yu Sakaue, Tetsuya Nomura, Issei Ota, Satoshi Tasaka, Kenshi Ono, Naotoshi Wada, Natsuya Keira, Tetsuya Tatsumi
Kyoto Chubu Medical Center

【Case overview】

A 78-year-old male complained of a rest pain of his left leg. Ankle brachial pressure index (ABI) was 0.33 on the left.

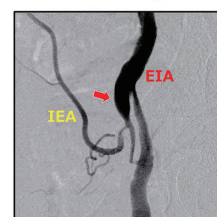
【Procedure summary】

Diagnostic angiography showed severe stenosis in the main stream of the external iliac artery (EIA), and the enlarged vessel, that looked like branching from the EIA just proximal to the stenosis, perfused the inferior epigastric artery (IEA). Intravascular ultrasound demonstrated intimal continuity in the main stream. On the other hand, the intimal continuity was not observed in the branching vessel which connected to the IEA. We diagnosed this clinical condition as EIA dissection, since the past computed tomography imaging around this lesion revealed that the IEA normally bifurcated from the EIA without anatomical anomalies. We deployed a self-expandable stent in the EIA covering the entry tear.

【Clinical time course and implication (or perspective)】

After the treatment, ABI increased to 0.84 on the left, and the rest pain of his left leg was improved. Spontaneous iliac artery dissection without involvement of the aorta is a rare clinical entity. Additionally, it is noteworthy that compressed true lumen caused by idiopathic EIA dissection induced chronic limb-threatening ischemia.

The enlarged vessel that looked like branching from the EIA perfused the IEA.



MO-43 Development of the scoring system to estimate prognosis for patients with peripheral arterial disease after revascularization

○Masaki Sano

Division of Vascular Surgery, Hamamatsu University School of Medicine

【What's known?】

Background: Peripheral arterial disease (PAD) patients have a poor prognosis due to the various comorbidities. However, it is difficult to evaluate life prognosis of PAD patients.

【What's new?】

Methods: This study is consisted of retrospective and prospective parts. From 2009 to 2017, PAD patients underwent revascularization procedures were enrolled. Patients were divided in two groups according to 2-year prognosis (survival: n=96, death: n=53). Patients characteristics, Wifi stage, SVS/AAVS score, psoas muscle index (PMI), and Geriatric Nutrition Risk Index (GNRI) were investigated retrospectively. From these results, we developed modified SVS/AAVS score, which was obtained from the sum of these factors; SVS/AAVS score, Wifi stage, PMI, and GNRI. From 2017 to 2018, PAD patients underwent revascularization procedures were enrolled. Modified SVS/AAVS score was calculated, and patients were divided in two groups (high risk: n=21, low risk: n=18). And we evaluate the usefulness of this scoring system prospectively. **Results:** In the retrospective study, we obtained cutoff value (AUC 0.831, sensitivity 77.4%, and specificity 76.0%). In the prospective study, 16 patients in high risk, and 1 in low risk group were dead in two years. The sensitivity and specificity were 94.1% and 77.3%. **Conclusion:** This score might be useful to predict 2-year prognosis of PAD patients.

MO-44 Effects of PCSK9 inhibitor on favorable limb outcomes in patients with chronic limb-threatening ischemia

○Yusuke Sato

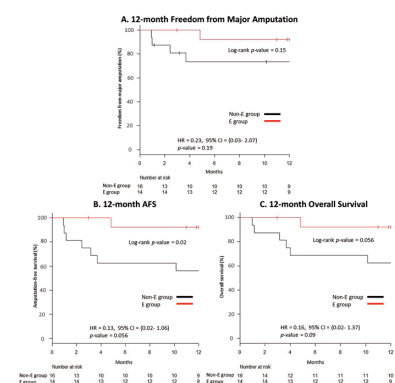
Tokeidai Memorial Hospital, University of Fukui Hospital

【What's known?】

Previous studies have shown that lipid-lowering therapy with statins is associated with better limb outcomes in patients with CLTI.

【What's new?】

A single-center, prospective observational study was performed on 30 patients with CLTI. The subjects were divided into 2 groups based on evolocumab administration: evolocumab-treated (E) group (n=14) and evolocumab non-treated (non-E) group (n=16). The primary outcome was 12-month freedom from major amputation. The secondary outcomes were 12-month AFS, overall survival (OS), and wound-free limb salvage. No significant difference was detected between the two groups for the 12-month freedom from major amputation, while the 12-month AFS rate was significantly higher in E group than that in non-E group (p=0.02). The 12-month OS rate in E group was shown a tendency for improvement, as compared with that in non-E group (p=0.056). Evolocumab administration was related to a tendency for improvement of AFS and OS (HR, 0.13, 95% CI, 0.02-1.06, p=0.056; HR, 0.16, 95% CI, 0.02-1.37, p= 0.09, respectively). The E group had a higher proportion of wound-free limb salvage at 12 months (92%vs.42%, p=0.03). Evolocumab administration was associated with a better AFS outcome in patients with CLTI. Long-term administration of evolocumab over 12 months contributed to improving proportion of wound-free limb salvage.



MO-45 A case: distal puncture in a localized part of the dorsal artery was effective for chronic total occlusion

○Dai Ozaki¹⁾, Ken Yokoyama¹⁾, Syohei Ouchi¹⁾, Kenji Yaginuma¹⁾, Tetsuro Miyazaki¹⁾, Takashi Tokano²⁾, Toru Minamino²⁾

¹⁾Juntendo Urayasu Hospital,

²⁾Department of Cardiovascular Medicine Juntendo University Hospital

【Case overview】

A patient was 86-year-old woman with left lower leg refractory ulcer (W1, I3, FI0, WIfi CS3). This ulcer had been treated as stasis ulcer but it was not improved by usual treatment. Her left leg was cold and skin perfusion pressure showed low level in left dorsal area. Angiography showed the anterior tibial artery (ATA) and the posterior tibial artery were both chronic total occlusion (CTO).

【Procedure summary】

We tried endovascular treatment in the ATA. Due to failure of antegrade approach, we tried trans collateral approach from the peroneal artery. But it was also failed because the collateral artery was too tortuous. Because a localized part of the dorsal artery was detectable, we tried distal puncture in it. Fortunately, we succeeded distal puncture. We made bidirectional approach and did wire rendezvous. After balloon dilatation, we could get one straight line of the ATA.



【Clinical time course and implication (or perspective)】

After endovascular treatment her symptom and wound improved. Distal puncture in a localized part may be an effective option of the procedure in such ATA CTO cases without appropriate puncture site.

MO-46 How to treat the right CLTI case with occlusion from right CIA to distal SFA occlusion and prior implantation of BNS from distal aorta to left EIA?

○Eiji Karashima

Shimonoseki City Hospital

【Case overview】

The 75 years old male admitted to our hospital because of the left CLTI. The distal aorta was occluded by thrombus, BNS was implanted to his distal aorta to left CIA. There was no symptom to his right foot, EVT had not been considered for occlusion from right CIA to distal SFA at that time.

One year later, he came to our hospital with severe right foot pain. His dorsum pedis was infected and small ulcer was shown in the middle of it.

【Procedure summary】

Even the 0.035-inch wire could easily cross the BNS struts, we gave up the stent deployment to his right iliac artery. There was no suitable vein to use the FP bypass, we decided to treat him with FF bypass and right SFA EVT.

【Clinical time course and implication (or perspective)】

Two weeks later of that treatment, the right CLTI was healed completely.

Even the hybrid therapy of this case was rare, we would like to report this case in JET 2021.

MO-47 Percutaneous anatomical endovascular bypass for CLTI patient with resection of infected common femoral bifurcation

○Takuya Haraguchi, Satoru Tokuma, Yoshifumi Kashima, Tsutomu Fujita
Sapporo Cardio-Vascular Clinic

【Case overview】

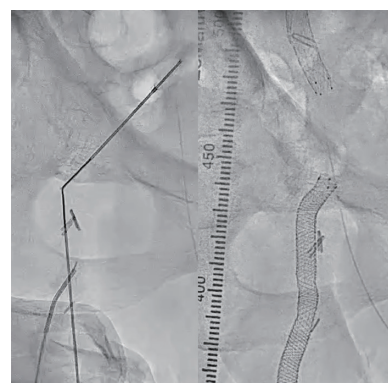
60s male presented with ischemic rest pain in his toes. His common femoral arterial bifurcation was ruptured due to MRSA infection after anal cancer surgery and resected 20 years ago. He suffered from acute limb ischemia, and he underwent emergency surgical bypass. However, his bypasses were extracted because of MRSA recurrence. His symptom became intermittent claudication, not critical limb ischemia, over time because of the development of collateral flow from internal iliac artery. With age, his symptom got worse to rest pain in his toes. The vascular surgeon decided not to surgically treat due to his high perioperative risk which were low nutrition, severe anemia, and so hard tissue in his thigh due to repeat MRSA infection, surgical bypass, and resection. He was referred to our institution for endovascular intervention.

【Procedure summary】

Endovascular devices could not pass the lesion including out of vessel due to his hard tissue around common femoral arterial bifurcation. Therefore, "Pave and crack technique" with "Needle Rendezvous technique" was successfully performed to conduct percutaneous anatomical endovascular bypass.

【Clinical time course and implication (or perspective)】

His symptom was completely improved without perioperative complication. The patency of endovascular bypass was observed 6 months later after the procedure.



MO-48 A case of severe limb ischemia that was very difficult to treat due to severe calcification

○Yoshikazu Nakamura
Heartlife hospital

【Case overview】

The case is a 64-year-old man. We performed EndoVascular Therapy (hereinafter abbreviated as EVT.) for stenosis of the right superficial artery and the anterior tibial artery because of the right first and third ischemia ulcers (Rutherford classification 5) one month ago, but they did not improve. At the time the posterior tibial artery was obstructed before the ankle joint with severe calcification. So this time we performed EVT for the posterior tibial artery. The wire somehow passed through, but the balloon catheter did not pass. Even if using Guidezilla, badform technique, pierce technique, it did not pass. We thought it would not pass due to calcification. When the calcification was reduced with the innerpierce technique using a PTGBD needle, the balloon catheter passed easily. After that, it was expanded and flow was obtained. From the above, we thought that innerpierce technique could be one of the treatment options for calcified lesions that are difficult to pass even with various techniques.

【Procedure summary】

The inner pierce technique using PTGBD needle reduced the calcified lesions.

【Clinical time course and implication (or perspective)】

The patient's wound status was improved after the procedure.

MO-49 Clinical Impact of Drug Coated Balloons Following Hemodialysis Patients for Femoro-popliteal Artery Lesions

○Kazuki Tobita, Hirokazu Miyashita, Futoshi Yamanaka, Shigeru Saito
Shonan Kamakura General Hospital

【What's known?】

A drug coated balloon (DCB) for femoro-popliteal artery is now available in Japan. Previous study revealed that DCB was less effective for severe calcified lesions, however, an effect of DCB was not clear for hemodialysis patients because there were few hemodialysis patients worldwide.

【What's new?】

Objective: The objectives of this study are to demonstrate the efficacy and the safety of DCB for hemodialysis patients.

Methods: This is a retrospective, observational, single center, open-labeled clinical trial. Approximately 144 limbs and 120 patients undergoing endovascular therapy (EVT) with DCBs for femoro-popliteal artery lesions were analyzed from November 2013 to June 2019. In this study, the cases treated with DCB and stents for one consecutive lesion were excluded. We evaluated outcome between hemodialysis (HD) and non-hemodialysis (non-HD) groups at least 1 year. Primary endpoint is primary patency defined as PSV-R<2.5 with vessel echosonography. Secondary endpoints are freedom from clinical driven target lesion revascularization, thrombosis, amputation and death.

Result: Primary patency was significantly lower in HD group [79.7 % vs 91.1 %, p=0.021]. The independent predictors of patency were PACSS grade 4 calcification, hemodialysis and chronic total occlusion.

Conclusion: In Japanese patient, DCB was effective but effectiveness was lower compared with non-HD patients.

MO-50 One year clinical outcome after drug-coated balloon angioplasty for de novo femoropopliteal lesions

○Kohei Yamaguchi, Shinsuke Mori, Takahide Nakano, Shigemitsu Shirai,
Masafumi Mizusawa, Kenji Makino, Yohsuke Honda, Masakazu Tsutsumi,
Mana Hiraishi, Norihiro Kobayashi, Masahiro Yamawaki, Yoshiaki Ito
Department of Cardiology, Saiseikai Yokohama City Eastern Hospital

【What's known?】

Several randomized trials of drug-coated balloons (DCB) angioplasty in patients with femoropopliteal (FP) lesions demonstrated superior patency rate compared to standard balloon angioplasty.

【What's new?】

The efficacy of DCB in our daily practice is still unclear. In this single center, retrospective study, we investigated consecutive 47 patients (57 limbs) who underwent DCB angioplasty for de novo FP lesions between April 2018 and October 2019. Primary patency at 1 year was 79.2%. Multivariate analysis revealed RVD was independent predictor of restenosis (hazard ratio 0.48, 95% confidence interval 0.24-0.93, p=0.031). According to receiver-operating characteristics analysis (area under curve=0.729), the cutoff value for the RVD was 4.5mm (sensitivity, 81%; specificity, 69%). The short-term clinical outcomes of DCB angioplasty for FP lesions was acceptable. RVD<4.5mm was the independent predictor for restenosis after DCB treatment.

MO-51 Five-year Clinical Outcomes of Paclitaxel-coated Stent Implantation for Femoropopliteal Disease Compared with Bare-Nitinol Stent Implantation

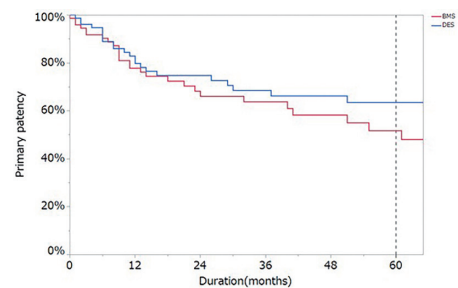
○Masakazu Tsutsumi, Yoshiaki Ito, Masahiro Yamawaki, Norihiro Kobayashi, Mouri Shinsuke, Yohsuke Honda, Kenji Makino, Shigemitsu Shirai, Masafumi Mizusawa, Kohei Yamaguchi, Takahide Nakano
Saiseikai Yokohama-city Eastern Hospital

【What's known?】

Long-term efficacy of Paclitaxel-coated stent (PCS) in real-world is still unknown. The purpose of this study is to investigate the 5-year outcomes of PCS implantation for femoropopliteal (FP) lesions and compare with that of bare-nitinol stent (BNS).

【What's new?】

This is a single center, retrospective study. Between July 2008 and April 2013, consecutive 275 lesions in 223 patients were treated with BNS. 85 lesions in 68 patients were treated with Zilver PTX (PCS). Primary endpoint is 5-year primary patency (5yPP) after propensity score matching. Stent patency was assessed by either duplex ultrasound or angiography. Secondary endpoints are amputation-free survival (AFS) and all-cause survival at 5 years. 5yPP after matching were not significantly different. (63.5% vs 51.8% p=0.46, see figure) AFS rate (59.2% vs 64.1% p=0.25) and All-cause survival rate (65.2% vs 67.4% p=0.35) were not significant different. In conclusion, there is no significant difference between clinical outcomes of PCS and BNS.



MO-52 The prognosis after endovascular revascularization among hemodialysis patients

○Munehiro Iiya¹, Hiroyuki Hikita¹, Hiroshi Yoshikawa¹, Fumichika Abe¹, Shihoko Tsujihata¹, Naruhiko Ito¹, Yoshinori Kanno¹, Keiichi Hishikari¹, Tadashi Murai¹, Atsushi Takahashi¹, Tetsuo Sasano²

¹Yokosuka Kyosai Hospital, ²Tokyo Medical and Dental University

【What's known?】

Objective) To explore the prognosis of hemodialysis patients following endovascular revascularization.

Methods) We retrospectively enrolled consecutive 900 patients (73 ± 8 years, 630 male) who underwent endovascular therapy in Yokosuka Kyosai Hospital between September 2011 and April 2019. We divided them into two groups; patients with hemodialysis (HD group, n=334) and without hemodialysis (non-HD group, n=566). The primary outcome was MALE, defined as a composite of target lesion revascularization, non-target lesion revascularization, amputation, and all-cause death.

Results) HD group had more frequent CLI (49% vs 19%, p<0.001). Among variables of lesion characteristics, HD group had more distal culprit lesion (aorto-iliac: 18% vs 30%, femoro-popliteal: 66% vs 63%, below the knee: 16% vs. 8%, p=0.001), frequent calcification (57% vs. 33%, p=0.001), and CTO lesion (60% vs. 44%, p=0.001). Kaplan-Meier curve analysis (median follow-up 1095 days) revealed the presence of HD is associated with increased risk of MALE. (log-rank <0.001)

Conclusion) HD group had more frequent MALE compared with non-HD group.

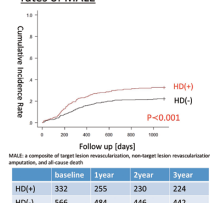
【What's new?】

The present study enrolled consecutive 900 patients who underwent endovascular therapy. The accumulate rate of MALE for three years were evaluated. Consequently, hemodialysis patients had more frequent MALE compared with non-hemodialysis patients.

Comparison of patients with/without hemodialysis (HD)

	HD (n=334)	non-HD (n=566)	p
Age (yr)	73±8	73±8	0.760
Male (n, %)	249 (75)	481 (85)	0.004*
BMI (kg/m ²)	23.5±3.8	22.8±4.52	0.001*
CLI (n, %)	163 (49)	105 (19)	0.001*
CLI (n, %)	3 (0.9)	2 (0.4)	0.001*
ABI	0.74±0.21	0.70±0.19	0.008*
Calcification (mg/dl)	8.39±4.45	3.37±3.36	0.001*
BMP (mg/dl)	571.8±79	317.8±191	0.001*
ESR-C (mg/dl)	465±26	365±29	0.001*
Low (mg/dl)	31±26	28±29	0.073
HSAI (n)	63 (19)	67 (12)	0.001*
Lesion			
aI (n, %)	53 (16)	43 (8)	
fP (n, %)	199 (60)	248 (44)	0.001*
bK (n, %)	192 (57)	147 (26)	0.001*
Stent (n, %)	234 (70)	442 (78)	0.001*

Kaplan-Meier estimated incidence rates of MALE



MALE is a composite of target lesion revascularization, non-target lesion revascularization, amputation, and all-cause death

	0-1 year	1-2 year	2-3 year
HD(+)	332	255	230
HD(-)	566	484	446

MO-53 Impact of wound-free ambulation time, a new endpoint, on patient's prognosis in chronic limb-threatening ischemia

○Shinsuke Kikuchi, Daiki Uchida, Ai Tochikubo, Yuri Yoshida, Atsuhiko Koya, Nobuyoshi Azuma

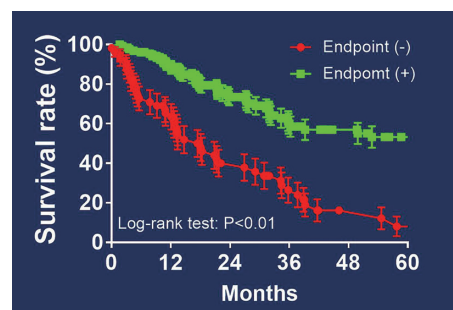
Asahikawa Medical University

【What's known?】

Wound-free ambulation time (WFA), a new endpoint, may give impact to patient's prognosis in chronic limb-threatening ischemia (CLTI). Based on clinical outcomes of 187 patients (225 limbs) underwent revascularization for CLTI between Jan 2012 to Dec 2017 in a single center (74% diabetes and 50% dialysis), WFA, which was time to achieve complete wound healing and ambulation after revascularization was assessed for patient's survival rate. WFA clinical stage did not alter patient's survival rate in this series, however the new endpoint, WFA, clearly stratified patient's prognosis in CLTI; there was difference in 2-year survival rate between patients who achieved WFA and patients who did not (73% and 40%, $P < 0.01$). Although this endpoint was a comprehensive factor including multiple factors associated with patient's survival rate in CLTI, such as low nutrition, dialysis and non-ambulatory status, wound healing and ambulation seems to be important factors related to subsequent patient prognosis after revascularization. Here, we show impact of WFA in treatment and patient prognosis of CLTI.

【What's new?】

Recovery of ambulatory status probably influences their general condition in addition to complete wound healing after revascularization. This combination of the two endpoints should be interesting for CLTI patient's prognosis.



MO-54 The W-BADFORM technique to resolve wire non-passage in bidirectional wiring

○Yoshinori Tsubakimoto, Yuki Ikeshita, Takaaki Ozawa, Ryotaro Tani, Akiko Shiraga, Makoto Saburi, Yohei Fushimura, Takeru Kasahara, Daisuke Irie, Tomohiko Sakatani, Akiko Matsuo, Keiji Inoue

Japanese Red Cross Kyoto Daini Hospital

【What's known?】

Background: During endovascular treatment (EVT) for chronic total occlusion (CTO) in below the knee (BTK) / below the ankle (BTA) region, it is often experienced that treatment is difficult because wire passage may be difficult even if the bidirectional system is conducted.

【What's new?】

Methods and Results: From April 2019 to October 2020, consecutive 4 patients with chronic limb threatening ischemia (CLTI) underwent EVT for BTK / BTA CTO lesion using the W-BADFORM (Balloon Deployment Using Forcible Manner) technique was retrospectively enrolled in this study. This technique was basically conducted when the wire passage was difficult, even if a bidirectional system was constructed by distal puncture or trans-collateral angioplasty. In this technique, after operating the bidirectional guide wire tips as close as possible, puncture the 21G needle, pull out the bidirectional wires to the body surface, and then perform BADFORM technique respectively to forcibly bring the bidirectional systems closer. These procedure facilitates rendezvous technique and allows devices to pass through the lesion. In all 4 case, technical success was obtained and no vessel complication was occurred.

Conclusion: In the initial results, the W-BADFORM technique might be a novel lesion crossing technique that resolves the wire non-passage during BTK / BTA intervention.



MO-55

Impact of Residual SYNTAX Score of Coronary Artery Disease in Patients with Peripheral Arterial Disease after Endovascular Treatment in I-PAD-Registry

○Yusuke Kanzaki¹⁾, Takashi Miura²⁾, Tamon Katoh¹⁾, Yushi Oyama³⁾, Naoyuki Abe⁴⁾,
Daisuke Yokota⁵⁾, Tatsuya Saigusa¹⁾, Soichiro Ebisawa¹⁾, Ayako Okada¹⁾,
Hirohiko Motoki¹⁾, Koichiro Kuwahara¹⁾

¹⁾Shinshu University, ²⁾Nagano Hospital,

³⁾Minami Nagano Medical Center Shinonoi General Hospital, ⁴⁾Nagano Red Cross Hospital,

⁵⁾Iida Hospital

【What's known?】

Background: Coronary artery lesion is likely complex in that of PAD patients, and sometimes complete revascularization (CR) is difficult. The relationship between residual SYNTAX score (rSS) of coronary artery and with clinical PAD outcome remains unclear.

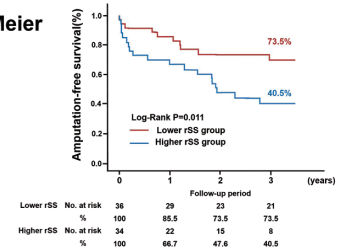
【What's new?】

Purpose:To reveal the target value of rSS of coronary artery disease (CAD) of PAD patients, and the association of rSS with amputation-free survival (AFS). **Methods:** Between August 2015 and July 2016, 335 consecutive patients (427 limbs) who underwent endovascular treatment (EVT) were enrolled in the I-PAD registry from 11 institutes in Nagano. After excluding patients with CR and without CAD, we recruited 70 patients (mean age, 73.8±9.8 years; male, 81.4%), and divided them into two groups by ROC analysis (area under curve=0.74, p<0.001): higher rSS group (N=34; rSS>6) and lower rSS group (N=36; rSS≤6).

Result: During

a median follow-up of 3.2 years, in Kaplan-Meier analysis, AFS was significantly lower in the higher rSS group than in the lower (Fig). **Conclusion:** Residual SYNTAX score after EVT associates significantly with AFS in PAD patients, and rSS = 6 is a useful target for CAD of PAD patients who underwent PCI.

Kaplan-Meier Analysis for AFS



MO-56 Endovascular Treatment for Acute Iliofemoral Vein Thrombosis

○Michihisa Umetsu¹⁾, Hitoshi Goto²⁾, Daijirou Akamatsu²⁾, Takashi Kamei²⁾

¹⁾Kesennuma City Hospital, ²⁾Tohoku University Hospital

【What's known?】

[Background] Endovascular treatment (EVT) is one of the optional treatments for DVT. In our institute, EVT is performed for the patients who occurred acute symptomatic iliofemoral vein occlusive thrombosis. We show our strategies and the outcome of treatments.

【What's new?】

[Procedure] Pharmacomechanical catheter-directed thrombolysis (PCDT) approaching from popliteal vein was performed, started from distal popliteal vein to iliac vein. Urokinase was injected from Fountain catheter for thrombolysis. Mechanical thrombectomy was performed using 7 Fr guiding catheter. When the thrombus remained, continuous thrombolysis using urokinase and unfractionated heparin was performed. When stenosis was still remained after several times of PCDT, ballooning or stenting was considered.

[Result] We performed anticoagulant therapy for 64 patients from Jul 2017 to Dec 2018. Among them, EVT was performed for seven cases. Median age was 63 y.o. (IQR: 30-71). PCDT was performed for all the cases. The median frequency of PCDT was 3 (range 1-3). Stenting was performed for one case. The primary thrombolysis was successful in all the cases. A case who had protein S and C deficiency reoccluded within 30 days. The circumference of the leg was significantly recovered in a week after first PCDT.

[Conclusion] Endovascular treatment has a great possibility for acute severe DVT.

MO-57 Successful treatment for inferior vena cava filter-related thrombus by the removal of the inferior vena cava filter with the catheter directed thrombolysis

○Sayaka Funabashi, Akihiro Tsuji, Jin Ueda, Hyroya Hayashi, Satoshi Kitahara, Sayuri Nakayama, Tatsuo Aoki, Takeshi Ogo

National Cerebral and Cardiovascular Center

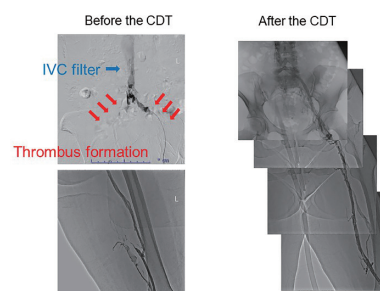
【What's known?】

A 37-year-old pregnant woman, who developed deep venous thrombosis (DVT) in right femoral vein was admitted to the nearby hospital. Unfractionated heparin (UFH) was started, but DVT remained unchanged. Subsequently, inferior vena cava (IVC) filter was deployed for preventing pulmonary embolism. However, enhanced contrast tomography revealed the DVT exacerbation from IVC to bilateral popliteal vein. She became IVC filter-related venous thrombosis and DVT worsened, and was transferred to our center for treatment. We decided to perform the catheter directed thrombolysis (CDT), and then to remove the IVC filter. The CDT was performed from the IVC to the left leg. The IVC filter was also removed safely. Her lower limb symptom was improved, and she was discharged from the hospital with oral anticoagulant therapy.

【What's new?】

The IVC filter-related venous thrombosis is one of the serious complications of IVC filter, which resulted in severe post thrombotic syndrome. We report the treatment plan for IVC filter-related thrombosis at our center.

Figure: Angiography in lower limb vein



MO-58 A case of left iliac vein total occlusion complicated with post thrombotic syndrome complicated with fractured self-expandable stent

○Cheng-Chun Wei

Shin Kong Memorial Hospital

【Case overview】

60s fisherman with left leg swelling for 1 year. CT showed left ilio-femoral vein total occlusion with collaterals and the pathophysiology was May-Thurner syndrome. The venography showed delayed flow over CFV, so we decided to open the occluded left iliac vein.

【Procedure summary】

We approached from right IJV and left CFV bi-directionally. The CTO route was ambiguous and no clear stump over iliac bifurcation, so we started with knuckle wire antegradely. Due to extreme vessel tortuosity and poor back-up, the conventional knuckle could not succeed. We tried guide-extension and balloon anchor to stabilize the GC from both sides. Bi-direction wire overlapped each other after some efforts. R-CART was done and retro GW crossed the lesion to IVC. After externalization, balloon angioplasty was performed with 8mm BC. 12mm*120mm VENVO stent was deployed. The VENOVO stent is designed for the iliofemoral veins with strong radial force. The stent stuck in the half way of deployment (Fig) and the possible mechanism of was spur by MTS. Manual retraction was tried but the balloon could not cross destroyed. We tried another strut and did BADFORM technique. Another E-luminexx covered the fractured VENOVO stent successfully.



【Clinical time course and implication (or perspective)】

The patient's swelling leg dramatically improved after the procedure.

MO-59 A rare cause of 'dramatic' iliac compression with acute deep venous thrombosis

○Eiji Miyauchi, Tomoyuki Ukezono, Atsuko Hiramane, Yusuke Kamizono, Ryoichi Arima

Kagoshima Prefectural Oshima Hospital

【Case overview】

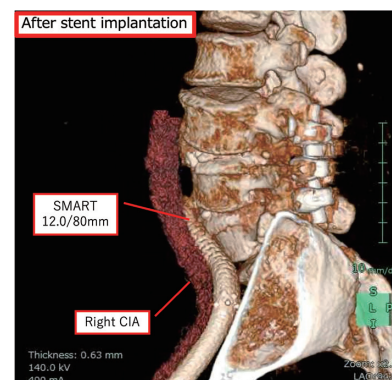
A 60s female underwent posterior lumbar interbody fusion (PLIF) because of lumbar spinal canal stenosis. 6 days later, She developed deep vein thrombosis (DVT) in her left leg. CT showed a large amount of thrombus was recognized to be from left proximal common iliac vein (CIV) to distal femoral vein. It also demonstrated left CIV was compressed by her 5th lumbar vertebra, which moved more forward dramatically compared to the pre-operation.

【Procedure summary】

To make vein open, catheter-directed venous thrombolysis (CDT) was performed and anticoagulation therapy started. However, those intervention were not very effective. Therefore, we planed to add stent implantation in stenosis of the left CIV. After self-expandable bare nitinol stent (SMART 12.0/80mm) was deployed, we succeeded in recanalization of iliac segment.

【Clinical time course and implication (or perspective)】

After stent implantation, she relieved from her symptom completely. Enhanced CT revealed that the stent shifted her right common iliac artery (CIA) forward and it kept patent. Iliac compression is usually caused by chronic development of bone spur in lumbar vertebra and gradual tortuous change of iliac artery. In our case, despite the dramatic shift of the lumbar vertebra, stent implantation was effective to keep CIV open (shown in Figure).



MO-60 A case of iliac vein compression syndrome treated with catheter directed thrombolysis and EVT

○Takafumi Fuwa¹⁾, Makoto Utsunomiya²⁾, Yuki Endo¹⁾, Shin Makabe¹⁾,
Tadashi Yamagishi¹⁾, Yutaka Koyama¹⁾, Naoto Inoue¹⁾

¹⁾Tokyo-Kamata Hospital, ²⁾Town Homecare Jonan

【Case overview】

The patient was 80 year old female. The chief complaint was left lower limb pain and swelling one week ago. Left limb grasping pain and redness were observed. D-dimer was extremely high (65.9 $\mu\text{g/ml}$), so she was referred to our hospital.

【Procedure summary】

We diagnosed as symptomatic central DVT and decided to treat it. We inserted a sheath through the popliteal vein and angiography was performed. A large amount of thrombus was observed in the iliac vein. We insert a fountain catheter and performed CDT by urokinase infusion. 3 days after, angiography showed thrombus disappearance, but some remain in the iliac vein. 14mm self expanding stent was deployed to the iliac vein.

【Clinical time course and implication (or perspective)】

The patient's symptoms removed quickly, and has past without relapse.

MO-61 A case of stenting for venous thrombosis due to Iliac compression syndrome and observing the degree of intima coverage with a vascular endoscope

○Takanobu Mitarai, Kzuyuki Okuyama, Nozomi Kotoku, Masashi Koga,
Yuki Ishibashi, Yasuhio Tanabe, Takumi Higuma, Yoshihiro J Akashi

St. Marianna University School of Medicine

【Case overview】

The case was 70s years old female. The patient had a significant swelling and pain in her left leg since several days ago. As a result of various examination, it was diagnosed as DVT/PE caused by Iliac-compression syndrome.

【Procedure summary】

In the acute phase, catheter-directed thrombolysis (CDT) was performed with the venous filter in place. On the fourth day after CDT, venography was performed. Although clots disappeared, blood flow was blocked in the compression area. Since balloon ballooning alone did not improve the condition, Stent was placed. This markedly improved venous blood flow. Thereafter, CDT was terminated, and DOAC was continued.

【Clinical time course and implication (or perspective)】

50 days after the stent placement, the stent was observed with an endoscope at the same time as the collection of the venous filter. Red thrombi and exposed sites of stent strut were also observed, but some struts were covered with an intima. Since strut coating was observed in a short period of time after stent placement, further coating is expected in the chronic phase. The use of antithrombotic drugs after stent placement for Iliac compression syndrome has not been established, and the findings of this case indicate that antithrombotic drugs may be terminated in the chronic phase in some cases.

MO-62 Endoluminal Bypass for Severe Calcified Femoro-Popliteal Lesions

○Kazuki Tobita, Hirokazu Miyashita, Futoshi Yamanaka, Shigeru Saito
Shonan Kamakura General Hospital

【What's known?】

Background: The endoluminal bypass was reported good outcome for severe femoro-popliteal lesions like TASC2 class C or D. Calcification is predictor to worsen patency after endovascular therapy (EVT), however, it was not known efficacy of endoluminal bypass for calcified lesions.

【What's new?】

Objective: To demonstrate outcome of endoluminal bypass for calcified lesions.

Methods: The consecutive 73 patients and 94 limbs undergoing EVT for femoro-popliteal lesion with endoluminal bypass from February 2017 to April 2018 in our institution were retrospectively analyzed. Severe calcification was defined as PACSS grade 4. Primary outcome was primary patency. Secondary outcomes were death, myocardial infarction, stroke, major amputation, any target revascularization (TLR), graft thrombosis (GT) and graft infection.

Results: We included 24 limbs as severe calcification group and 70 limbs as non-severe calcification group. Two groups has same primary patency rate [87.5 % vs 87.1 %, p=0.811]. Any TLR was not different between two groups, however, GT was significantly higher in severe calcification group [12.5 % vs 2.9 %, p=0.049]. And mortality with severe calcification was significantly higher too [20.8 % vs 4.2 %, p=0.022].

Conclusion: Endoluminal bypass had good patency even for calcified lesions, however, graft thrombosis and mortality were higher.

MO-63 Impact of Frailty on Elderly Patients with Peripheral Artery Disease from the I-PAD Registry, 2 year follow up

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Tamon Kato²⁾, Yoshiteru Okina¹⁾, Shun Nakazawa¹⁾, Shunichi Tsukada¹⁾,
Tatsuya Saigusa²⁾, Mitsuru Kagoshima¹⁾, Koichiro Kuwahara²⁾

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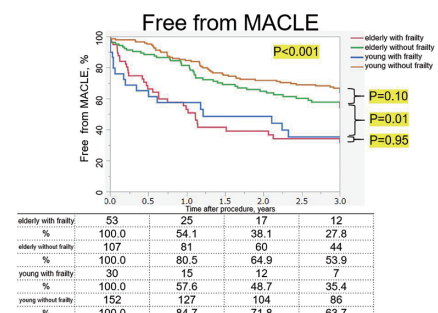
³⁾Department of Cardiovascular Medicine, Nagano Municipal Hospital

【What's known?】

It has been pointed out that frailty may be an independent prognostic factor in medical interventions, but it is unclear whether it is a more important factor than age.

【What's new?】

The findings of this retrospective study (N=352) which assesses the effects of frailty in patients with PAD who underwent EVT, compared the three- year major adverse cardiovascular and limb events rate between four groups in peripheral artery disease patients. The result is as follows: 1. The prognosis of elderly patients without frailty was better than that of young people with frailty. 2. For patients without frailty, no significant effect of age was observed on the incidence of MACLE at 2 years. 3. clinical frailty scale, a simple indicator of frailty, was independently associated with MACLE at 2 years in PAD patients after revascularization.



MO-64 Lymphocyte-neutrophil ratio predicts long-term prognosis in patients undergoing endovascular therapy

○Kentaro Jujo¹⁾, Keiko Mizobuchi²⁾, Yuichiro Minami²⁾, Motoko Kametani²⁾,
Issei Ishida²⁾, Shintaro Haruki²⁾, Madoka Akashi²⁾, Masashi Nakao²⁾,
Nobuhisa Hagiwara²⁾

¹⁾Tokyo Women's Medical University Medical Center East, ²⁾Tokyo Women's Medical University

【What's known?】

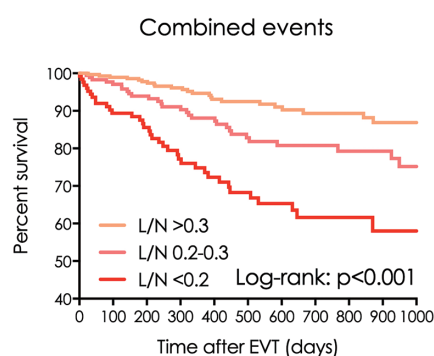
Lymphocyte modulates systemic inflammatory response, but its ratio to neutrophil (L/N ratio) has not been fully evaluated in terms of its contribution on the prognosis of patients with peripheral artery disease (PAD).

Total of 599 consecutive patients who received endovascular therapy (EVT) was divided into 3 groups based on L/N ratio; Low risk (L/N >0.3); Moderate risk (L/N 0.2-0.3), and High risk (L/N <0.2). The primary endpoint was a composite of any death and major amputation.

During 449 days of median follow-up after EVT, there were 93 combined events (cumulative risk, 15.5%), including 60 deaths and 33 major amputations, of which 59 were within the first year. Patients with CLI was included in each subgroup as 25.8%, 36.0%, and 64.8%, respectively. Kaplan-Meier analysis of subgroups revealed that the lower L/N ratio group had the higher rate of composite endpoints ($p < 0.001$, Figure). In multivariate Cox regression analysis, higher L/N ratio class had a significantly higher hazard ratio of the primary endpoint, even after adjustment for age, gender and morbidity of CLI (HR: 1.56, 95%CI: 1.20-2.03).

【What's new?】

The ratio of lymphocyte to neutrophil may predict long-term adverse clinical events in patients with PAD.



MO-65 Japan-version High Bleeding Risk (J-HBR) Could Also Predict the BARC Bleeding Events in Patients Undergoing EVT for Peripheral Artery Disease

○Shutaro Goda, Yoshiaki Ito, Shinsuke Mori

Department of Cardiology

【What's known?】

J-HBR, which is revised version of Academic Research Consortium HBR, has published to evaluate bleeding risk after percutaneous coronary intervention (PCI) for Japanese patients. Several criteria, such as heart failure, frailty and PAD, were added to ARC-HBR considering current studies about bleeding. But there are no standard criteria of bleeding risk for patients undergoing endovascular treatment (EVT), therefore we applied J-HBR for those patients and tried to verify bleeding event. Because J-HBR has already included PAD as a major criterion, we have excluded it and evaluated bleeding risk with the other criteria.

【What's new?】

We enrolled 215 patients who received EVT for only iliac artery stenosis up to present. Patients were divided into two groups whether they met the J-HBR criteria or not, 137 (63.8%) patients were met and 78 (36.2%) were not. Within 2 years, bleeding occurred in 23 patients (10.7%) according to BARC type 3 or 5; in 20 patients (16.8%) according to HBR high risk group; and in 3 patients (3.8%) according to no-HBR group ($p = 0.013$). J-HBR could also predict BARC bleeding events in patient undergoing EVT, as well as PCI. Bleeding events occurred significantly more in patients categorized as HBR than no-HBR group.

MO-66 Impact of complete revascularization in coronary artery for peripheral artery disease patients underwent endovascular therapy: A Sub-analysis of the I-PAD registry

○Tamon Kato

Shinshu University School of Medicine

【What's known?】

Background: Previous reports have shown that complete revascularization (CR) in coronary artery decrease major adverse cardiac event (MACE). Peripheral artery disease patients have severe clinical outcomes. However, impact of CR in PAD population was little unknown.

【What's new?】

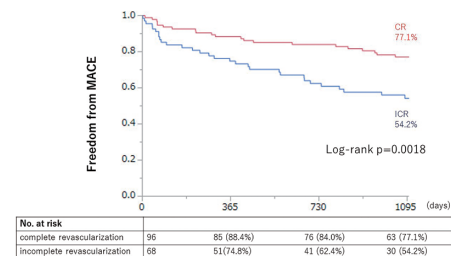
Aim: We evaluated impact of CR for the 3-year clinical outcome in PAD patients.

Method: I-PAD registry was a prospective, observational, multicenter, all-comer cohort study, has enrolled 336 patients. We recruited 164 PAD patients with coronary artery disease. The primary endpoint was major adverse cardiovascular event (MACE: all-cause death, myocardial infarction, stroke).

Result: Of the 164 PAD patients with CAD, of the 96 patients received complete revascularization in coronary artery (CR group), and 68 patients received incomplete revascularization in coronary artery (ICR group). Kaplan-Meier curve showed freedom from MACE in CR group was significantly higher than ICR group at 3 years (77.1% vs 54.2%, $p=0.002$). On multivariate analysis revealed hemodialysis, age, heart failure, CLTI, hemodialysis were positive predictor of MACE, and BMI, albumin and complete revascularization in coronary artery were negative predictor of MACE.

Conclusions:

Complete revascularization in coronary artery was significantly associated with clinical outcomes in PAD patients underwent EVT population.



MO-67 Angioscopic ulcerated plaques in the femoropopliteal artery associated with impaired infrapopliteal runoff

○Tomohiro Yamaguchi, Takanori Yamazaki, Ou Hayashi, Ryosuke Yahiro,

Kazuhiro Nakao, Tsukasa Okai, Shoichi Ehara, Yasuhiro Izumiya, Minoru Yoshiyama

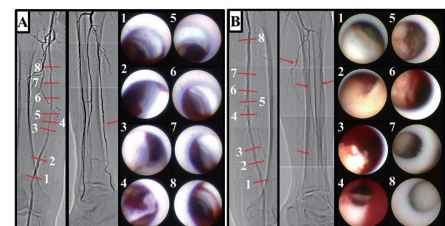
Osaka city university graduate school of medicine, department of cardiovascular medicine

【What's known?】

Histopathological studies demonstrated that infrapopliteal stenotic and occlusive lesions commonly comprised chronic thrombi, which were possibly derived from up-stream atherosclerotic lesions. The aim of this study was to evaluate the atherosclerosis in femoropopliteal arteries detected by angioscopy associated with poor infrapopliteal runoff assessed with angiographic runoff score (ARS).

【What's new?】

Thirty-one diseased legs of patients with PAD who underwent EVT were retrospectively included. The yellow plaque color scores were semi-quantitatively determined as 0, 1, 2, or 3. We defined extraordinary plaques with rough surfaces, similar to gastric ulcers, as ulcerated plaques (UPs). We analyzed the association between these angioscopic findings and ARS. To evaluate the variables associated with ARS, we divided the study population into two groups according to the median ARS (ARS = 4). In results, UPs and mural thrombi on any of the detected UPs were more frequently detected in patients with high ARS. Linear regression analysis revealed that the presence of UPs was positively and independently associated with poor ARS ($\beta = 0.462$, $p= 0.004$), and that oral anticoagulant use was negatively and independently associated with poor ARS ($\beta = -0.411$, $p= 0.009$). The present study revealed that angioscopic observation was useful to evaluate up-stream atherosclerotic lesions associated with crural runoff.



MO-68 New lesion after endovascular therapy of femoropopliteal lesions for intermittent claudication

○Tomonori Katsuki¹⁾, Kyohei Yamaji¹⁾, Yoshimitsu Soga¹⁾, Osamu Iida²⁾,
Masahiko Fujihara³⁾, Daizo Kawasaki⁴⁾, Kenji Ando¹⁾

¹⁾Kokura memorial hospital, ²⁾Kansai rosai hospital, ³⁾Kishiwada tokushukai hospital,

⁴⁾Morinomiya hospital

【What's known?】

The incidence of target lesion revascularization (TLR) was decreased in patients who underwent EVT for FP, however, clinical impact of newly developed lesions could not be ineligible in those patients.

【What's new?】

We investigated 911 IC patients in 4 hospitals who underwent a successful EVT for de novo FP lesion, but without a history of EVT. More than a half of patients suffered from any limb revascularization at 5 years after their first EVT for FP lesions. Of these, revascularization was more performed for new lesions than for first treated lesions, during the 5-year follow up. BMI <23 kg/m², diabetes, hemodialysis, and atrial fibrillation were independent predictors for new lesion revascularization. According to the risk score based on the predictors: BMI (<23 kg/m², 1 point), diabetes (2 points), hemodialysis (3 points), and atrial fibrillation (2 points), patients with ≥4 points had twice higher risk for new lesion revascularization, compared with 0-1 point.

MO-69 Prediction of the technical success of endovascular therapy in patients with critical limb-threatening ischemia using the Global Limb Anatomical Staging System

○Takahiro Tokuda, Yasuhiro Oba, Yoriyasu Suzuki, Ai Kagase, Hiroaki Matsuda, Akira Murata, Tatsuya Ito
Nagoya heart center

【What's known?】

There is a lack of reports on the predictive risk factors of revascularization for the target artery path (TAP) with EVT using the Global Limb Anatomical Staging System (GLASS) stage.

Therefore, the present study was conducted to 1) clarify the technical success rate, procedural complications, and the 30-day mortality using GLASS stage ; 2) determine the factors influencing the problems arising in treating TAP; 3) develop a model for determining the grade of difficulty; and 4) assess the ability of this model to predict the technical success for the treatment of TAP.

【What's new?】

This study revealed clinical outcomes of GLASS stage. Through multivariate analysis, the absence of pedal modifier (P)0 or P1, GLASS 3, total occlusion, and severe calcification predicted technical success for TAP. The GLASS scoring system which we proposed using the results of multivariate analysis reliably predicts the technical success for TAP in patients with critical limb threatening ischemia. This system might easily enable clinicians to consider the appropriate TAP for recanalization.

MO-70 Simultaneous endovascular treatment and minor forefoot amputation for critical limb ischemia

○Takashi Yanagiuchi, Taku Kato, Shunpei Ushimaru, Hirokazu Yokoi
Rakuwakai Otowa Hospital

【What's known?】

Objective: In the setting of critical limb ischemia (CLI), standalone endovascular treatment (EVT) sometimes cannot facilitate clinical success because many patients present with severe ischemic wounds, often with ongoing bacterial infection. Although minor amputation is effective to control infection and promote early healing, timing of minor amputation and revascularization is still controversial. In this study, we performed simultaneous EVT and minor amputation in the catheter laboratory, and examined wound healing rate and factors associated with delayed wound healing.

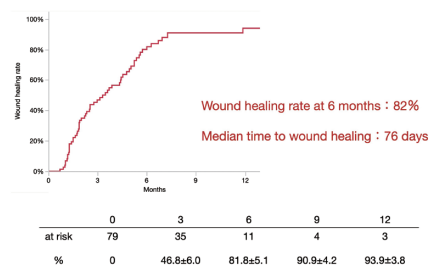
【What's new?】

Methods: We analyzed 79 consecutive critically ischemic limbs from 73 patients who underwent simultaneous EVT and minor forefoot amputation between November 2017 and May 2020. The wound healing rate was estimated by the Kaplan-Meier method.

Results: The wound healing rate at 6 months reached 82%. Median time to wound healing was 76 days. By multivariate analysis, Lisfranc/Chopart amputation (HR 2.36; 95% CI 1.05-6.33), nonexistence of above the knee occlusive lesions (HR 1.87; 95% CI 1.02-3.34), and lower number of patent BTA runoff vessels after the EVT (HR 1.78; 95% CI 1.08-2.96) were independent predictors of delayed wound healing.

Conclusion: The simultaneous procedure had a positive impact on CLI, achieving higher wound healing rate and shorter healing time to those in earlier studies.

Figure title : Cumulative wound healing rate after simultaneous EVT and minor forefoot amputation



MO-71 The association between Clinical Frailty and 3-Year Prognosis in Patients with Claudication and Critical limb ischemia: from I-PAD Registry

○Tomoaki Mochidome¹, Takashi Miura¹, Tamon Kato², Yusuke Kanzaki², Naoyuki Abe³, Daisuke Yokota⁴, Takashi Yanagisawa⁵, Kensuke Zyoukou¹, Daisuke Sunohara¹, Toshinori Komatsu¹, Toshio Kasai¹, Uichi Ikeda¹

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⁵Department of Cardiology, Saku Central Hospital Advanced Care Center

【What's known?】

Clinical frailty scale (CFS) is known the tool which evaluate the patients about health and functional evaluation. Moreover, it is said that CFS is associated with hospitalization period and short-term mortality. However, the association between CFS and long-term mortality on the patients with PAD are not well known.

【What's new?】

I-PAD registry enrolled 371 consecutive PAD patients who were performed EVT and divided 324 patients who conducted follow up survey into the two groups; CLI group (n=110), claudication group (n=214). To assess the prognostic value of CFS, we categorized into further two groups according to CFS; CFS \geq 5 was Frail group, and CFS $<$ 5 was not frail group. The primary endpoint was 3-year MACE (all-cause mortality, MI and stroke) after EVT.

The 3-year MACE rate was remarkably higher in the frail group than in the not frail group among the patients with not only CLI, but also claudication (54.5% vs 36.9%, p=0.04, 38.5% vs 14.1%, p=0.008, respectively). Multivariate Cox analysis showed the CFS \geq 5 was strong predictor for 3-year MACE in both groups (HR2.09, 95%CI 1.11-3.95, p=0.02, and HR3.05; 95%CI: 1.30-6.83, p=0.03, respectively).

CFS \geq 5 was strongly associated with poor prognosis for 3-year after EVT in patients with CLI and claudication.

MO-72 Prediction of wound healing using Vacuum-assisted closure therapy after endovascular revascularization for critical limb ischemia

○Tomoya Fukagawa, Shinsuke Mori, Kohei Yamaguchi, Shigemitsu Shirai, Masafumi Mizusawa, Kenji Makino, Yosuke Honda, Mana Hiraishi, Masakazu Tsutsumi, Norihiro Kobayashi, Masahiro Yamawaki, Yoshiaki Ito

Department of cardiology, Saiseikai yokohama-city eastern hospital

【What's known?】

The predictors between wound healing and unhealed wound in critical limb ischemia patients with Vacuum-assisted closure therapy after endovascular treatment were unknown.

【What's new?】

Heel wound and no blood flow to wound were associated with unhealed wound underwent Vacuum-assisted closure therapy in critical limb ischemia patients. There is no relationship between wound healing and infectious wounds at initial diagnosis.

MO-73 The prognosis of chronic limb-threatening ischemia patients after endovascular revascularization according to GLASS classification; from I-PAD registry

○Yoshiteru Okina¹, Tamon Kato², Takashi Miura³, Yusuke Kanzaki⁴, Naoyuki Abe⁵, Ken Nishikawa¹, Shun Nakazawa¹, Shunichi Tsukada¹, Mitsuru Kagoshima¹

¹Joetsu General Hospital, ²Shinshu university hospital, ³Nagano Municipal Hospital,

⁴Shinonoi General Hospital, ⁵Nagano Red Cross Hospital

【What's known?】

The difference in prognosis of chronic limb-threatening ischemia (CLTI) patients who have undergone endovascular treatment (EVT) according to the GLASS classification is not well known in Japan.

【What's new?】

From August 2015 to July 2016, 335 consecutive patients (427 limbs) who underwent endo vascular treatment (EVT) were enrolled in the I-PAD registry from 7 institutes in Nagano prefecture, and recruited 78 CLTI patients. Primary end point is composite outcome of amputation free survival (AFS) and all cause death. Secondary end point is MALE (major/minor lower extremity amputation, any revascularization) 3 year after EVT. The incidence of primary composite outcome was not significantly different for each stage of GLASS classification I/II and III (50.0% vs. 73.3% vs. 65.8%, p=0.25, respectively). The respective incidence of AFS and all cause mortality for each stage of the GLASS classification was not significantly different. (20.0% vs. 20.0% vs. 37.1%, p=0.28, and 40.0% vs. 66.7% vs. 42.5%, p=0.41, respectively). The incidence of MALE was also not significantly different between GLASS stage I/II and III (25.0% vs. 33.3% vs. 44.7%, p=0.15, respectively). In this study, there was no difference in MALE and ABI-based LBP for CLTI patients after EVT examined based on GLASS classification.

MO-74 Saphenous Vein Size as a Surrogate Marker for Mortality of Patients with Chronic Limb-threatening Ischemia Undergoing Endovascular Therapy

○Yosuke Hata¹, Osamu Iida¹, Mitsuyoshi Takahara², Shin Okamoto¹, Takayuki Ishihara¹, Kiyonori Nanto¹, Takuya Tsujimura¹, Koji Yanaka³, Toshiaki Mano¹

¹Cardiovascular Center, Kansai Rosai Hospital,

²Department of Diabetes Care Medicine, Osaka University Graduate School of Medicine,

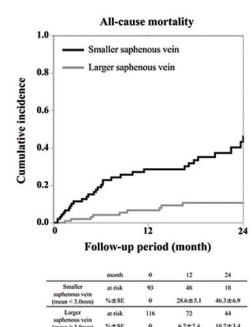
³Division of Cardiovascular Medicine and Coronary Heart Disease, Hyogo College of Medicine

【What's known?】

The size of autologous vein graft is an important determinant of prognosis in patients with chronic limb-threatening ischemia (CLTI) undergoing bypass surgery. However, it remained unrevealed whether a small vein graft would directly deteriorate their prognosis, or having small veins per se would work as a surrogate marker for poor prognosis in CLTI patients.

【What's new?】

The current study included 209 consecutive CLTI patients who primarily underwent EVT. The saphenous vein size was assessed before EVT by ultrasound echocardiography and a small saphenous vein was defined as the mean diameter <3.0 mm. As a result, a small saphenous vein was observed in 44.5%. The 1- and 2-year all-cause mortality rate were 17.0% and 26.4%, respectively. All-cause mortality rate was significantly higher in patients with a small saphenous vein compared to patients with a larger one (figure). The multivariate analysis revealed that a small saphenous vein was independently associated with all-cause mortality.



MO-75 **The Impact of Rehabilitation on The Activities of Daily Living of Patients with Critical Limb-Threatening Ischemia**

○Yuki Kozai, Yoshiaki Ito, Masahiro Yamawaki, Norihiro Kobayashi,
Masakazu Tsutsumi, Yohsuke Honda, Kenji Makino, Masahumi Mizusawa,
Shigemitsu Shirai, Kohei Yamaguti, Mana Hiraishi, Tkahide Nakano
Yokohama City Eastern Hospital

【What's known?】

Patients with Critical Limb-Threatening Ischemia (CLTI) frequently experience decline of activities of daily living (ADL) and decline of ADL is related with poor prognosis. It has been reported that rehabilitation for patients with CLTI is significantly associated with the improvement of ADL. We investigated the impact of frequency of rehabilitation on ADL status during hospitalization.

【What's new?】

We classified patients (n=91) into two groups: the improvement group (n=21) and non-improvement group (n=71), and compared patients background, limb background, and frequency of rehabilitation between two groups. ADL status was defined as ADL change according to Barthel Index (BI) at the time of hospitalization and discharge. Frequency of rehabilitation was defined as the times of rehabilitation divided by the days of hospitalization. The rates of patients who were younger, on non-hemodialysis, acquired direct flow of pedal arch artery after EVT, and experienced frequency of rehabilitation during hospitalization were significantly higher in the improvement group than the other group. After multivariate analysis, frequency of rehabilitation during hospitalization was only independent predictor of improvement of ADL status (odds ratio: 1.23, 95% confidence interval: 1.08-1.39, $P < 0.01$). The frequency of rehabilitation was independently associated with improvement of ADL status during hospitalization in patients with CLTI after EVT.

MO-77 The Effect of Aggressive Wire Recanalization in Calcified Atheroma and Dilatation (ARCADIA) Technique in Eccentric Calcified Lesion of Non-stenting Zone

○Hirokazu Konishi, Roji Koshida, Maoto Habara, Kenya Nasu, Yoshihisa Kinoshita, Etsuo Tsuchikane, Mitsuyasu Terashima, Tetsuo Matsubara, Takahiko Suzuki
Toyohashi Heart Center

【What's known?】

Stent-less Percutaneous transluminal angioplasty using a drug coated balloon is a novel and effective strategy in non-stenting zone [common femoral artery (CFA) and popliteal artery (PA)]. However, eccentric calcified plaque is the most difficult lesion at the point that is hard to be expanded, and is easy to create dissection.

【What's new?】

We performed aggressive wire recanalization in calcified atheroma and dilatation (ARCADIA) technique to peripheral artery disease with eccentric calcified lesion of non-stenting zone. First, guide-wire was passed to original lumen. Next, another guide-wire was passed into calcified plaque with intravascular ultrasound guided and dilated the calcified lumen by using scoring-balloon and CROSSER. Ten-four PAD patients with eccentric calcification in non-stenting zone (CFA or PA) were treated ARCADIA procedure in 2018-2020. One-year Target lesion revascularization occurred only one case. Primary patency of one year was 92.6%. Consequently, ARCADIA technique is effective to treat eccentric calcified lesion of non-stenting zone.

MO-78 Safety and Efficacy of Transradial endovascular Intervention for Aortoiliac and Femopoplital Lesion

○Tatsuki Doijiri
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【What's known?】

In PCI, Transradial Intervention is fundamental method . On the other hand, in EVT , Transradial Intervention isn't fundamental. One of the reasons was device lag. However, the problem has also been improved, especially in Aortoiliac lesions. We analyzed safety and efficacy of transradial endovascular treatment (EVT).

【What's new?】

From July 2019 to June 2020, we underwent 40 consecutive cases of EVT in single center for Aortoiliac lesion by TRI, except patients of HD, Radial artery occlusion, bending of descending aorta and Leriche syndrome. We used R2P system (Destination or Slenguide) (30 cases) and 4.5Fr Parent plus theath (10 cases). Procedural success was 100% . 12 cases (30%) CTO were included.3 Cases (7.5%) were needed additional puncture of CFA. Overall complication rate were 5%, all with radial artery occlusion.However There were no major complications including cerebral infarction, Aortic Dissection, distal embolism and major bleeding. I consider TRI to be the first choice for EVT, at least in aortic iliac artery lesions.

MO-79 10-year Clinical Outcomes After Endovascular Therapy

○Tomonori Katsuki, Kyohei Yamaji, Seiichi Hiramori, Yusuke Tomoi,
Yoshimitsu Soga, Kenji Ando
Kokura memorial hospital

【What's known?】

Mid-term outcomes after EVT had been well-evaluated; however, 10-year outcomes after EVT are rarely reported.

【What's new?】

The current study evaluated very long clinical outcomes for the patients who underwent EVT for de novo lesions. We divided the patients into the three groups according to lesion location (AI, FP, and BTK groups). We obtained 91% clinical follow-up information at 10 years. Within 10 years after EVT, more than half of patients who underwent EVT for AI or FP lesions died, while three-fourths of patients who underwent EVT for BTK lesions died. The median life expectancies after EVT were 8.4 years in patients with AI lesions, 9.1 years in those with FP lesions, and 4.4 years in those with BTK lesions, while the life expectancy in the age-sex matched general Japanese population was 14.7 years.

Though the risk of TLR after EVT for AI lesions was relatively low at 0.8% per year beyond five years up to 10 years, non-TLR continued to occur irrespective of lesion location up to 10 years.

MO-80 Impact of extravascular ultrasound guide wiring on achieving optimal vessel preparation and patency in recanalization of superficial femoral artery chronic total occlusion

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³Toyohashi Heart Center

【What's known?】

One means which may improve poor outcomes of endovascular therapy (EVT) for superficial femoral artery (SFA) chronic total occlusion (CTO).

【What's new?】

This retrospective single center study evaluated 239 SFA CTO lesions successfully treated with EVT and implanted self-expandable nitinol stent in the periods of April 2007 to December 2018 at Saiseikai Yokohama City Eastern Hospital. Subject was divided into 2 groups, whether duplex ultrasound guide (DUSG) or angio guide (AG) during CTO wiring. DUSG group:65 lesions and AG group:174 lesions were evaluated angiographic dissection patterns after initial balloon angioplasty immediately after successful wire passing of SFA CTO lesions and also compared those primary patency rate. Restenosis was defined as peak systolic velocity ratio of >2.4 by duplex scan. TASC II CD lesions was 89% (58/65) in DUSG group and 79% (138/174) in AG group (p=0.05). There was no significant difference in the initial balloon diameter immediately after successful wire passing (DUSG group 3.7±0.5mm and AG group 3.8±0.5mm, p=0.17). Incidence of non-severe dissection (NHLBI classification A to C) was significantly high (p<0.01) in the DUSG group 57% (37/65) compared with AG group 21% (37/174). 3-years primary patency rate was significantly high in DUSG group 84.5% compared with AG group 68.4% (p<0.01).

MO-81 New EVT technique “Prone position trans Popliteal artery retrograde Approach (PPAP)” has many benefits in perioperative period

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Fukushima Daiichi Hospital

【What's known?】

Femoral-Puncture has been essential for EVT, although we know it has possibility of major complications like bleeding or aneurysm. And, the "new challenge" like TAI (Dr.Takimura produced) and R2P (TERUMO) came out. I think these challenges are one of the advances in medicine to reduce patients' burden.

And also, Supine-Position is essential for EVT now. URAPAN technique Dr.Urasawa produced is one of the most major EVT technique, and we perform it when we need bidirectional approach. Generally, we can't complete EVT progress only using this technique because it is hard to perform it for the patient lying in supine position. How about the prone position? We haven't considered much about the posture of patients during EVT.

【What's new?】

We performed prone position trans popliteal artery retrograde Approach (PPAP) to about 10 patients. PPAP gave us some benefits. Firstly, the sheath pressure in their popliteal artery told us the blood flow situation at that time. So, we could reduce the amount of contrast medium, and the sheath pressure can be used for clinical decision making.

Secondary, the degree of patients' satisfaction was high. All patients who were performed both preferred PPAP to conventional EVT.

Finally, nursing work after EVT got reduced clearly.



MO-82 A ruptured popliteal artery aneurysm treated with stentgraft implantation and coil embolization

○Shunsuke Kojima, Tatsuya Nakama, Kotaro Obunai
Tokyobay Medical Center

【Case overview】

Popliteal artery aneurysms (PAA) rarely rupture. Here, we report a case of successful treatment with stentgraft implantation and coil embolization for ruptured PAA. An 86-year-old woman with a history of stroke presented with severe pain in her right leg. Ruptured PAA was revealed by computed tomographic (CT) scan. She was in shock status and her right leg was massively swollen and tense.

【Procedure summary】

An emergent endovascular therapy (EVT) was performed and angiogram showed ruptured PAA (26x28mm). Because a guidewire could not be advanced by antegrade approach, retrograde approach from anterior tibial artery (ATA) was obtained for lesion crossing. Before the stentgraft implantation, 4 coils were subsequently deployed inside the aneurysm to prevent it from further expansion due to end-leak. A 5x50mm stentgraft was deployed to exclude the aneurysm and self-expand nitinol stent was placed from the proximal ATA to inside of the stentgraft. Then fasciotomy was performed for clinical suspicion of acute compartment syndrome; tense, firm compartment and rapidly progressing pain. A final angiogram showed no residual flow into the aneurysm and excellent downstream flow.

【Clinical time course and implication (or perspective)】

The patient had an uneventful postoperative course and was transferred to another hospital for further rehabilitation.

MO-83 Heparin bonded stent graft (Viabahn® stent graft) versus interwoven nitinol stents (Supera® stent) for the treatment of femoropopliteal lesions in hemodialysis patients with peripheral artery disease

○Naoko Higashino, Osamu Iida, Mitsutoshi Asai, Masaharu Masuda, Shin Okamoto, Takayuki Ishihara, Kiyonori Nanto, Takashi Kanda, Takuya Tsujimura, Yasuhiro Matsuda, Yosuke Hata, Toshiaki Mano

Kansai Rosai Hospital Cardiovascular Center

【What's known?】

Hemodialysis (HD) patients with peripheral artery disease (PAD) generally have complex femoropopliteal (FP) lesions including severe calcification. Although heparin bonded stent graft (Viabahn® stent graft) and interwoven nitinol stents (Supera® stent) have been currently emerged as a FP-specific device with acceptable durability in the complex FP lesions, their performance has not been systematically compared in real-world practice.

【What's new?】

This was comprised of single-center retrospective study participating 65 FP lesions in 58 HD patients who underwent endovascular therapy using Viabahn stent graft (44 lesions from 39 patients) or Supera stent (21 lesions from 19 patients). Outcome measures were 12-month primary patency and freedom from stent thrombosis. No significant difference in baseline characteristics was found between the 2 groups, except longer lesion length in the Viabahn group than in the Supera group. Twelve-month primary patency rate was significantly higher in the Viabahn group with 88.6% than in the Supera group with 66.7% ($P=0.027$), while freedom from stent thrombosis rate was not statistically difference among groups (both 91%, $P=0.72$). Viabahn stent graft had a better primary patency rate and a comparable stent thrombosis rate as compared to Supera stent for the treatment of FP lesions in HD patients.

MO-84 Efficacy of multichannel balloon angioplasty in the calcified common femoral artery lesions

○Satoru Nagatomi^{1,2)}, Shigeo Ichihashi²⁾, Hiroshi Yamamoto¹⁾, Daigo Kanamori¹⁾, Shinichi Iwakoshi²⁾, Kimihiko Kichikawa²⁾

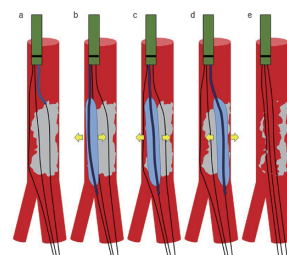
¹⁾Sumitomo Hospital, ²⁾Nara Medical University

【What's known?】

There have been several options reported for CFA intervention in recent years. Bioabsorbable stent and drug-coated balloon have been proposed as measures of the “leave nothing behind” concept, but have not shown satisfactory results. The TECCO trial demonstrated favorable mid-term outcomes of the stent arm in terms of clinical improvement, primary patency. The VMI-CFA trial also revealed outstanding mid-term outcomes of Supera stent in primary patency and freedom from target lesion revascularization. However, Stent placement also has an inherent risk of stent fracture because of the high flexing location of the vessels, and stent thrombosis having a potential risk of acute limb ischemia due to loss of flow both to the profunda femoris and superficial femoral arteries. Furthermore, CFA lesions are frequently complicated by calcified plaque, which can undermine stent expansion or delivery of endovascular devices.

【What's new?】

The SMASH (crossing *m*ultichannel inside *h*eavily calcified lesions) -angioplasty technique is proposed, by which lesion expansion can be maximized while minimizing the need for stent placement. To illustrate this technique, seven patients treated with SMASH-angioplasty are presented in this article.



MO-85 Comparison of primary patency between drug-coating balloon angioplasty and plain old balloon angioplasty for very small femoropopliteal lesions

○Shinsuke Mori, Masahiro Yamawaki, Takahide Nakano, Kohei Yamaguchi, Shigemitsu Shirai, Masafumi Mizusawa, Kenji Makino, Yohsuke Honda, Masakazu Tsutsumi, Mana Hiraishi, Norihiro Kobayashi, Yoshiaki Ito
Saiseikai Yokohama City Eastern Hospital

【What's known?】

It has been reported about poor clinical outcome after stent implantation for very small femoropopliteal (FP) lesions. Little data exists on patients who have undergone drug-coating balloon (DCB) angioplasty for small FP lesions. We compared clinical outcomes of DCB angioplasty with POBA for small FP lesions.

【What's new?】

This was a single center non-randomized retrospective study. From April 2017 to September 2019, 63 patients (77 lesions) who underwent DCB angioplasty or POBA for de novo very small FP lesions were included. A very small vessel is defined as a vessel with a reference vessel diameter <4mm measured by quantitative vascular analysis. The patients were classified into two groups: patients treated with DCB angioplasty (DCB group, 28 patients, 32 lesions) and patients treated with POBA (POBA group, 35 patients, 45 lesions). We compared primary patency at 12-months after each treatment (DCB group: 71% vs. POBA group: 47%, $p<0.05$). Consequently, clinical outcome of DCB angioplasty was superior to that of POBA in very small FP lesions.

MO-86 Clinical implication of the stent invagination of interwoven nitinol stent: form a single-center retrospective analysis

○Shunsuke Kojima, Tatsuya Nakama, Kotaro Obunai, Hiroyuki Watanabe
Tokyobay Medical Center

【What's known?】

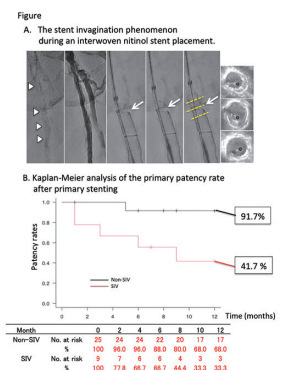
The stent invagination (SIV) during the interwoven nitinol stent (IWS) implantation may cause stent mal-apposition and reducing the minimum stent area. However, the clinical implication of SIV remains unclear. This study sought to assess the clinical implication of the SIV of IWS in femoropopliteal lesions in patients with PAD.

【What's new?】

<Methods> This was a retrospective single-center study that consecutively enrolled 32 patients with symptomatic femoropopliteal lesions who received IWS implantation from January 2019 to October 2019. Twelve-month primary patency after the initial IWS placement was compared between lesions with SIV (SIV cohort) or without SIV (Non-SIV cohort).

<Results> A total of 32 patients and 34 limbs (mean age 74 ± 7.8) received IWS implantation. All IWS were deployed successfully, however, 9 cases (26.5%) of SIV occurred during the IWS placement. Critical limb threatening ischemia was 50 % of total limbs. Twelve-month primary patency in total was 78.2%. Non-SIV cohort showed significantly higher primary patency than the SIV cohort (91.7% vs 41.7%, $P=0.0047$). In multivariate analysis disclosed, the SIV phenomenon was an independent predictor of loss of primary patency ($P=0.01$)

<Conclusions> IWS implantation showed acceptable durability for real world Japanese patients, however the SIV might lead to lower 12-month primary patency.



MO-87 Clinical outcomes of Drug-Eluting Stent versus Drug-Coated Balloon for patients with peripheral artery disease presenting femoropopliteal lesions

○Taku Toyoshima, Osamu Iida, Shin Okamoto, Takayuki Ishihara, Kiyonori Nanto, Takuya Tsujimura, Yosuke Hata, Naoko Higashino, Toshiaki Mano
Kansai Rosai Hospital Cardiovascular center

【What's known?】

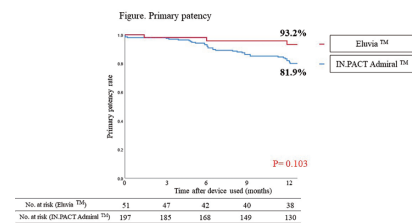
Introduction: Eluvia™ drug-eluting stent (DES) and IN.PACT Admiral™ drug-coated balloon (DCB) demonstrate durable primary patency for patients with peripheral artery disease presenting femoropopliteal (FP) lesions. However, direct comparison of clinical outcomes between Eluvia™ versus IN.PACT Admiral™ in real-world FP practice have not been well elucidated.

【What's new?】

Methods: This was single center and retrospective study, enrolling 248 lesions in 202 patients who underwent endovascular therapy using Eluvia™ DES (51 lesions from 48 patients) or IN.PACT Admiral™ DCB (197 lesions from 154 patients) between January 2016 and October 2019. The primary outcome was 12-month primary patency. Predictors for loss of patency were also assessed by multivariate analysis.

Results: The lesion length (18.9cm versus 11.9cm, $P<0.001$) were longer and chronic total occlusion (39.2% versus 14.7%, $P<0.001$) were more frequently observed in Eluvia™ DES group than those in IN.PACT Admiral™ DCB group. 12-month primary patency was numerically higher in Eluvia™ DES group than those in IN.PACT Admiral™ DCB group (93.2% versus 81.9%, $P=0.103$), but not statistically significant. After multivariate analysis, chronic total occlusion ($P=0.042$), chronic limb-threatening ischemia ($P=0.015$) were significantly associated with 12-month loss of primary patency.

Conclusion: Eluvia™ DES showed numerically higher 12-month primary patency compared to IN.PACT Admiral™ DCB in real-world FP lesions.



MO-88 The frequency and factors related with Eluvia stent occlusion in real world patients

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【What's known?】

The Eluvia stent shows great 2-year patency, however, we experience some occlusion cases in real-world practice.

【What's new?】

Sixty-six consecutive femoropopliteal lesions underwent Eluvia stent implantation from Feb 2019 to June 2020 were retrospectively analyzed. The primary outcome was stent occlusion. The percentage of CLTI was 43%, de novo lesion was 57%, CTO was 53% and average lesion length was 234mm. Lesion full-cover strategy with Eluvia stent was taken only in 43%. During median follow-up of 266 days, 14 (21%) lesions occluded. All the occluded patients were on dual-antiplatelet therapy (DAPT) at the time of occlusion except for one patient whom stent occlusion occurred 7 days after cessation of DAPT. No patient presented with acute limb ischemia. The baseline character of occluded group was older (80.2 vs 75.0, $p=0.03$) and more frail (average clinical frailty scale 5.2 vs 3.2, $p=0.005$) compared with non-occluded group. There were no significant in lesion characteristics. The percentage of Eluvia stent full-cover was significantly smaller in occluded group (21% vs 50%, $p=0.048$). In conclusion, Eluvia stent occlusion was not infrequent phenomenon in real-world EVT. Patient frailty and not full-covering was associated with stent occlusion.

MO-89

Comparison of clinical outcome after peripheral intervention with "Fracking technique" versus balloon angioplasty for calcification in common femoral artery

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【What's known?】

Surgical endarterectomy in common femoral artery (CFA) is still considered the gold standard treatment. However, the perioperative morbidity is remarkable. The outcome of endovascular intervention for CFA lesion do not achieve our expectation due to the heavily calcified plaque which resists acute gain with endovascular intervention. Thus, we have to devise and invent the treatment for addressing the calcification.

【What's new?】

We evaluated the efficacy and clinical outcome of our new technique named "Fracking technique" which performs hydraulic fracturing with using needle to make cracks in calcification in CFA. We retrospectively analyzed to compare "Fracking technique" (FT) (n=27) with standard balloon angioplasty (SBA) (n=36) for calcified lesion in CFA, excluding no calcified lesion and in-stent lesion, in single center. Minimal lumen area (MLA) on IVUS after FT and SBA were $23.2 \pm 4.7 \text{ mm}^2$, $12.2 \pm 3.8 \text{ mm}^2$, ($p < 0.001$). FT demonstrated a significantly higher primary patency rate and freedom from clinically driven target lesion revascularization compared with SBA at 1 year (83% vs 32%; $p < 0.001$, and 91% vs 62%; $p = 0.030$). Consequently, the treatment of the calcified plaque in CFA with "Fracking technique" obtained the larger MLA and reduced restenosis and retreatment compared with standard balloon angioplasty.

