LIVE CASE GUIDE

Celebrating 20 Years of Innovation, Insight, and Improved Outcomes
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Tuesday 28 May until Friday 31 May 2024
Leipzig, Germany

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GUIDE TO LIVE CASE TRANSMISSIONS

During the Leipzig Interventional Course 2024 more than 55 interventional and surgical live cases are scheduled to be performed and transmitted to the auditorium. The aim of this booklet is to give you an overview about the live case schedule and to provide a practical guide through the procedures.

We hope for your understanding that with respect to the clinical needs of the patients changes of the schedule may occur.
Furthermore, the anticipated procedural steps are just an outline of the procedure.
Depending on the discretion of the operator the procedural strategy and/or the choice of material may vary.

LINC

LEIPZIG INTERVENTIONAL COURSE
28–31 May 2024 | Leipzig, Germany

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LIVE CASE TRANSMISSION CENTERS

During LINC 2024 several live cases will be performed from national and international centers. All live case transmissions are coordinated, filmed, and produced by the Media House crew, using the latest in high definition television and wireless technology.

- **Universitätsklinikum Leipzig, Abt. Angiologie,** *Leipzig, Germany*

- **Policlinico Abano Terme,** *Abano Terme, Italy*
- **Beijing Anzhen Hospital,** *Beijing, China*
- **Ohio Health,** *Columbus, United States*
- **Galway University Hospital,** *Interventional Radiology, Galway, Ireland*
- **Universitäres Herz- und Gefäßzentrum UKE Hamburg,** *Hamburg, Germany*
- **Universitätsklinikum Jena,** *Jena, Germany*
- **St. Franziskus Hospital Münster,** *Münster, Germany*
- **Mount Sinai Hospital New York,** *New York, United States*
- **Osaka Police Hospital,** *Osaka, Japan*
- **Hôpital Marie Lannelongue Paris,** *Paris, France*
- **Singapore Sengkang General Hospital,** *Singapore, Singapore*
- **Urayasu Ichikawa, Tokyo Bay Medical Center,** *Tokyo, Japan*
- **UniversitätsSpital Zürich,** *Zurich, Switzerland*

PROGRAM

Guide to LIVE CASE TRANSMISSIONS for LINC 2024
Scan this QR code to find the details of the planned live cases

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LIVE CASE TRANSMISSION CENTERS

Leipzig

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Sandra Düsing
Axel Fischer
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Sabine Steiner

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Beijing

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Xiaobin Tang
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LIVE CASE TRANSMISSION CENTERS

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LIVE CASE TRANSMISSION CENTERS

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Prakash Krishnan
David D. Song
Raman Sharma, Vishal Kapur
Ajit Rao, Karthik Gujja

Osaka Police Hospital, *Osaka, Japan*

Osamu Iida

Hôpital Marie Lannelongue Paris, *Paris, France*

Stéphan Haulon

Singapore Sengkang General Hospital,
Singapore, Singapore

Edward Choke Tieng Chek
Kalpana Vijaykumar

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Yo Iwata, Tetsuya Kobayashi
Shunsuke Kojima, Makio Muraishi
Kazuhiro Asano, Hiroya Takafuji,
Tatsuya Yamamoto,
Yuta Inoue, Yuki Narita, Naoki Mimaki
Yudai Fujimoto, Kotone Mase

UniversitätsSpital Zürich, *Zurich, Switzerland*

Nils Kucher
Mario Münger
Alexandru Grigorean

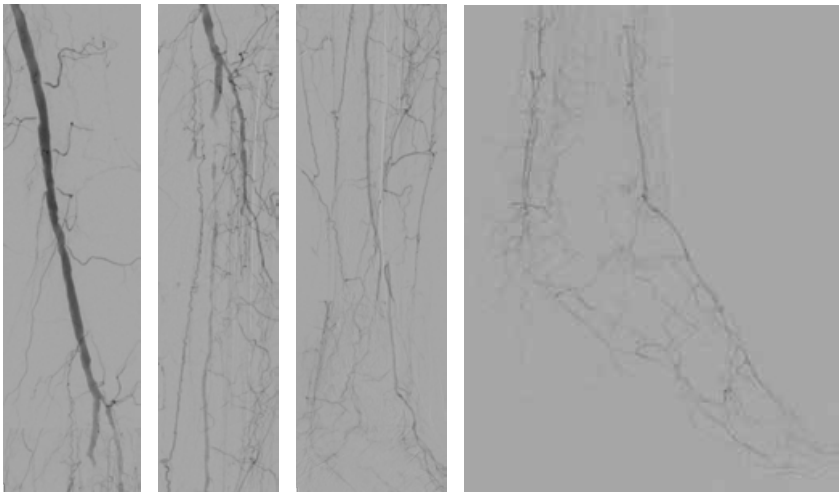
CLTI, complex BTK-CTOs left

Patient data: Male, 82 years (H-F)

Operators: Andrej Schmidt
Sandra Düsig

Clinical data: CLTI bilateral, Dig 3 left; Dig 1 and lateral foot right; PTA right BTK 5/2024; Diabetes mellitus type 2; CAD, CABG 2014; SSS, Pace-maker, permanent AF Chronic renal failure, GFR 65ml/min; Minor stroke, Ataxia

Risk factors: Angiography during treatment right BTK: BTK-disease left: TPT-stenosis, posterior and anterior tibial artery CTO, moderate to severe calcification



Procedural steps:

1. Left antegrade approach:
- 6Fr 55cm sheath (COOK)

2. Guidewire-passage and treatment of the TPT-stenosis:
- Command 0.014" 300cm guidewire (ABBOTT Vascular)
- PTA with Armada 14 3.0/40mm (ABBOTT Vascular)

3. Guidewire-passage of the ATA-CTO:
- Command 0.014" 300cm guidewire (ABBOTT Vascular)
- Sergeant support-catheter, straight, 90cm (iVascular)

In case of failure: retrograde approach:
- 2.9 French pedal access kit (COOK)

4. Treatment of the ATA-CTO:
- Exchange to viperwire 0.014"
- Stealth 360 Peripheral Orbital Atherectomy 1.25mm MicroCrown (ABBOTT Vascular)
- PTA with Armada 14 2.5 or 3.0/200mm balloon (ABBOTT Vascular)
- MagicTouch Sirolimus-coated balloon 3.0/200 (CONCEPT MEDICAL)

5. Stenting on indication
- Implantation of a DES Xience Prime BTK 3.5/38mm (ABBOTT Vascular)

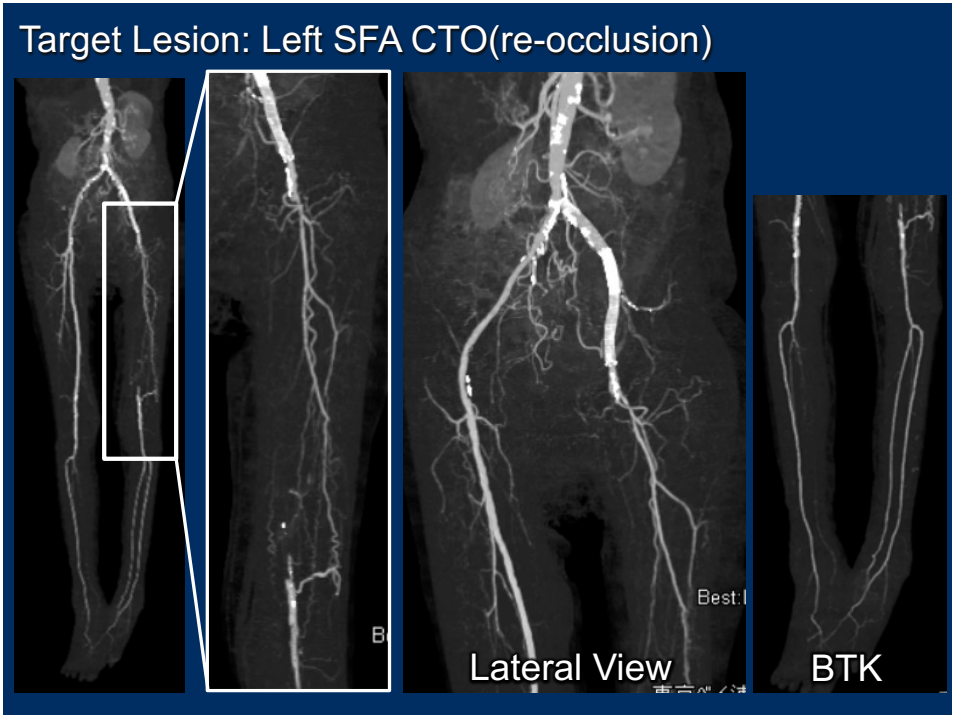
Left SFA CTO (re-occlusion)

Patient data: Female, 86 years

Operators: Tatsuya Nakama

Clinical data:
Target Lesion: Left SFA CTO(re-occlusion)
Indication: Rutherford 5
Cre / eGFR: 0.90 / 45
ABI: 0.88 / 0.52
Prior Intervention:
2023/11/15 Lt CIA-EIA SMART 8.0x100, 8.0x80
2024/4/18 Rt SFA-POP Lutonix 5.0x100, 5.0x300
Lt. SFA Lutonix 5.0x300, 5.0x150

Risk factors: Hypertension, Dyslipidemia



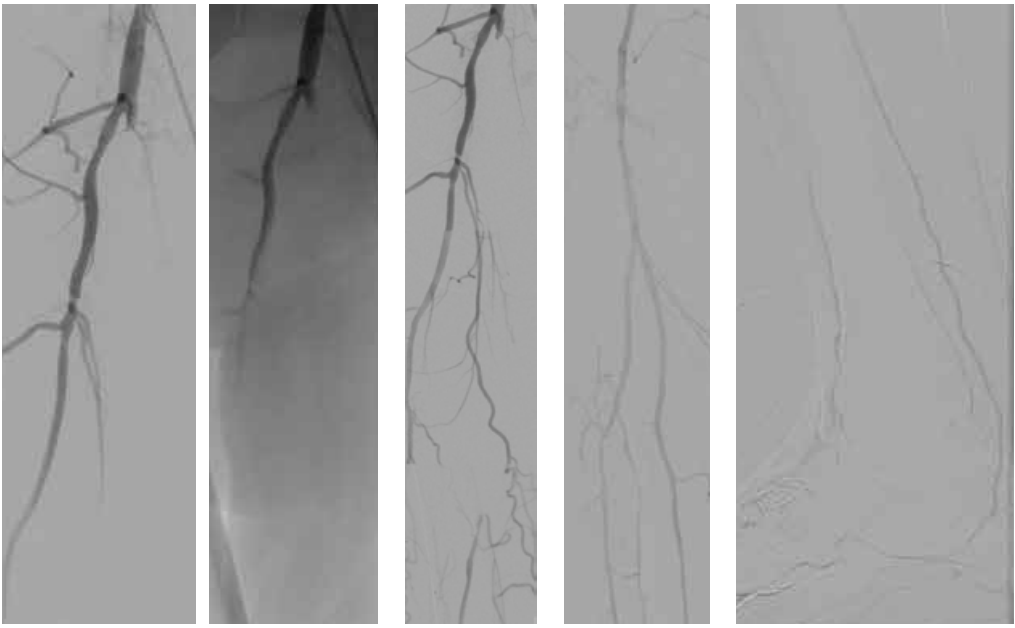
CTO right SFA, treatment with Sirolimus-coated devices

Patient data: Male, 64 years (R-S)

Operators: Andrej Schmidt
Axel Fischer

Clinical data: Severe claudication right, ABI 0.64, walking-capacity 150 meters
Rutherford class 3; PTA / stenting left external iliac artery CTO 5/2024
Hypertension, current smoker

Risk factors: Angiography during PTA / stenting left EIA:
long SFA-CTO right, moderate calcification, high offspring of the posterior tibial artery



Procedural steps:

1. Left groin to right cross-over approach:
- 6 French Cross-over sheath (COOK)

2. Guidewire-passage right SFA-CTO:
- Command 18 300cm guidewire (ABBOTT Vascular)
- Sergeant 18 straight, 130cm (iVascular)

In case of failure: retrograde approach via distal SFA
- 9cm 21 Gauge needle (B Braun)
- Command 18 300cm guidewire (ABBOTT Vascular) or
- BeBack crossing-catheter 4French (BENTLEY)

3. Vessel-preparation and treatment with Sirolimus-coated devices
- Ultrascore 5.0/300cm Scoring-Balloon (BD)
- NiTides Amphilimus-Eluting Stent (Alvimedica)
- MagicTouch Sirolimus-coated balloon (distal) (CONCEPT MEDICAL)

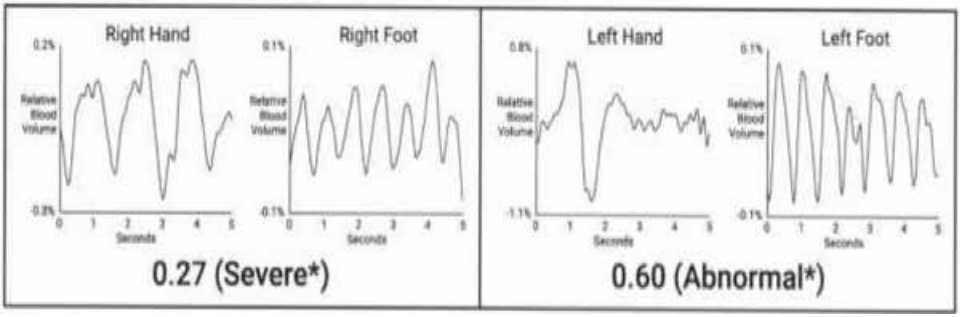
Case #1 from New York

Patient data: Male, 64 years

Operators: Prakash Krishnan
David D. Song

Clinical data: HPI: 67 M presents with residual LLE lifestyle limiting claudication progressive to ischemic rest pain (Rutherford Classification Grade II, Category 4).
PMHx: CAD, Afib, HTN, HLD, DMII, PAD
PAD Hx: RSFA IVL, DCB, Stent (4/22/24)
Social Hx: Never smoker
Medications: ASA, Xarelto, Atorvastatin, Lisinopril, Metformin

ABI:



Arterial Duplex:

Conclusions:
Moderate to Severe diffuse atherosclerosis is seen in the lower extremity arterial system.
Significant elevation of the peak systolic velocity is seen in the right mid Superficial Femoral, bilateral distal Superficial Femoral and left Popliteal arteries of the lower extremities.
Evidence of significant velocity drop with monophasic flow patterns at the level of the right Popliteal, bilateral Posterior Tibial, Anterior Tibial and Dorsalis Pedis arteries in the lower extremities.
Consider peripheral angiography as clinically indicated.

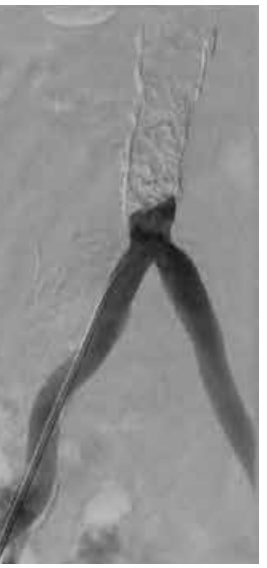
Severely calcified CTO of the infrarenal aorta

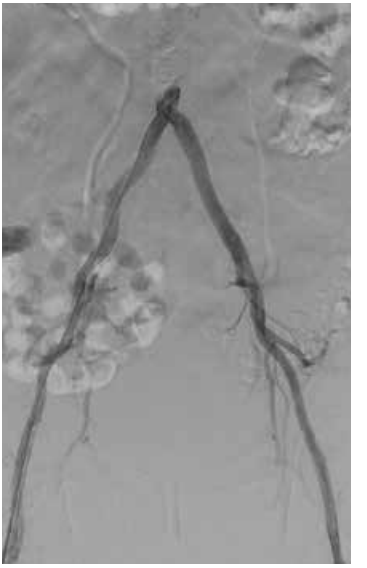
Patient data: Male, 73 years (H-J)

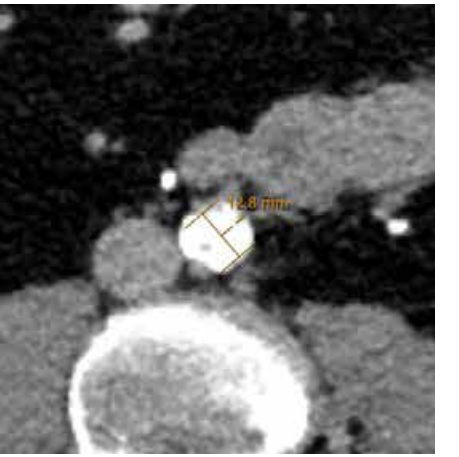
Operators: Andrej Schmidt
Sandra Düsing

Clinical data: Severe claudication bilateral, calf and thigh, walking-capacity 150 meters
Rutherford class 3
Diabetes mellitus type 2
Complete left bundle branch block

Risk factors: CT and angiography: Severe calcification and total occlusion of the distal infrarenal aorta
Complete left bundle branch block on ECG
Transthoracic echo: Normal ejection fraction (60%)







Procedural steps:

1. Retrograde groin access bilateral
- 9Fr 25cm sheath right (TERUMO)
- 7Fr 10cm sheath left (TERUMO)

2. Brachial access left
- 5 or 6 French 90cm sheath (COOK)

3. Guidewire-passage, preferably intraluminal:
- Connect 250 T 0.018" 300cm CTO-Guidewire (ABBOTT Vascular)

4. Intravascular schockwave-PTA
- Lithotripsy balloon 8.0mm (JOHNSON & JOHNSON)

5. Implantation of covered stents (CERAB-technique)
- BeGraft Aortic 12/49mm (BENTLEY)
- BeGraft Plus 9/59 mm bilateral (BENTLEY)

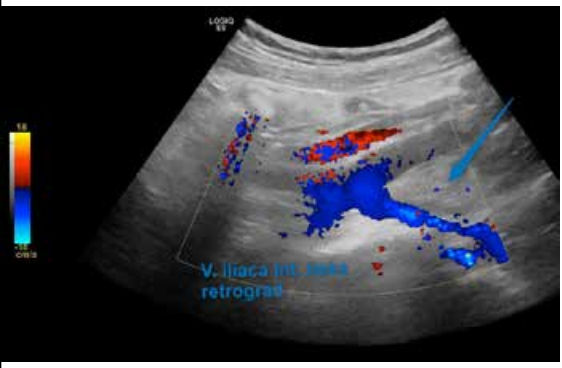
May-Thurner syndrome: Persistent left-sided varicocele and recurrent varicosis of the left leg following successful embolization of the left testicular vein

Patient data: Female, 37 years

Operators: Prof. Nils Kucher
Dr. M. Münger
Dr. A. Grigorean

Clinical data: Pain in the middle of the lower abdomen and a feeling of heaviness, especially before menstruation and during ovulation, increasing for 2 years. Additionally with pain in the groin area on both sides. She reports venous claudication in both legs.

Risk factors: Duplex: May-Thurner compression of the left common iliac vein with retrograde flow in the left internal iliac vein *(figure 1)* and evidence of large ascending lumbar vein. Severe nutcracker compression of left renal vein with retrograde paravertebral vein but no reflux in left ovarian vein (6 mm). Right ovarian vein dilated with 8-9 mm.
Computed tomography: Filiforme stenosis of left commun iliac vein with collateral circulation via the ascending lumbar vein draining into the hemiazygous vein. Left renal vein with connection to the ascending lumbar vein. As far as can be assessed in this contrast, no varicose ovarian veins. Suspicuous early contrast of the left iliac veins and the ascending lumbar vein *(figure 2)*
Treadmill test with 12% inclination, 3,2 km/h: muscular pain after 220m in the left upper and lower leg, after 770m also in the right leg.



Procedural steps:
1. Venous access ultrasound guided 10 F left CFV, if necessary right internal jugular vein (6F)
2. Venography left common iliac vein, left renal vein and the ovarian vein
3. IVUS May Thurner
4. Sinus obliquus stent into May Thurner lesion ■ (OPTIMED)
5. IVUS

Case #1 from Galway

Patient data: Female, 34 years, EH

Operators: Professor Gerard O' Sullivan/Professor Stephen Kee
Dr Niamh O'Halloran

Clinical data: Presented with left lower limb swelling and discomfort in 27th week of pregnancy. 3cm difference between both legs. Ctvenogram confirms an extensive ileofemoral DVT with iliac vein compression on the left side. MRV demonstrated complete effacement of the proximal common iliac vein and occlusive DVT commencing 60mm from the ileocaval bifurcation through to the femoral bifurcation and extending into the profunda. Treated with Innohep until delivery of baby. Switched to apixaban once she stopped breastfeeding. She is now six months post partum.
On clinical examination she has left lower limb swelling.

Risk factors: Currently on apixaban with mild lower limb swelling

Procedural steps:
1. US guided access right IJV from above
■ 10F 23cm sheath (COOK Brite Tip).
■ US guided access from below 6Fr 11cm (COOK Brite Tip).
■ Cross with (COOK Tri-Force) 5Fr 90cm.
If necessary, snare in the middle with an ■ Argon CloverLeaf snare
2. 10,000 units IV heparin.
3. IVUS
■ Philips Volcano – identify dominant inflow and potentially stent landing zones.
4. Balloon;:
■ ideally straight to Bard Atlas 16mm x 60mm to 16 atm for 16s. If passage isn't big enough then sequential PTA with smaller balloons leading up to 16mm.
5. Stent:
■ 16/16mm Medtronic ABRE/BD venovo/Bentley Beyond/
Optimed Sinus Venosus. Post dilate to 16mm at 16 atm for 16s.
6. Completion venography and IVUS
7. Remove sheaths. Gentle pressure
8. Class 2 thigh high stockings (JOBST) before the patient leaves the department.
Pneumatic compression boots (Tyco-Covidien) before the patient leaves the department.
9. First dose of BD Clexane 1mg/kg/12h before the patient leaves the department.
10. Day 1 CDUS

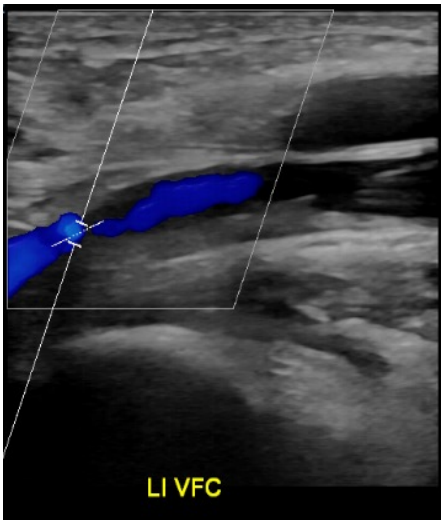
Postthrombotic syndrome left leg after iliofemoral deep vein thrombosis 2009 with the following risk factors: iliac compression syndrome, oral contraception, immobilization after trauma to the left ankle joint

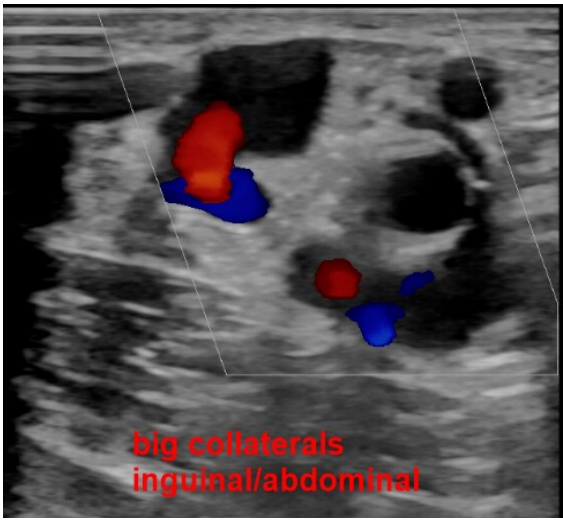
Patient data: Female, 52 years

Operators: Prof. Nils Kucher
Dr. M. Münger
Dr. A. Grigorean

Clinical data: Pronounced disturbing suprapubic collateral circulation (spontaneous Palmaz shunt), heaviness, tension and swelling in the left leg, pain in the groin. Venous claudication. History of distal deep vein thrombosis 2014.

Risk factors: Duplex: Occlusion of the V. iliaca com./ext. with good landing zone (stent) in the area of the V. femoralis com. *(figure 1)*.
Main inflow via V. profunda fem., V. femoralis postthrombotically altered.
Popliteal vein insufficient. Big collaterals inguinal/abdominal *(figure 2)*.
Free drainage via the right pelvic veins.
Treadmill test with 12% inclination, 3,2 km/h: muscular pain after 220m in the left upper and lower leg, after 770m also in the right leg.





Procedural steps:
1. Venous access ultrasound guided puncture 10F right CFV
2. Catheter supported passage of pelvic veins ■ (CXI, COOK)
3. Predilatation to 12mm ■ (Mustang, BOSTON SCIENTIFIC)
4. Selective venography left iliaca common vein ■ Cobra 5F catheter.
May use IVUS
5. ■ Venovo Stent (14mm) (BD) **into predilates vein (common/external iliac vein) with possible stent extension in the proximal common femoral vein** ■ (BD)
6. Stent dilatation to 14mm with Atlas ballon ■ (BD)

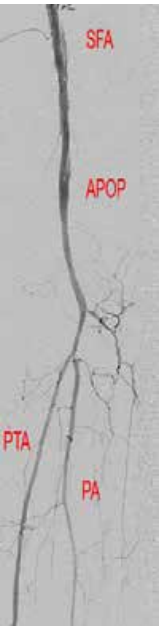
Endovascular treatment in-stent occlusion of femory artery (8F Rotarex atherectomy and sirolimus-eluting balloon angioplasty)

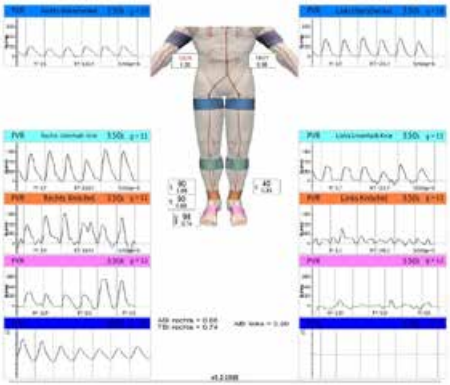
Patient data: Male, 72 years

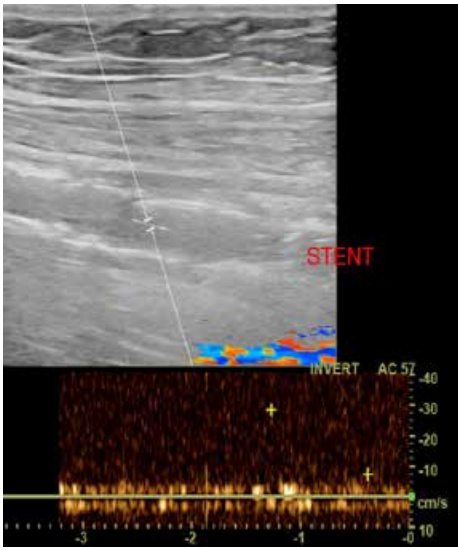
Operators: Prof. Nils Kucher
Dr. M. Münger
Dr. A. Grigorean

Clinical data: Symptomatic PAD of the left leg Fontaine Stage IIb. The patient suffers from leg claudication on the left side since 4 weeks. In the past 3 years, several endovascular interventions were performed on the left femoral artery including atherectomy (6F) and stent implantation. Pre-existing two vessel run-off below the knee *(figure 1)*.

Risk factors: Oscillography confirmed reduced left leg perfusion *(figure 2)*.
Duplex: in-stent occlusion of femoral artery *(figure 3)*. Popliteal artery patent and 2 vessel run off posterior tibial and peroneal arteries.
cvRF: persistent active smoking, arterial hypertension, diabetes mellitus







Procedudral steps: **1. Antegrade access left CFA (8 F)**
2. Diagnostic angiography
3. Catheter supported passage/recanalisation of SFA occlusion
4. Vessel preparation with ■ POBA/Rotarex Atherectomy (8F) (BD)
5. PTA/DEB: ■ Magic Touch (CONCEPT MEDICAL), optional stenting of SFA/APOP

Leriche-syndrome, severely calcified aortoiliac CTO

Patient data: Male, 68 years (P-V)

Operators: Andrej Schmidt
Axel Fischer

Clinical data: Severe claudication bilateral, calf and thigh, walking-capacity 100 meters, Rutherford class 3
Failed recanalisation attempt elsewhere 4/2024

Risk factors: Angiography: Distal infrarenal aortic and iliac bilateral, calcified CTO, renal artery stenoses

Procedural steps:

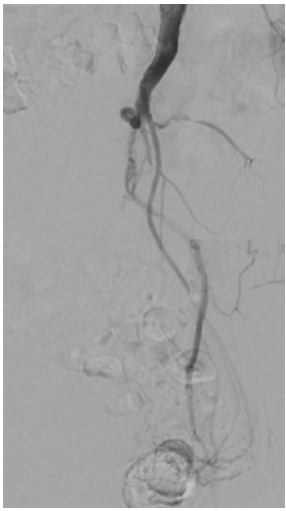
1. Bilateral common femoral access
- 7 or 8 Fr 10cm sheath (TERUMO)
- Left brachial 5 or 6 Fr 90cm sheath (COOK)

2. Guidewire-passage, preferably intraplaque:
- 0.018" Connect 250 T 300cm guidewire (ABBOTT Vascular) or
- 0.014" Confianza Pro 12g 180cm guidewire (ASAHI INTECC)
- Sergeant 0.018" 90cm support-catheter (iVascular)

3. PTA
- Lithotripsy-ballon PTA bilateral in Kissing-technique (JOHNSON & JOHNSON)

4. Stenting
- Advanta V 12 balloon expandable covered stents 9/59mm bilateral (GETINGE)



Anatomical variant of the inferior vena cava (left sided) with high-grade stenosis in the area of the nutcracker point (between the abdominal aorta and the superior mesenteric artery) *(figure 1)* with kinking of the abdominal aorta.

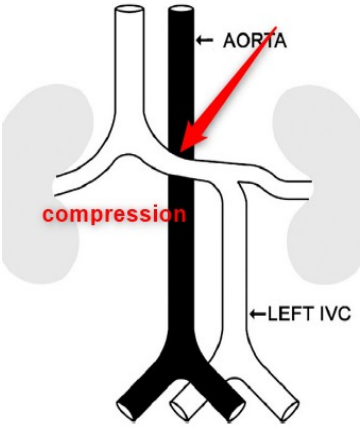
Patient data: Female, 71 years

Operators: Prof. Nils Kucher
Dr. M. Münger
Dr. A. Grigorean

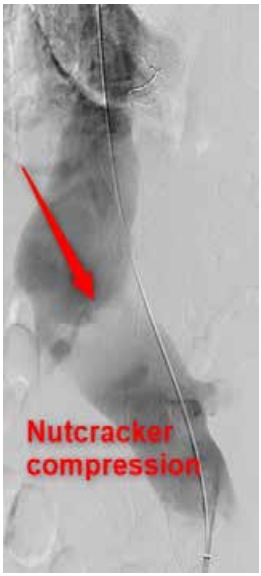
Clinical data: Swelling, and heavy weak legs for 2 years, especially when walking, so that she has to take regular breaks to be able to continue walking. The patient also experiences dyspnea during physical exertion.

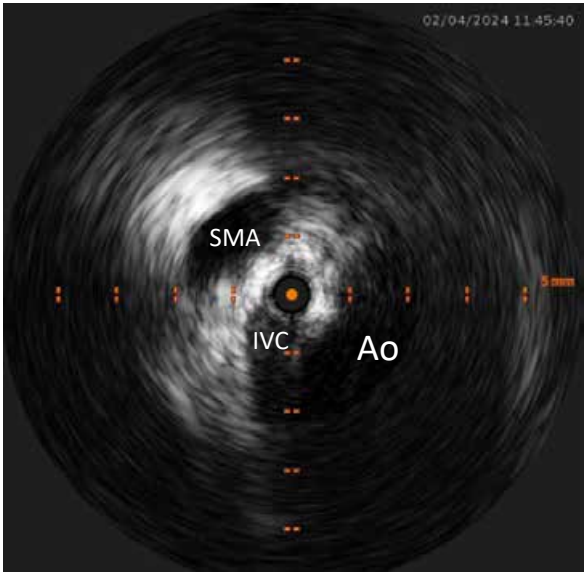
Risk factors: Duplex: high-grade stenosis of the inferior suprarenal, infrahepatic vena cava
Computed tomography: left-sided infrarenal inferior vena cava with kinked aorta crossing just above the renal veins with severe stenosis *(figure 2)*, collateral circulation via subcutaneous veins in the abdominal wall
Phlebography: left-sided infrarenal inferior vena cava, dilated to approx. 28 mm with sharp imprint of the aorta just above the renal veins *(figure 3)*.
IVUS confirmed nutcracker compression of IVC between kinked aorta and superior mesenteric artery *(figure 4)*. Echocardiography showed normal size and function of both ventricles without evidence of pulmonary hypertension. Cardiopulmonary excercise test was stopped early due to leg weakness and shortness of breath.

Procedudral steps:
1. Venous access ultrasound guided 10F CFV on both sides
2. Selective venography inferior vena cava. May use IVUS again.
3. Stenting in double-barrel technique: ■ 2x BeYond (BENTLEY) 14/80 or 14/100
4. Kissing balloon dilatation to 14mm with ■ Atlas balloon (BD) of both stents
5. Final phlebography


← AORTA
compression
←LEFT IVC


Nutcracker
compression


Nutcracker
compression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SMA
IVC
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Case #2 from Galway

Patient data: Female, 41 years, ED

Operators: Professor Gerard O' Sullivan/Professor Stephen Kee
Dr Niamh O'Halloran

Clinical data: History of extensive DVT in 2009. Underwent pharmacomechanical thrombectomy at this time with insertion of self expanding stent into the left external iliac vein extending to the left common femoral vein. IVC filter inserted and has since been removed. The patient developed recurrent DVT at 29 weeks gestation. No flow identified within stents on dopper US. Managed with anticoagulation.

Risk factors: On Apixaban.
Currently has leg swelling. No pain but describes tightness.
CTV 3-5-24 – Left common iliac and external iliac venous stent in situ. No flow is demonstrated within the stents indicating occlusion. No evidence of thrombus within the IVC. The deep veins of the lower limb appear patent. No evidence of right sided thrombus. No pelvic masses.

Procedural steps: **1. Ultrasound guided access from popliteal vein in supine position and right IJV.**
2. Heparin 10,000 units IV.
Venography to identify thrombosis
3. Thromectomy with
■ Penumbra 12 lightning device.
■ Inari Clotriever will be available as back up device if required.
This will be placed over an ■ Amplatz 260 wire
4. Balloon: ■ 14/60 Bard Atlas
5. Completion venography and IVUS
6. Remove sheaths. Gentle pressure.
7. Class 2 thigh high stockings
■ (JOBST) before the patient leaves the department.
Pneumatic compression boots
■ (Tyco-Covidien) before the patient leaves the department.
First dose of ■ BD Clexane 1mg/kg/12hr before the patient leaves the department.
Day 1 CDUS

May-Thurner syndrome: persistent left-sided varicocele and recurrent varicosis of the left leg following successful embolization of the left testicular vein

Patient data: Male, 32 years

Operators: Prof. Nils Kucher
Dr. M. Münger
Dr. A. Grigorean

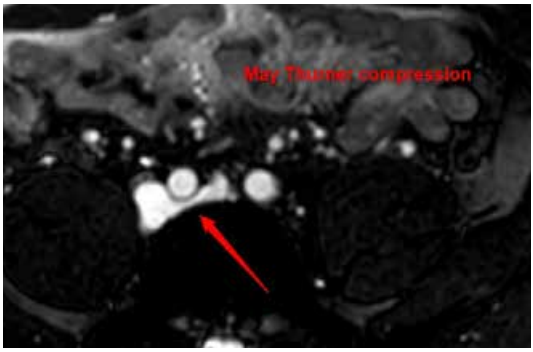
Clinical data: Recurrent extensive varicosis of entire left leg following varicose vein stripping 2015 left leg and endovascular embolization of the left testicular vein for varicocele (Sandwich of foam and coils) 02/2024
Persistent varicocele Inguinal pain on the left groin and in the left leg after prolonged standing
Treadmill ergometry 03/2024: unremarkable

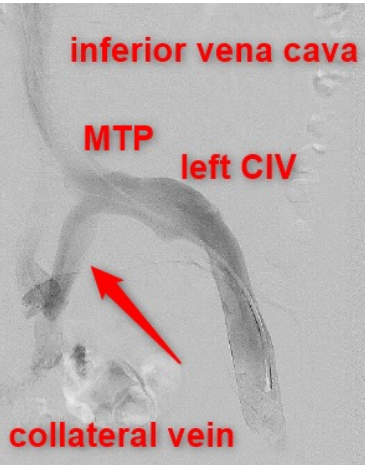
Risk factors: Phlebography: Occlusion of the left testicular vein, collateral vein distal to the may thurner point *(figure 1/2/4)*
MRI: Severe May Thurner compression *(figure 3)*
Duplex: Collateral vein distal to the may thurner point *(figure 5)*

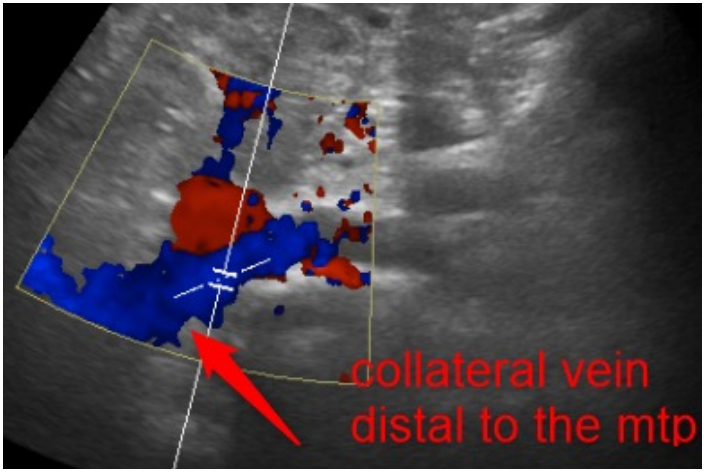
Procedural steps:
1. Venous access ultrasound guided puncture 10F right CFV
2. Selective venography left iliaca common vein
■ Cobra 5F catheter. May use IVUS
3. Beyond Stent (14-16mm) into May Thurner lesion ■ (BENTLEY)
4. Stent dilatation to (14-16mm) ■ (Atlas, BD)
5. May use IVUS for stent landing zones and to rule out stent compression


left testicular vein


St.n. embolisation


May Thurner compression


inferior vena cava
MTP
left CIV
collateral vein


collateral vein
distal to the mtp

Case #3 from Galway

Patient data: Female, 35 years

Operators: Professor Gerard O' Sullivan/Professor Stephen Kee
Dr Niamh O'Halloran

Clinical data: 35 yo lady known to gynaecology with a long history of severe pelvic pain.
Background of endometriosis, migraine and facial neuralgia.
2 pregnancies (single + twins).
Dyspareunia. IUCD in situ.

Risk factors: CT TAP 6/5/21 - Prominent pelvic and paravaginal varices with enlarged gonadal veins – likely reflecting pelvic congestion syndrome.
MRI pelvis 11/11/22 – as shown on CT the left gonadal vein is dilated in supine position up to13mm in diameter at the level of drainage to the renal vein and up to 11mm more proximally. The right gonadal vein measures proximally 10mm and distally 7mm.
This has been better demonstrated on CT TAP. The results in left and right parametrial venous enlargement up to 7mm in diameter.

Procedural steps: **1. US guided access** from above ■ 10F 23 cm sheath COOK Brite Tip.
■ Access left OV vein 5F MERIT MEDICAL 90cm C2 catheter.
■ Ideally cross over to right OV from the left ("Loop the Loop").
If not use left OV venogram to identify ROV orifice in IVC and cannulate same
2. Embolise both OV veins with ■ BALT coils – 10mm diameter x 50cm
3. Access internal iliac veins and ideally pudendal veins. Insertion of coils and foam Sclerovein 1% diluted 3:1 with air
4. 3000 units IV heparin
5. IVUS: ■ Volcano to identify stent landing zones (PHILIPS).
6. Balloon: ■ Bard Atlas 14mm x 60mm to 14 atm for 14 s (BARD)
7. Stent: ■ 14/16mm Medtronic ABRE/BD Venovo/Bentley Beyond/
Optimed Sinus Venosus/Medtronic ABRE.
Post dilate to 14mm at 14 atm for 14 s.
8. Completion venography and IVUS
9. Remove sheaths. Gentle pressure
10. Class 2 thigh high stockings ■ (JOBST) before the patient leaves the department.
Pneumatic compression boots ■ (Tyco-Covidien) before the patient leaves the department.
First dose of Clexane 1mg/kg/12h before the patient leaves the department.
Day 1 CDUS

Severely calcified internal carotid artery stenosis

Patient data: Male, 65 years (F-P)

Operators: Andrej Schmidt
Rinaldo Myrselaj

Clinical data: Asymptomatic, progressive, radiation-induced ICA-stenosis right
Tonsil carcinoma with neck-dissection and radiation 2012
Pulmonary adeno-carcinoma with resection 2017
Renal carcinoma with resection 2016
COPD
Diabets mellitus type 2, hypertension, former smoker, HLP

Risk factors: Maximal systolic flow velocity
04/2023: 3.0m/sec ; 04/2024: 4.0m/sec

Procedural steps:
1. Access right groin ■ 7 Fr-90cm sheath (COOK)
2. Cerebral protection:
■ Filterwire EZ (BOSTON SCIENTIFIC)
■ Potentially "buddy-wire" first: PT2 (BOSTON SCIENTIFIC)
3. Predilatation:
■ Lithotripsy-balloon (JOHNSON & JOHNSON)
4. Stenting:
■ CGuard – Carotid Embolic Prevention System (InspireMD)
5. Postdilatation on indication
■ Sterling 5.0/20 mm monorail balloon (BOSTON SCIENTIFIC)

In-Stent Reocclusion right SFA

Patient data: Male, 81 years (K-G)

Operators: Axel Fischer
Sabine Steiner

Clinical data: Dig I gangrene right, severe claudication right calf, walking-capacity 100 meters, ABI right 0.60; Rutherford class 5
PTA / stenting right external iliac artery 4/2024
PTA / atherectomy left popliteal artery 2023
Stenting right SFA 2020
CAD, PTCA 2020
Hypertension, diabetes mellitus type 2, former smoker

Risk factors: Angiography during PTA right iliac arteries 4/2024

Procedural steps:

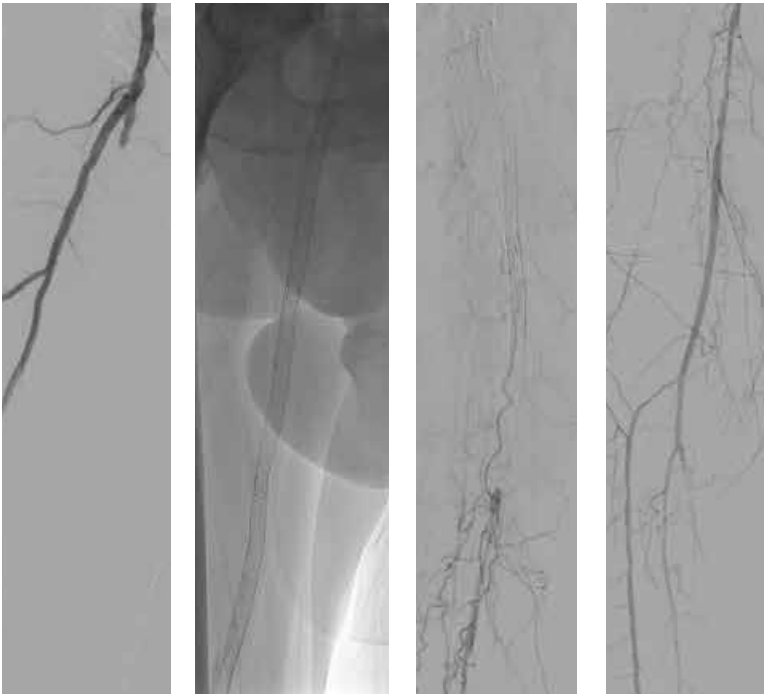
1. Left femoral and cross-over access
- 8Fr cross-over-sheath (COOK)

2. Guidewire-passage of the in-stent occlusion right SFA
- Stiff angled 0.013" glidewire (TERUMO)
- 0.035" Sergeant support-catheter, angled, 130cm (iVascular)

3. Thromb-atherectomy:
- 8Fr Rotarex-catheter (BD)

4. PTA with drug-coated balloons:
- Lutonix PTX-coated balloons (BD)

...



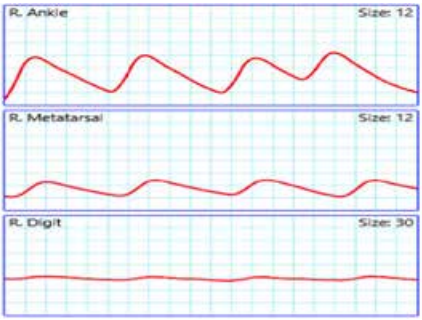
Case #2 from New York

Patient data: Female, 68 years

Operators: Prakash Krishnan
David D. Song

Clinical data: HPI: 68 F presents with residual LLE lifestyle limiting claudication progressive to ischemic rest pain (Rutherford Classification Grade II, Category 4).
PMHx: AS S/P TAVR, HTN, HLD, PAD
PAD Hx: RSFA DA, DCB (4/15/24)
Social Hx: Never smoker
Medications: ASA, Plavix, Rosuvastatin

ABI:



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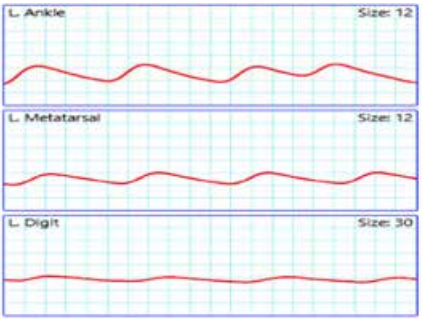


0.23

Arterial Duplex:

Conclusions:
Moderate to Severe diffuse atherosclerosis is seen in the lower extremity arterial system.
Significant elevation of the peak systolic velocity is seen in the bilateral External Iliac, Common Femoral and left mid Superficial Femoral arteries of the lower extremities.
Evidence of significant velocity drop with monophasic flow patterns throughout the lower extremities bilaterally.
The left mid Superficial Femoral artery shows evidence of a total occlusion.
Consider peripheral angiography as clinically indicated.

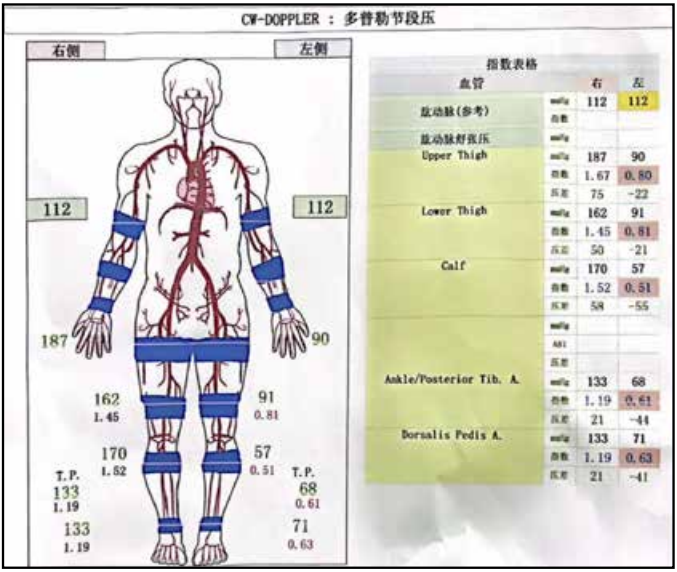
Occlusion in the distal of left SFA and the left popliteal artery

Patient data: Male, 60 years

Operators: Xiaobin Tang
Weihao Shi
Sheng Wang

Clinical data: The patient was admitted due to intermittent claudication in the left lower limb for 3 years.
Ultrasound indicates occlusion of the distal of left SFA the left popliteal artery.
CTA: occlusion in the distal of left SFA and the left popliteal artery.

Risk factors: Smoking history
No hypertension or diabetes



Procedural steps:
1. Right femoral access (6F)
2. Crossing lesion
■ V-18 Guide wire (BOSTON SCIENTIFIC)
3. Balloon pre-dilatiation
■ Pacific Plus balloon catheter (MEDTRONIC)
4. Distal protection
■ SpiderFX Embolic Protection Device (MEDTRONIC)
5. Turbohawk Plus Directional Atherectomy System (MEDTRONIC) **is used following distal protection along the wire**
6. IN.PACT Admiral DCB (MEDTRONIC)

Data will be published as soon as it is available

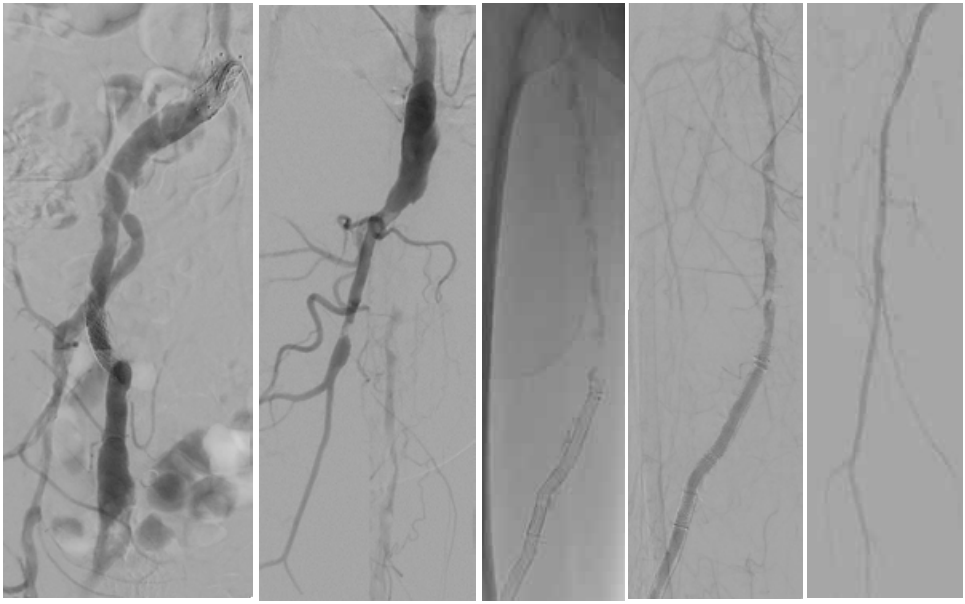
Ante- and retrograde access for a SFA-CTO right

Patient data: Female patient, 73 years (S-R)

Operators: Andrej Schmidt and Axel Fischer

Clinical data: Severe claudication right calf, walking capacity 50 meters and
Restpain during night, ABI 0.43; Rutherford class 4
Thrombendartherectomy (TEA) right groin 2017
PTA with DCB and Supera-stent implantation distal SFA right 2022
Failed recanalization attempt right proximal SFA-CTO 5/2024,
Innability to pass the GW into the CT after TEA
CAD, PTCA 2020; Hypertension, former smoker

Risk factors: Angiography: SFA-CTO right, failed reca-attempt



Procedural steps:

1. Access:
- Left groin retrograde and cross-over access:
- 7Fr 40cm cross-over sheath (COOK)
- Right retrograde approach – 4Fr 10cm 0.021" sheath

2. Guidewire-passage:
- Antegrade insertion of a 6Fr-Multipurpose-catheter (MEDTRONIC)

3. Retrograde passage:
- 0.018" Command 18 guidewire (ABBOTT Vascular) or
- BeBack Crossing-Catheter 4 Fr. (BENTLEY)

3. Angioplasty/Stenting:
- Oceanus balloon 5.0 diameter balloon (iVascular)
- Eluvia Drug-Eluting Vascular Stent System 7.0/150 mm (BOSTON SCIENTIFIC)

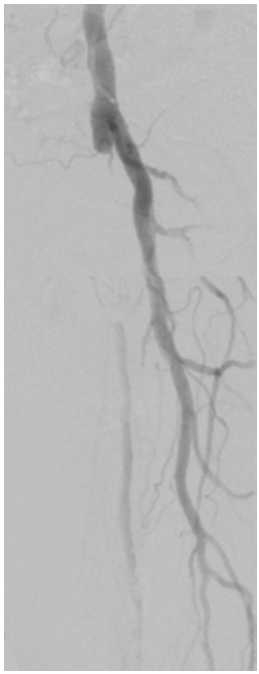
Severely calcified CTO left SFA for intraluminal lithotripsy-treatment

Patient data: Female patient, 78 years (I-S)

Operators: Andrej Schmidt
Sabine Steiner

Clinical data: Severe claudicatio left calf, walking capacity 150 meters, ABI 0.67, Rutherford class 3
Angioplasty / DCB / Supera-Stent right SFA 12/2023
CAD, PTCA 2022; Hypertension; Moderate chronic renal failure, GFR 55ml/min

Risk factors: Angiography during recanalization right SFA



Procedural steps:

1. Cross-over access from right to left
- 7Fr Cross-over sheath (COOK)

2. Guidewire-passage:
- 6Fr Multipurpose Guiding-catheter (MEDTRONIC)
- Command 18 or Connect 250 T Guidewire (ABBOTT Vascular)
- Potentialy retrograde approach via mid SFA:
- 4Fr 0.021" Radial sheath 10cm (TERUMO)
- BeBack Crossing-catheter (BENTLEY)

3. Angioplasty
- Lithotripsy-balloon 6.0mm (JOHNSON & JOHNSON)
- Luminor 6.0/80mm DCB (iVascular)

4. Stenting on indication:
- Supera interwoven nitinol-stent (ABBOTT Vascular)

Data will be published as soon as it is available

Data will be published as soon as it is available

Data will be published as soon as it is available

Data will be published as soon as it is available

Complex and severely calcified common femoral artery stenosis

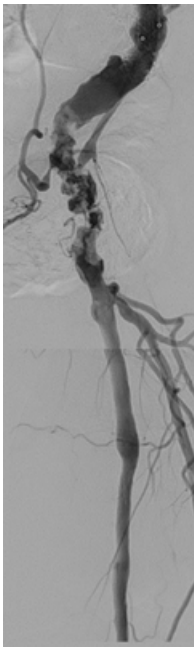
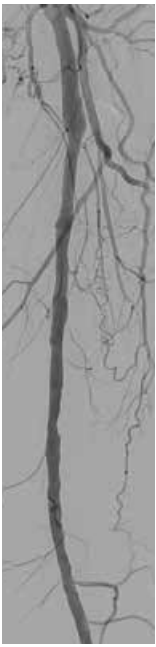
Patient data: Male patient, 73 years (P-M)

Operators: Andrej Schmidt
Axel Fischer

Clinical data: Severe claudication left, walking capacity 200 meters, ABI left 0.67, Rutherford class 3; Thrombendarterectomy right femoral bifurcation 2018, numbness of the thigh; EVAR 2019; CAD, PTCA 2018
Dilatative cardiomyopathy, ejection fraction 35%, NYHA II
Hypertension, former smoker, HPL

Risk factors: Angiography: Left distal external iliac artery and common femoral artery subtotal, complex stenosis, severely calcified



Procedural steps:

1. Left brachial access:
- 6Fr-90 cm sheath (COOK)
- 5Fr Judkins 125cm diagnostic catheter (CORDIS)

2. Left mid SFA retrograd access:
- 7Fr-10cm sheath (TERUMO)

3. Guidewire-passage from ante- and retrograde
- Connect 250 T 300cm CTO-guidewire (ABBOTT Vascular)
- Potentially BeBack 4Fr Crossing-Catheter (BENTLEY)

4. Angioplasty: Lithotripsy 8.0mm (JOHNSON & JOHNSON)

5. Stenting: Supera-stent 7.5/60mm interwoven nitinol-stent (ABBOTT Vascular)

Data will be published as soon as it is available

Pre-emptive coilembolisation of aortic sidebranches to prevent type 2 endoleaks

Patient data: Male, 71 years (L-H)

Operators: Andrej Schmidt
Rinaldo Myrselaj

Clinical data: Asymptomatic, progressive infrarenal aneurysm, max. diameter 5.8cm
Recurrent spinal fractures with surgical repair
TAVR 2020
Minor stroke 2020
Dilatative cardiomypotahly, NYHA II
Adipositas, BMI 37.9
Diabetes mellitus type 2, hypertension, former smoker

Risk factors: CT: max. diameter of the infrarenal aorta: 4/2024: 58mm; 3/2022: 44mm
Lumbar arteries patent: L2, 3 and 4 bilateral
Inferior mesenteric artery patent

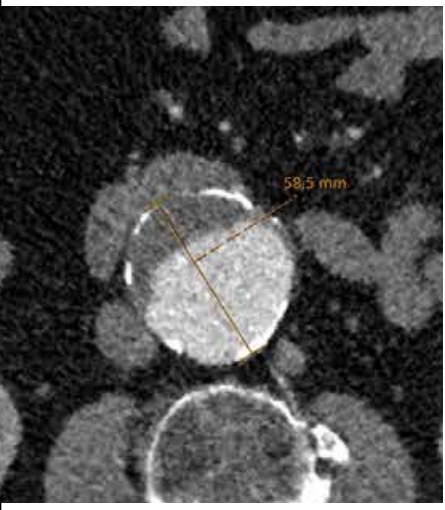
Procedural steps:

1. Right groin access:
- 9Fr 25 cm sheath (TERUMO)

2. Selective intubation of the aortic sidebranches
- Destino Twist stearable guiding sheath 6,5French (OSCOR)
- 5Fr Sidewinder 1 diagnostoc catheter (CORDIS)

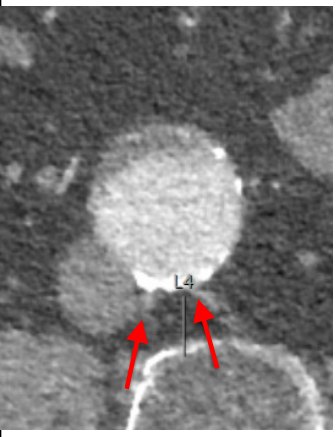
3. Coilembolisation of lumbar arteries:
- Progreat Microcatheter System 2.7 French (TERUMO)
- Ruby Coils, large volume systems (PENUMBRA)
- Tornado Embolisation Coil 0.018" Coils (COOK)
- Azur HydroCoil System (TERUMO)

4. Occlusion of the inferior mesenteric artery:
- Amplatzer Plug 6mm (ABBOTT Vascular)

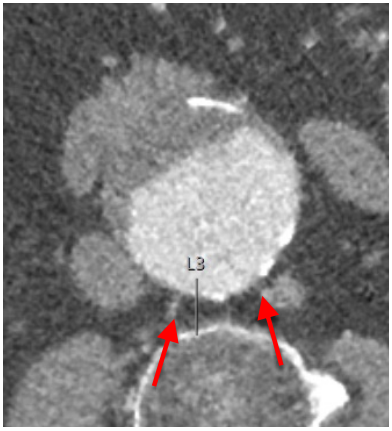


L4 and L3 segmental arteries

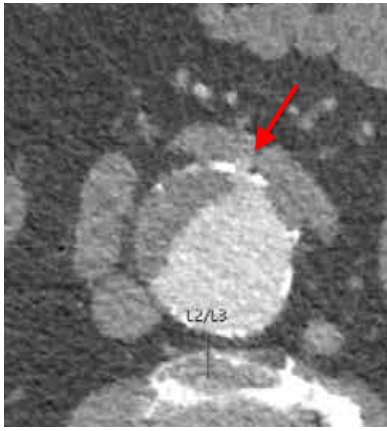
Inferior mesenteric artery



L4 segmental arteries



L3 segmental arteries

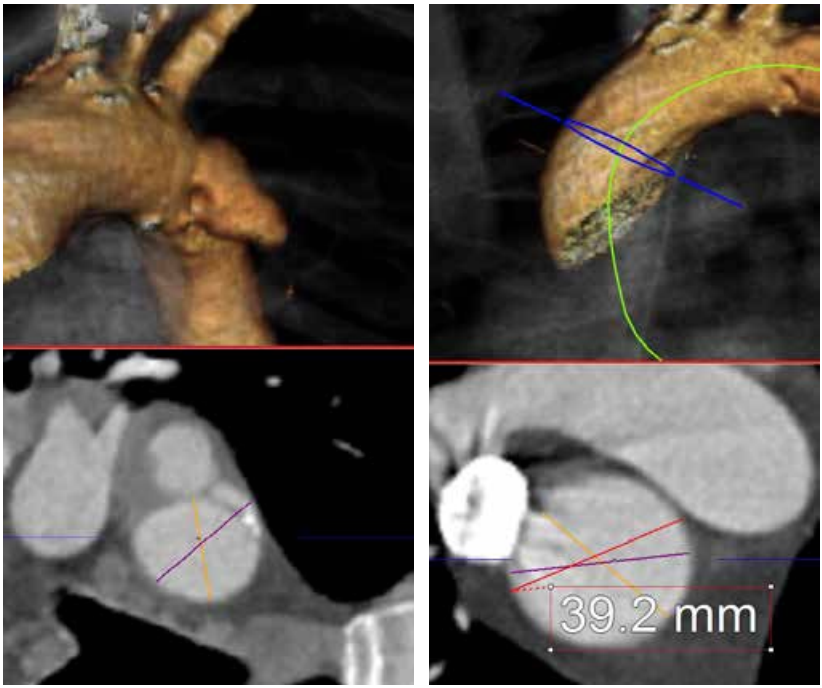


Inferior mesenteric artery

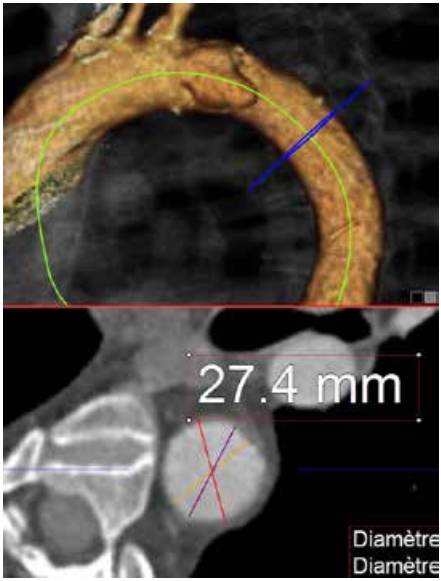
BEVAR for Arch PAU

Patient data:	Male, 71 years
Operators:	Stéphan Haulon
Clinical data:	• High Blood Pressure • Ulcerative Colitis • Diabetus Mellitus
Pre-operative work-up	• Echocardiography: normal EF • Coronary angiogram: negative • Supra aortic trunk DUS: no stenosis, no dissection ASA score III

Anatomic evaluation: Proximal landing zone

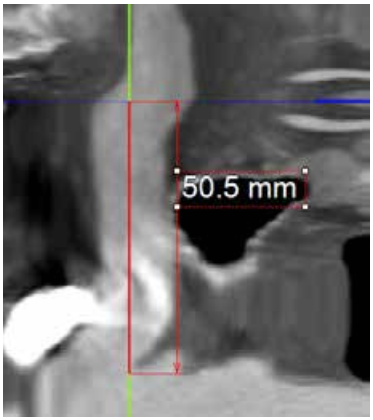


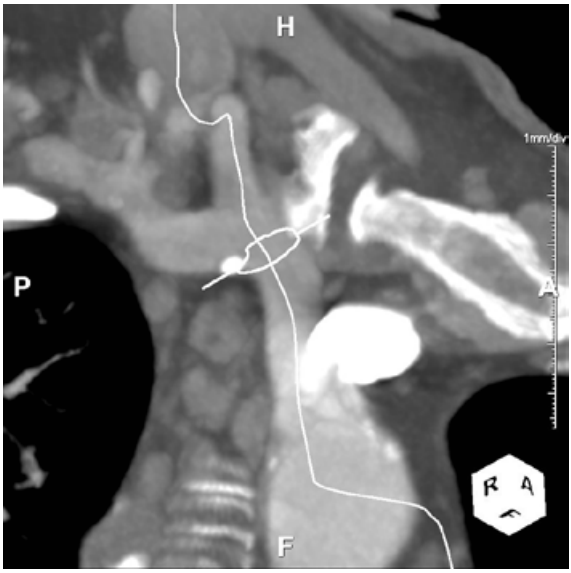
Anatomic evaluation: Distal landing zone



Anatomic evaluation: <u>Target vessel: Innominate artery</u>

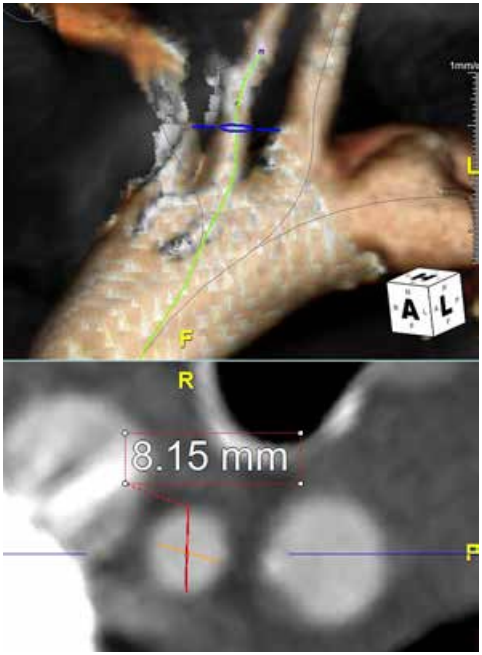
- Length: 50mm
- Diameter: 14mm
- Clock position: 12:30
- Working position: RAO 60 CAU 25 for bifurcation





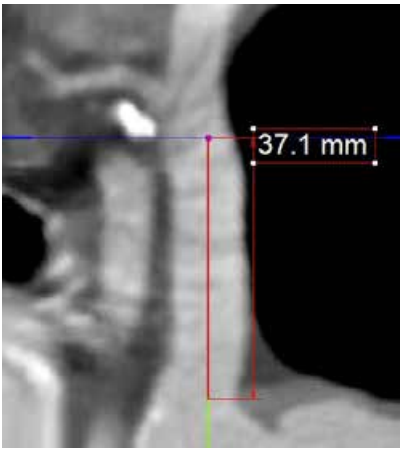
Anatomic evaluation:

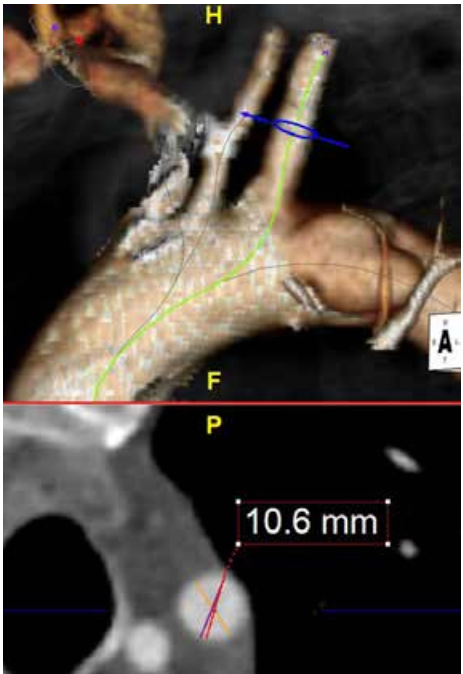
Target vessel: LCCA
- Diameter: 8/9mm
- Length: >100mm
- Clock position: 11:30



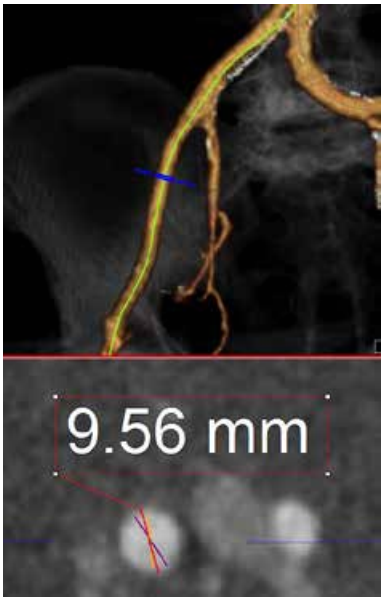
Anatomic evaluation:

Target vessel: LSA
- Diameter: 11mm
- Length to VA origin: 37mm
- Clock position: 12:

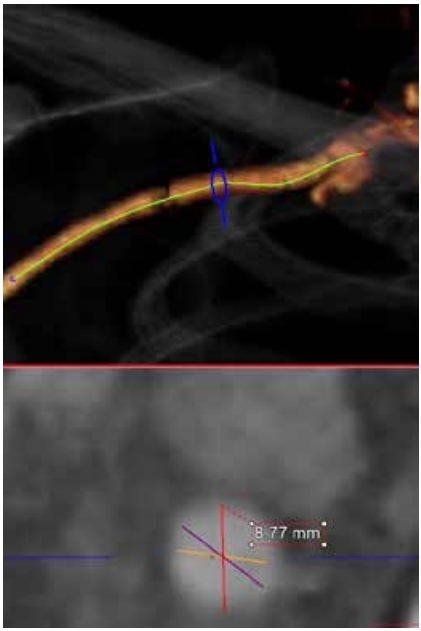


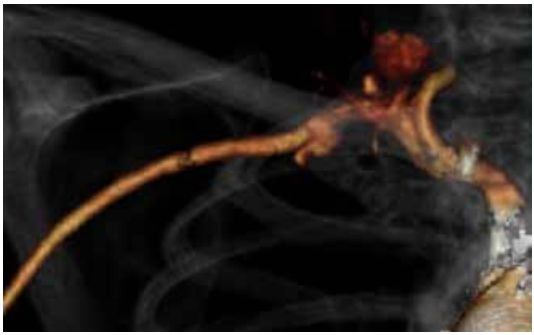


Anatomic evaluation: Right iliac/femoral access

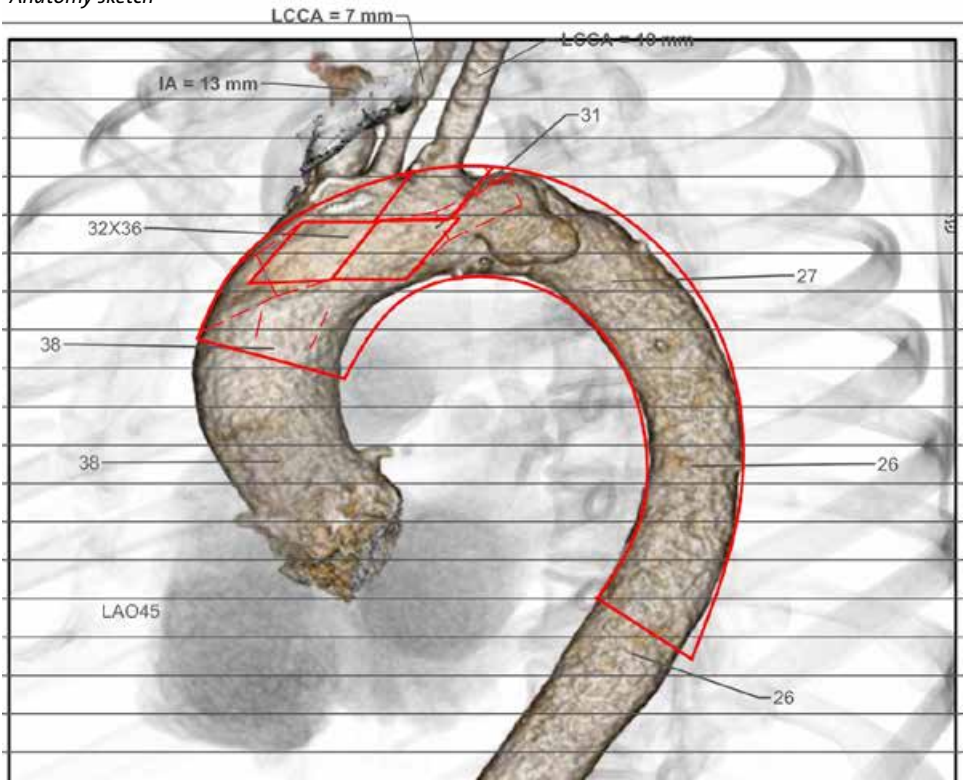


Anatomic evaluation: Right axillary access



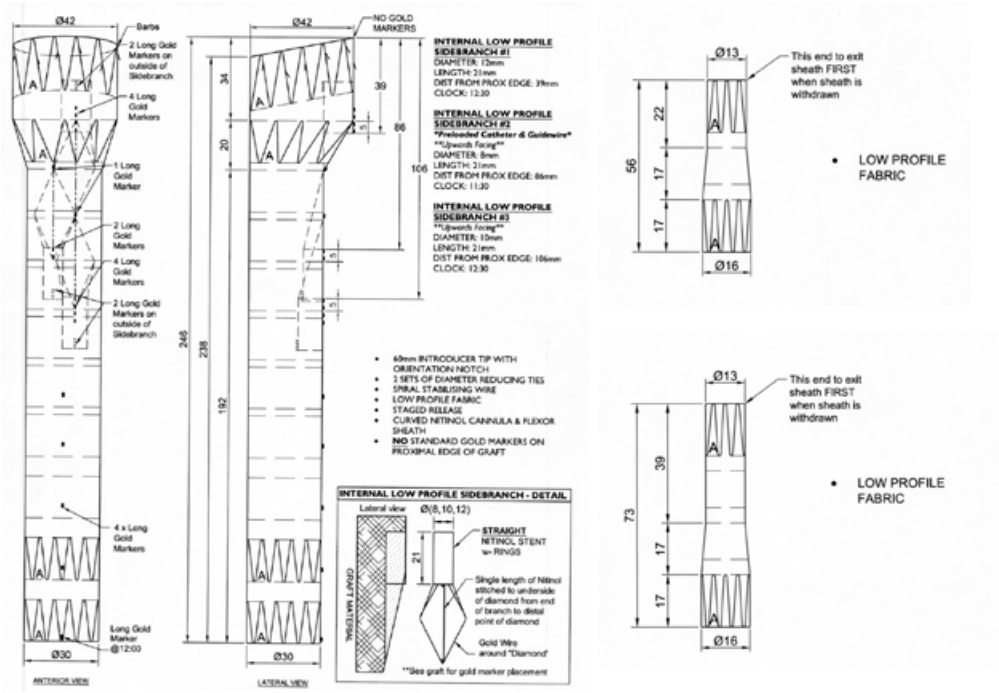


Anatomy sketch



GORE® Viabahn®

Graft plan
Branched endograft CMD



Sizing
Bridging stents

TV	Diameter / First bifurcation (mm)	Stent type	Shaft Length (cm)	Diameter (mm)	Length (mm)
Innominate	14/50	**Gore limb HGB**	60	16	70
LCCA	8	Viabahn	120	9	100
LSA	11/39	Viabahn	120	13	100

POBA and sirolimus coated balloon to Right leg ATA and PTA CTO

Patient data: Female, 84 years (LYK)

Operators: Edward Choke Tieng Chek
Kalpana Vijaykumar

Clinical data: Right leg severe rest pain

Past medical history:
- Diabetes Mellitus
- Hypertension
- Hyperlipidemia
- Previous anterior STEMI in Nov 2015 s/p PCI
- Severe MR with MVP s/p Mitraclip Jan 2020
- AF on apixaban
- Chronic Kidney Disease 4
- Peripheral vascular disease with left leg CLTI with 3rd toe gangrene s/p L leg laser atherectomy and angioplasty on 12/4/24

Right leg duplex on 10 May 2024:
PTA and ATA CTOs
R toe pressure 61mmHg

Procedural steps:
1. Antegrade Brite Tip 5 fr sheath (TERUMO) **to R CFA**
2. V18 (BOSTON SCIENTIFIC) **or Command ES 014** (ABBOTT) **supported by 2.6 Fr CXI catheter** (COOK) **for antegrade crossing of ATA and PTA CTO**
3. Retrograde puncture of ATA or PTA if antegrade crossing unsuccessful (Sheathless approach with V18 supported by 2.6Fr CXI catheter)
4. IVUS (Opticross 18, BOSTON SCIENTIFIC) **of ATA and PTA to determine RVD and to size the POBA and Sirolimus coated balloon** (MagicTouch PTA, CONCEPT MEDICAL)
5. POBA of ATA and PTA CTO with JADE (ORBUSNEICH)
6. Sirolimus coated balloon to ATA and PTA (MagicTouch PTA, CONCEPT MEDICAL)

Type 2 TAAA
Type B Dissection
T-branch + False Lumen Occluder

Patient data: Male, 71 years

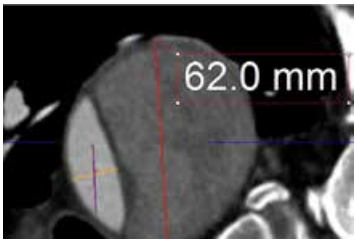
Operators: Stéphan Haulon

Clinical data:
- 66-year-old male
- Hypertension
- Type B Dissection
- Partial left nephrectomy

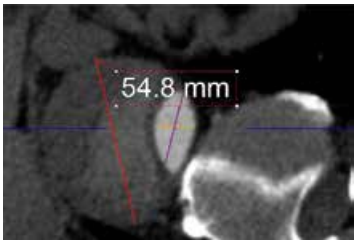
CT IMAGING Thoracic
Visceral

CT IMAGING

Thoracic



Visceral



TREATMENT PLAN

Staged procedure to reduce SCI risk

1) Fenestrated TEVAR
LSA Fenestrated using electrocoagulation

2) BEVAR
T-branch graft + FLE

PRE-OPERATIVE WORK-UP

• TTE: LVEF 61%
• Coronary angio: no significant stenosis
• DUS supra-aortic trunks: no significant stenosis
• eGFR (MDRD): 54 ml/min

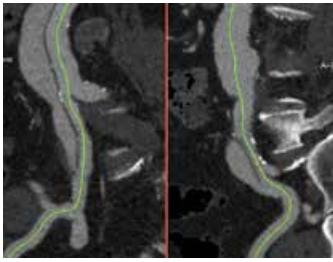
FIRST STAGED PROCEDURE:

• 16/05/24
• Proximal TEVAR: –> COOK ZTA PT 40-36-217
ZTA PT 38-34-167
• LSA Fenestration using electrocoagulation: –> Begraft + 10-37

SECOND STAGE : T-BRANCH + FLE

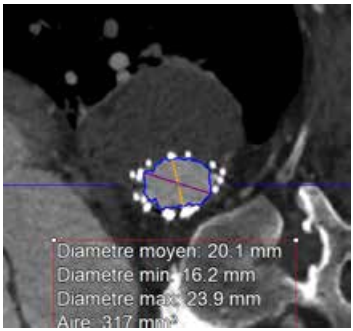
• CT, SMA, & LRA perfused by true lumen
• RRA perfised by false lumen

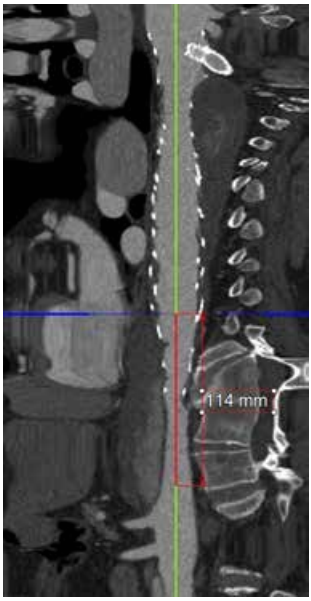
2 communication tears:
Right common iliac
Right renal artery



Anatomical Evaluation

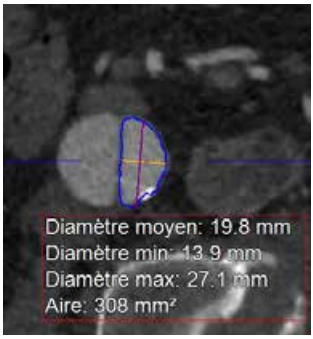
Proximal landing zone:

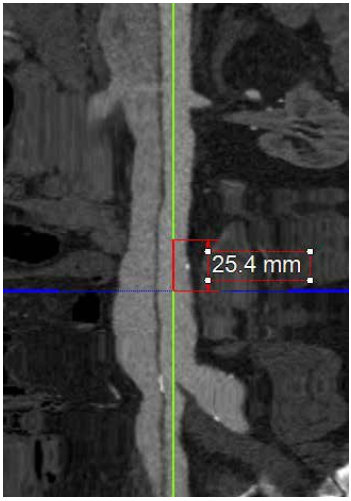




In Cook ZTA PT
38-34-167
3 stents overlap

Distal landing zone:

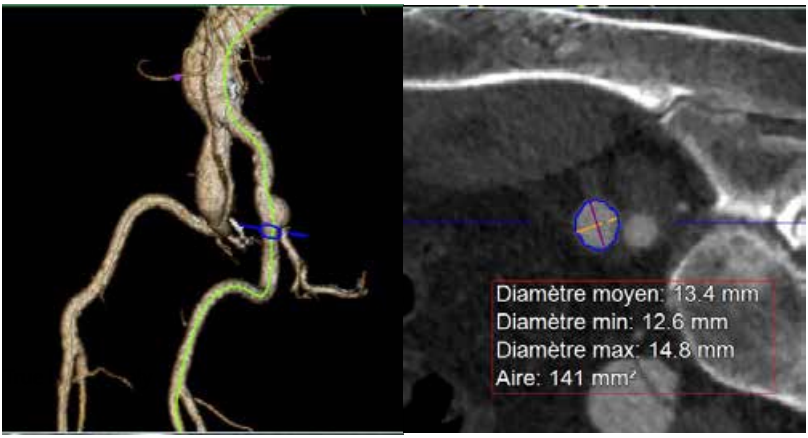




Above IMA
Distal true lumen
diameter: 20mm

Anatomical Evaluation

Left femoral access



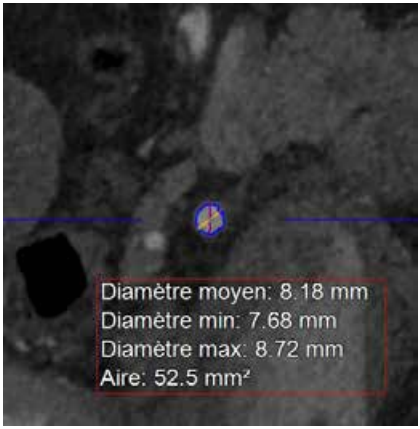
True lumen only

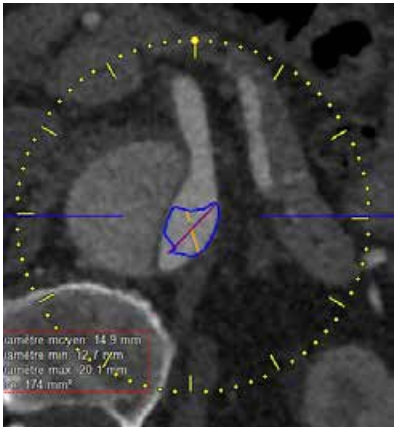
Right femoral access

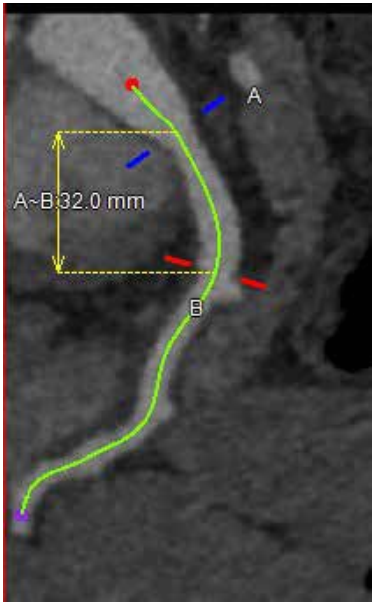
True and false lumen only

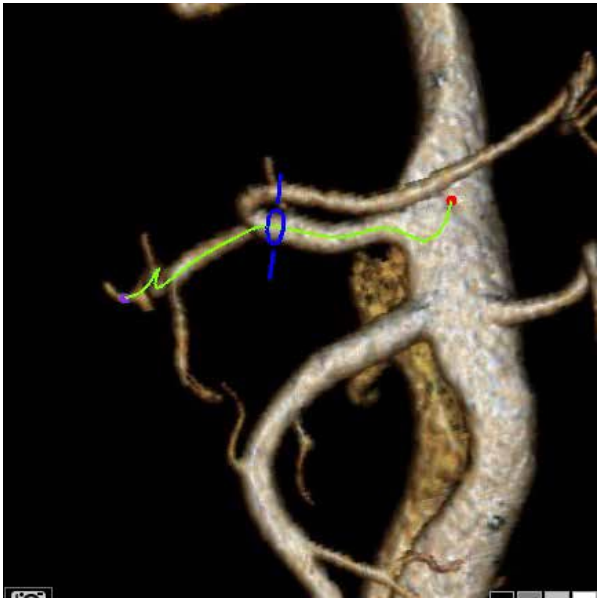
Anatomical Evaluation

• Celiac trunk
• Diameter: 8 mm
• Length to first branch: 32mm
• Clock position: 12:40



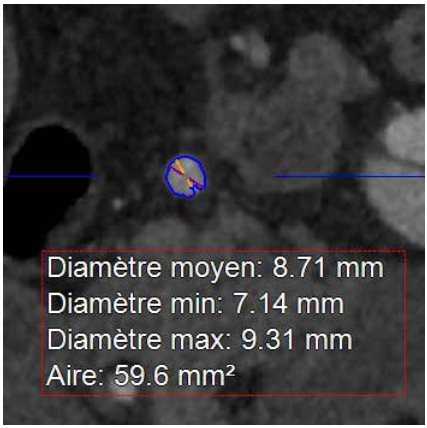


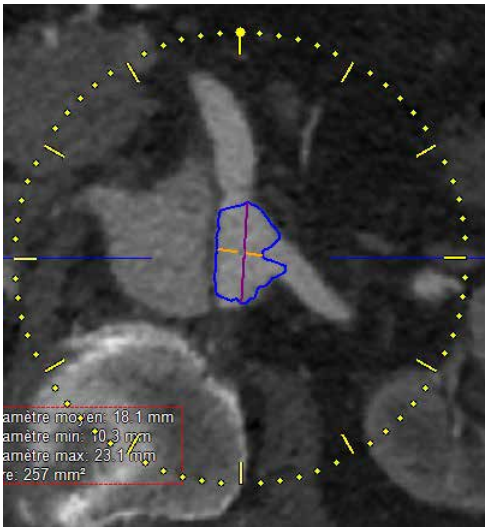


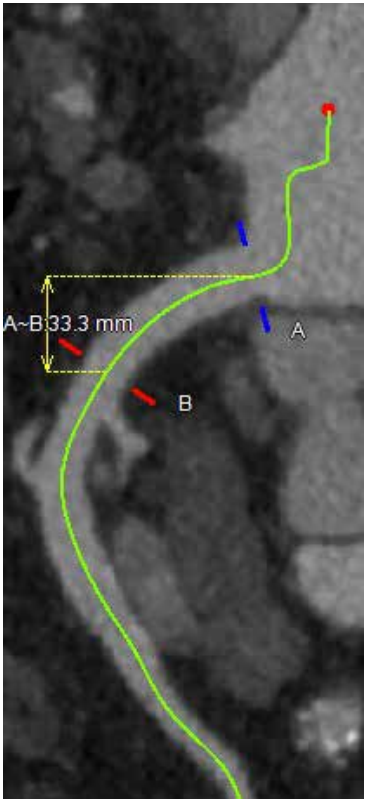


Anatomical Evaluation

• Superior Mesenteric Artery
• Diameter: 9 mm
• Length to first branch: 33 mm
• Clock position: 12 : 00

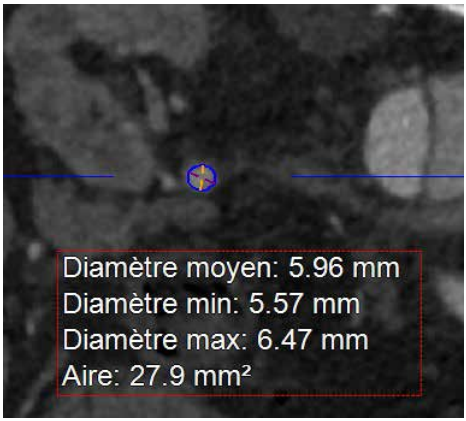


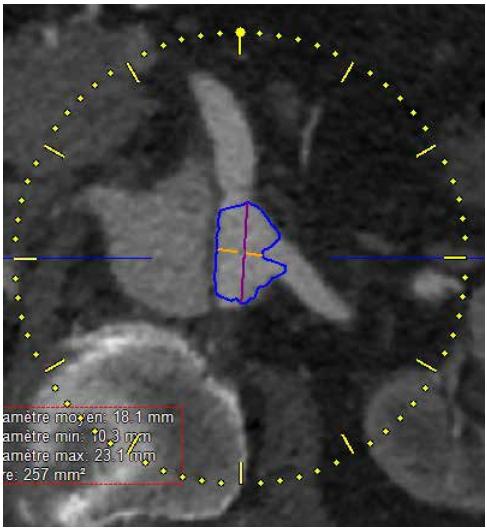


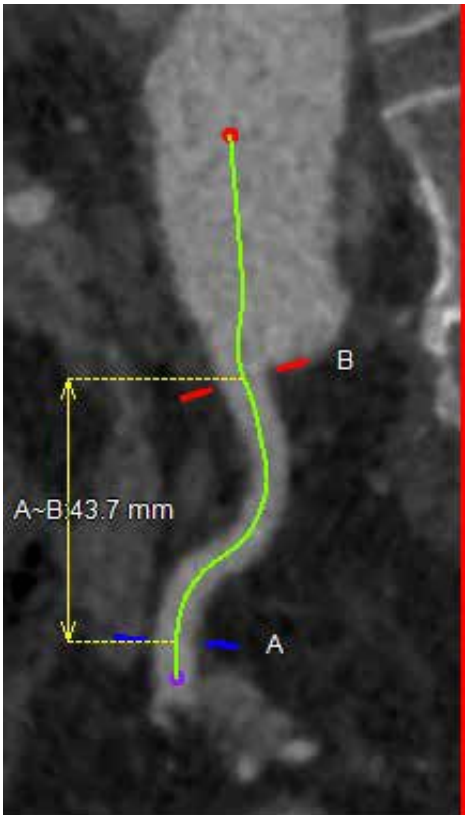


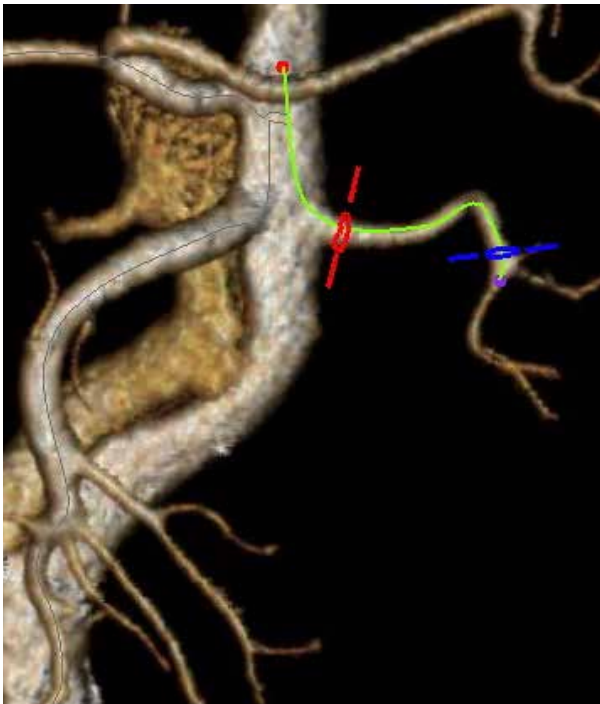
Anatomical Evaluation

- Left Renal Artery
- Diameter: 6 mm
- Length to first branch: 43 mm
- Clock position: 4:00



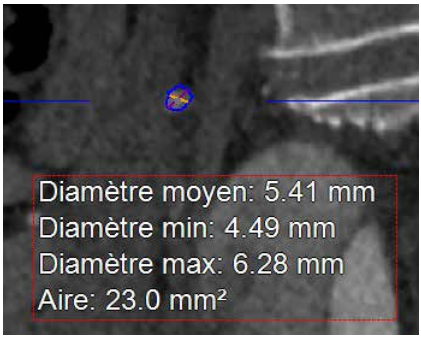


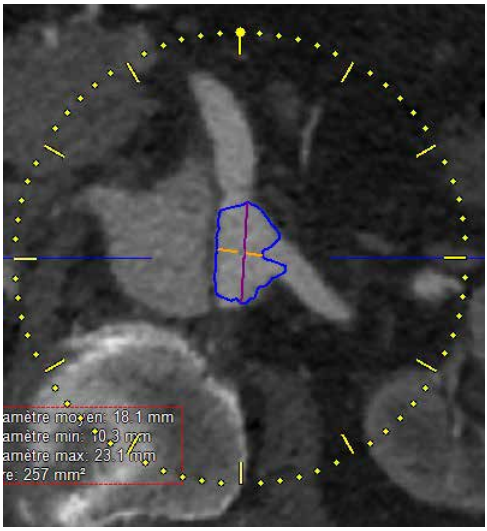


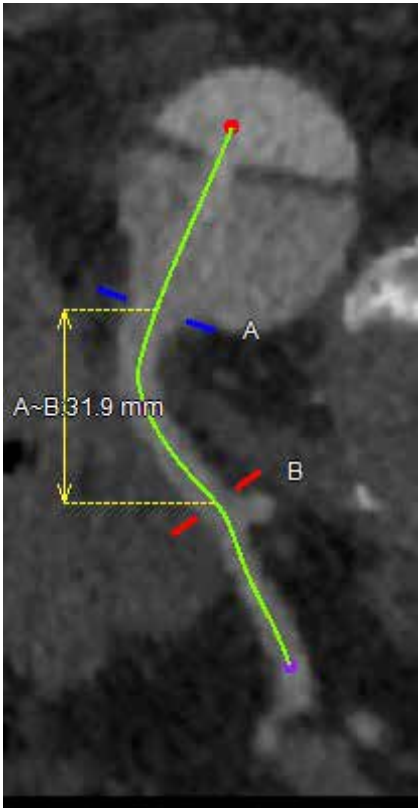


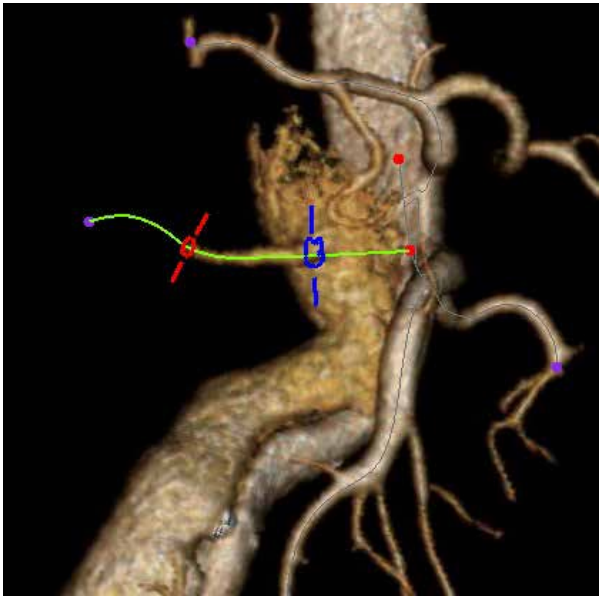
Anatomical Evaluation

• Right Renal Artery
• Diameter: 6 mm
• Length to first branch: 32mm
• Clock position: 9:50



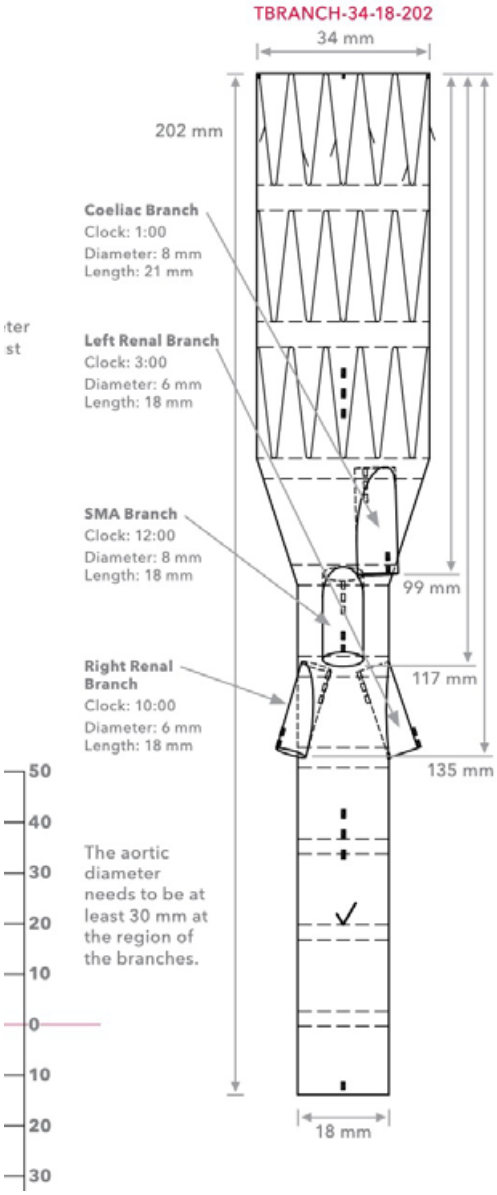




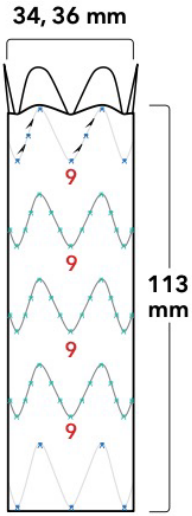


PLANNING

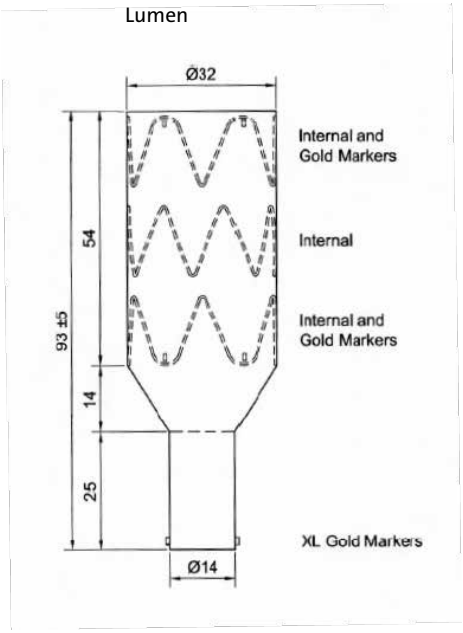
1) COOK T-branch 34-18-202



2) Cook Zenith alpha ZTAP-36-113



3) FLE 32 in False Lumen



Sizing stents

	Diameter/1st bifurcation	Stent	Shaft length (cm)	Diameter Stent (mm)	Length (mm)
CT	8/28-33	Begraft +	120	8	57
SMA	9/33	Begraft +	120	9	57
LRA	6/34	Begraft +	120	6	38
		Begraft +	120	6	58
RRA	6/43	Begraft +	120	6	58

Data will be published as soon as it is available

Data will be published as soon as it is available

Data will be published as soon as it is available

Data will be published as soon as it is available

Data will be published as soon as it is available

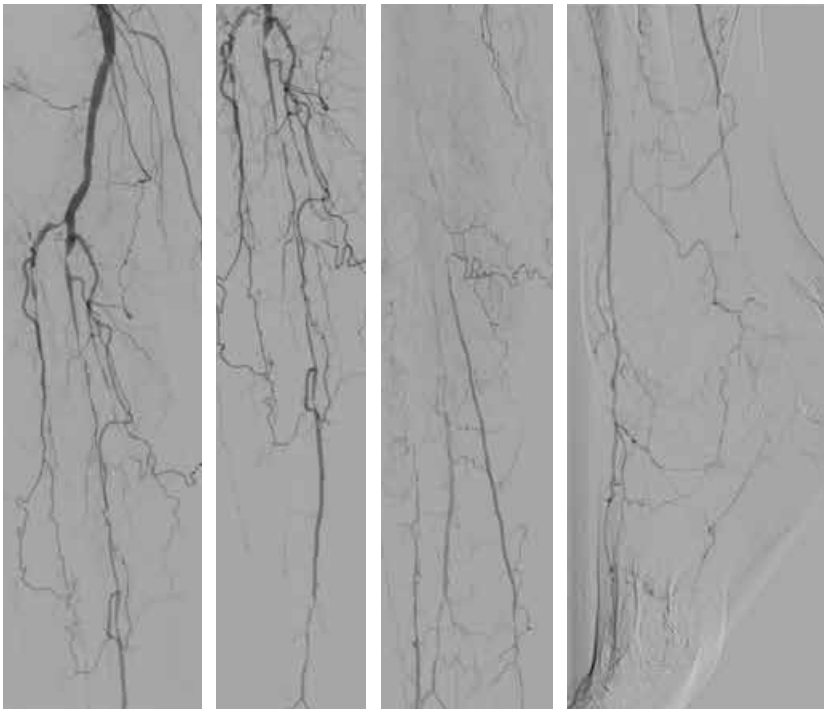
CLTI right, complex BTK-CTOs

Patient data: Male patient, 81 years (HP-S)

Operators: Andrej Schmidt
Rinaldo Myrselaj

Clinical data: Restpain right foot, interdigital ulceration Dig II / III, Rutherford class 5
PTA left BTK 5/2024 for CLTI
CAD, PTCA 2018 and 2022; Ischemic cardiomyopathy, EF 45%, NYHA II
Diabetes mellitus type 2; Hypertension, HLP
Chronic renal failure, GFR 55ml/min

Risk factors: Angiography during treatment left leg: 3-vessel disease right BTK



Procedural steps:

1. Right groin antegarde access
- 6Fr 55cm sheath (COOK)

2.Guidewire-passage of the ATA-CTO:
- 0.014" Command Guidewire 300cm (ABBOTT Vascular)
- Sergeant 0.018" 130cm support-catheter (iVascular)

3. Angioplasty:
- Oceanus balloon 0.014" 3.0/120mm (iVascular)
- Bare temporary Spur Stent System 3.0/65mm (REFLOW MEDICAL)
- MagicTouch Sirolimus-coated balloon 3.0/200mm (CONCEPT MEDICAL)

Optimizing results of peripheral artery interventions

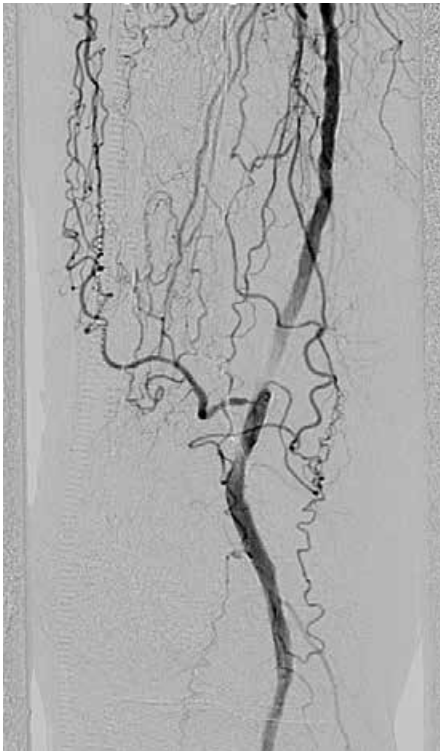
Patient data: Male, 87 years

Operators: Osamu Iida

Clinical data: LEAD Rutherford 3, ABI right unmeasureble

Risk factors: Diabetes, Chronic renal disease, Coronary artery disease, Hemodialysis

Target arterial pathway: Right SFA occlusion with severe calcification



Procedure steps:
- Contralateral approach from rt CFA with 7Fr sheath
- Retrograde approach from distal SFA if antegrade approach is failed

Wire: 0.014 inch Gladius MG, CROSSLEAD (ASAHI),
0.035 inch Radifocus straight and baby J type wire (TERUMO)

Support catheter: 4Fr Surgent (iVascular), Ichibanyari PAD (KANEKA)

Imaging modality: Intravascular ultrasound (TERUMO)

Treatment: DES, DCB or stent-graft depending on wire route

Intraluminal wire passage: Atherectomy followed by DCB

Subintimal wire passage: Stentgraft implantation under pave and crack technique

Pioneering techniques and innovations for complex BTK disease

Patient data: Female, 84 years

Operators: Osamu Iida

Clinical data: CLTI Rutherford 5
(non-healing ischeamic ulcer between the left fourth and fifth toe for 3-month)

WIFI classification
W 1, I 2, fI 0

Risk factors: Diabetes, Hypertension, Chronic renal failure, Coronary artery disease
Skin perfusion pressure: dorsal 38mmHg, plantar 48mmHg

History of revascularization:
On April/2024: drug coated balloon angioplasty for left poplitial artery stenosis, stentgraft implantation for SFA.

Lt SFA: 100%→0% (Viabahn 6*100mm+6*250mm)
Lt PoP: 90%→25% (RANGER 6*100mm)

Target arterial pathway: Right anterior tibial artery (ATA) occlusion

Data will be published as soon as it is available

Data will be published as soon as it is available

Extremely calcified CTO mid SFA right

Patient data: Male patient, 82 years (PU-T)

Operators: Andrej Schmidt
Axel Fischer

Clinical data: Severe claudication right, walking capacity 150meters, Rutherford class 3
Recanalization failure elswhere
DCB-PTA of the mid SFA right 2015; CAD, CABG 2014
Aortic valve replacement 2008 and 2012; Chronic renal failure, GFR 39ml/min

Risk factors: Cine-angiography: extremely calcified mid-SFA CTO right




Procedural steps:
1. Antegrad access right groin: ■ 7Fr-55cm sheath (COOK)
2. Guidewire-passage: ■ Connect 250 T 300cm CTO-guidewire (ABBOTT Vascular)
3. In case of antergade failure:
Either retrograde approach via distal SFA or
antegrade use of the ■ BeBack Crossing-catheter (BENTLEY)
4. Treatment depending on intraluminal or subintimal guidewire-passage
Intraluminal:
■ Lithotrispy-balloon (JOHNSON & JOHNSON)
■ DCB-PTA Ranger-PTX-balloon (BOSTON SCIENTIFIC)
Subintimal: 'Crack & Pave'-technique:
■ Predilatation with 4.0 or 5.0 Admiral balloon (MEDTRONIC)
■ Viabahn covered stent (GORE)
■ Conquest high-pressure-balloon (BD)
■ Supera interwoven nitinol-stent (ABBOTT Vascular)

Data will be published as soon as it is available

IBD right after BEVAR d/t progression with Type1b endoleak

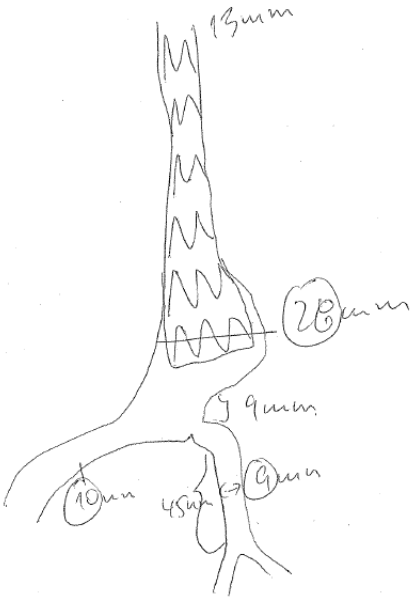
Patient data: Male patient, 79 years (DH)

Operators: Giuseppe Panuccio
Jose Torrealba

Clinical data: CMD BEVAR in Aug 2021
Proximal Extension in Dez 2021 by Type 1a
Right iliac extension April 2023

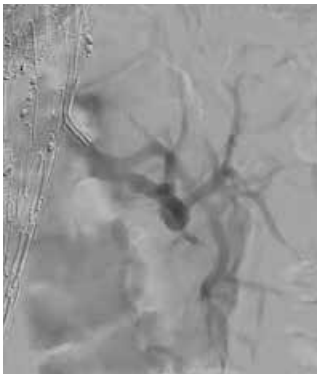
Popliteal Aneurysm with right bypass
HTN
CKD

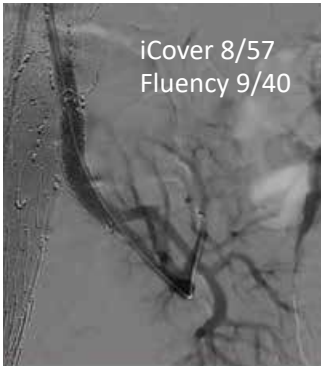
Risk factors: Control CTA with 5 mm growth of the aneurysmal sack up to 6,2 in one year
Type 1c EL coming from the LRA bridging stent, Type 1b EL form the right iliac limb

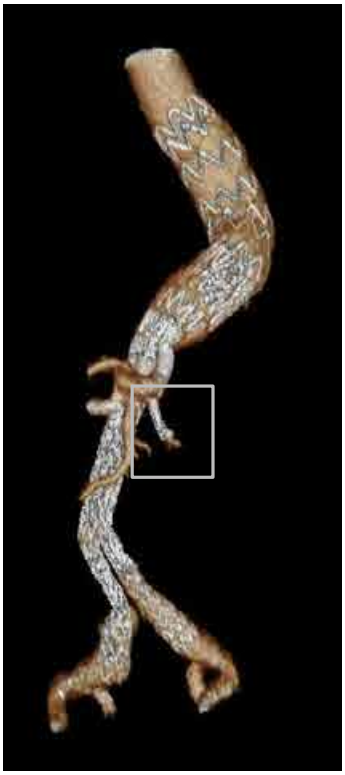


Procedural steps:

1. Percutanous access and Prostar preclosure
2. Fusion with Vessel Navigator (Phillips)
3. ZBIS (COOK) deployment
4. Establishment of a trough-and-trough femoral wire and performance of the cross-over manouver with the 10 Fr x 55 Ansel (COOK) sheath
5. Catheterization of the IIA
6. Bridging of the IIA with Advanta V12 (GETINGE) 9mm
7. Deployment of an Advanta 12mm to connect the ZBIS with the old limb, with 13 mm postdilation







Data will be published as soon as it is available

Minimaly Invasive Segmental Artery Coil Embolisation (MISACE)

Patient data: Male patient, 65 years (U-H)

Operators: Andrej Schmidt
Sandra Düsing

Clinical data: Progressive post-dissection aneurysm of the descending thoracic aorta, max. diameter 75mm
Typ-A aortic dissection 4/2022 with open reconstruction of the ascending aorta and aortic arch and CABG.
Reconstruction of the aortic arch 8/202e with Thoraflex Hybrid Prosthesis and TEVAR distal descending aorta
Endovascluar repair with fenestrated custom-made device planned
Permanent atrial fibrillation
Hypertension, Minor stroke 2021

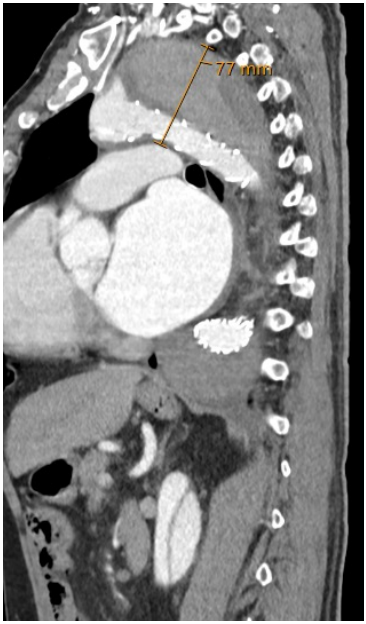
Risk factors: CT 3/2024: diameter-progression of the descending aorta

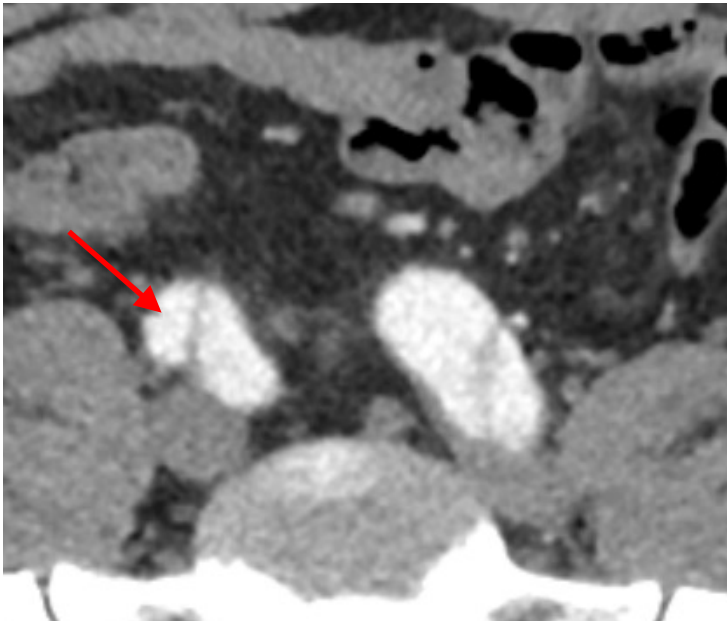
Procedural steps:

1. Access right groin
- 6Fr-25cm sheath (TERUMO)

2. Selective intubation of segmental arteries of the thoracoabdominal segment (Th10 - L1)
- 6Fr LIMA MACH 1 Guiding-Catheter (BOSTON SCIENTIFIC)
- 5Fr SOS Catheter 80cm (MERIT MEDICAL)
- 2.7Fr Progreat Microcatheter, 135cm (TERUMO)

3. Coilembolisation of segmental arteries:
- Ruby Coils, large volume systems (PENUMBRA)
- Tornado Embolisation Coil 0.018" Coils (COOK)
- Azur HydroCoil System (TERUMO)





Entrance to false lumen

Data will be published as soon as it is available

T-branch implantation

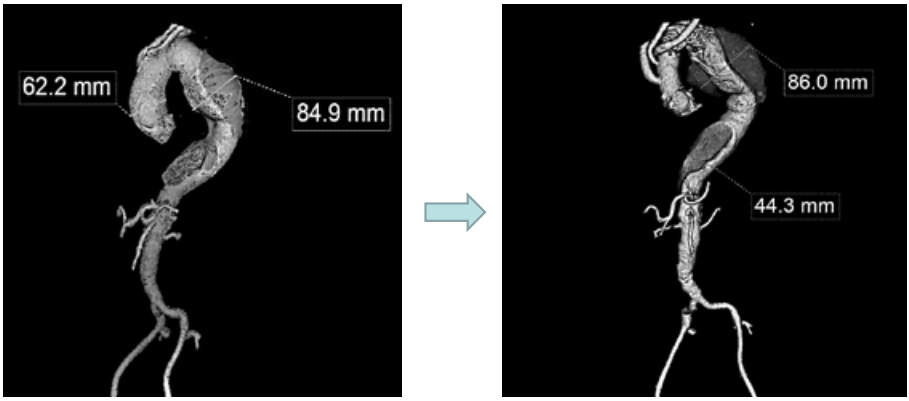
Patient data: Female patient, 76 years (FH)

Operators: Giuseppe Panuccio
Jose Torrealba

Clinical data: TAAA type II 8 cm
Ascending Aneurysm s/p Ascending replacement + FET 12/23
Stage 1 TAAA repair, s/p TEVAR 17/05/24
HTA,DM 2

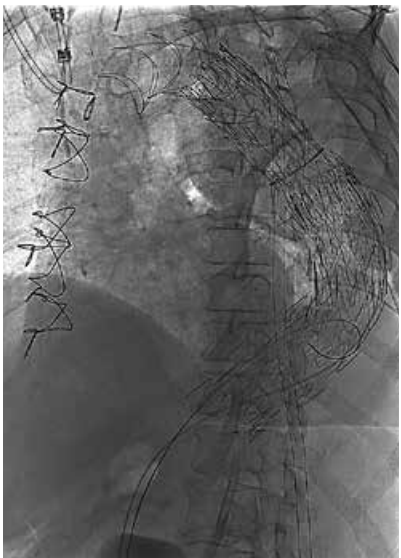
Risk factors: Diseased Aorta with thrombus
Upwards facing left renal aretry

21/12/23 Ascending replacement + FET



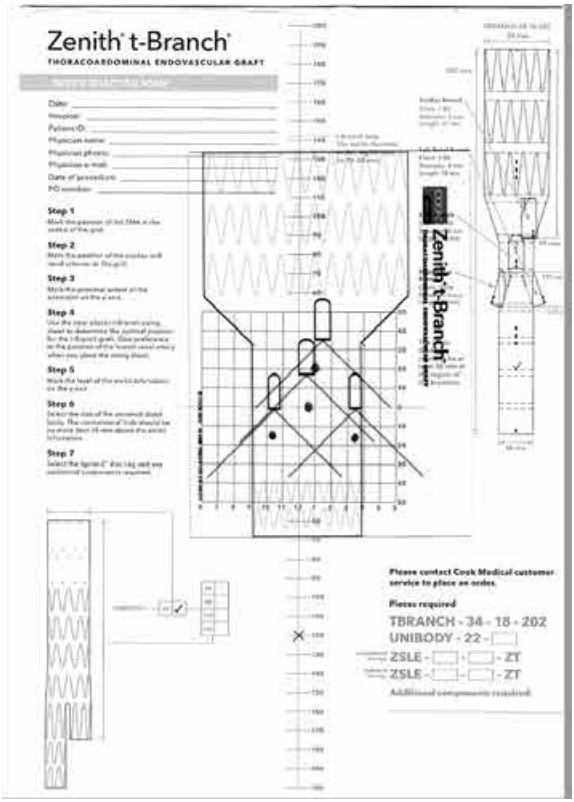
17/05/23: First Stage TEVAR

ZTA-P-46-233
ZTEG-2P-36-152-PF
ZTEG-2PT-36-157-PF



Procedural steps:

1. Percutanous access and Prostar preclosure
2. Fusion
with Vessel Navigator (Philips)
3. T-branch (COOK) deployment
4. Unibody (COOK) 22x98 deployment and deployment bilateral 13 mm COOK limbs
5.Introduction of a 14 Fr x 45mm COOK sheath and
inside a 10Fr x 55mm Fustar steerable sheath
with a 0,014 trough-and-through wire.
6. Sequential catheterization and bridging stent deployment
of RRA (6mm Viabahn, GORE), LRA (7mm Viabahn, GORE),
SMA (8 mm Fluency, BARD) and CT (8mm Advanta V12, GETINGE)



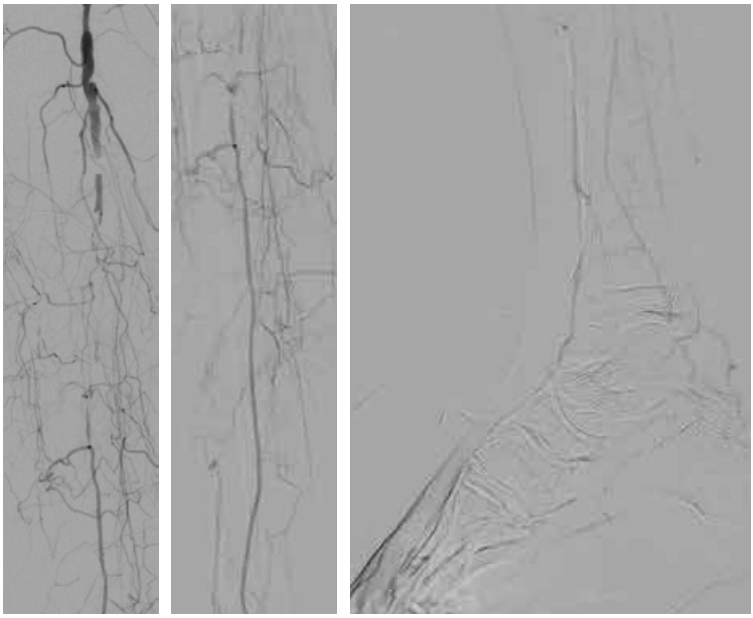
CLTI with complex BTK-CTOs right, retrograd access for embolic protection during atherectomy

Patient data: Male patient, 83 years (J-H)

Operators: Andrej Schmidt, Axel Fischer

Clinical data: CLTI bilateral, several ulcerations right forefoot, digital and lateral
PTA left BTK 5/2024; Bilateral cerebral ischemic stroke 3/2024
Stenting right internal carotid artery 3/2024
CAD, CABG 2/2024, ischemic cardiomyopathy, recurrent pulmonary oedema
Gastrointestinal bleeding 2/2024; Diabetes mellitus type 2, hypertension, HLP

Risk factors: Angiography bilateral during treatment left:
CTO BTK right, poplital, and 3-vessel CTO, potentially partially thrombotic / embolic



Procedural steps:

1. Right antegrade access: ■ 8Fr-55cm sheath (TERUMO)
2. Retrograde approach to the peroneal artery:
■ 7cm 21 Gauge needle (COOK) ■ 4 Fr 0.018" thin walled Halo Sheath (BD)
3. Guidewire-passage to the ATA and filter-protection
■ Command ES 0.014" 300cm Guidewire (ABBOTT Vascular)
■ Sergeant 0.018" 130cm suppport-catheter (iVascular)
■ Emboshield NAV 6 Embolic Protection (ABBOTT Vascular)
4. Atherectomy of the popliteal and anterior tibial artery
■ JetStream 1.85mm SC Atherectomy Catheter (BOSTON SCIENTIFIC)
5. Additional guidewire-passage to the peroneal artery and
■ **JetStream atherectomy of the tibioperoneal trunk**
6. PTA with drug-coated balloons: ■ Acotec 3.0/300mm-balloon (BOSTON SCIENTIFIC)

CO2-angiography for BTK-treatment in a chronic renal failure patient

Patient data: Female patient, 81 years (E-S)

Operators: Andrej Schmidt
Sandra Düsing

Clinical data: Restpain and minor ulceration dig IV right, Rutherford class 5
Stenting right SFA 2016;
Hypertension, HLP, diabetes mellitus type 2

Risk factors: Duplex-sonography:
Reocclusion stent distal SFA right,
Patent proximal and mid SFA and popliteal artery,
CTO of the anterior tibial artery, patent dorsalis pedis artery, slow-flow 10cm/sec.
ABI right 0.32

Procedural steps:

1. Right antegrade access:
- 6Fr 55cm sheath (TERUMO)

2. CO2-angiography:
- Angiodroid automatic CO2-injector (ANGIODROID)

3. Treatment depending on lenght and calcification of the lesions
- Potentially Rotarex-thromb-atherectomy of the SFA-stent (BD)
- PTA of the ATA with long scoring-balloon Ultrascore 3.0/300mm (BD)
- Sirolimus-coated balloon-treatment (MagicTouch (CONCEPT MEDICAL))

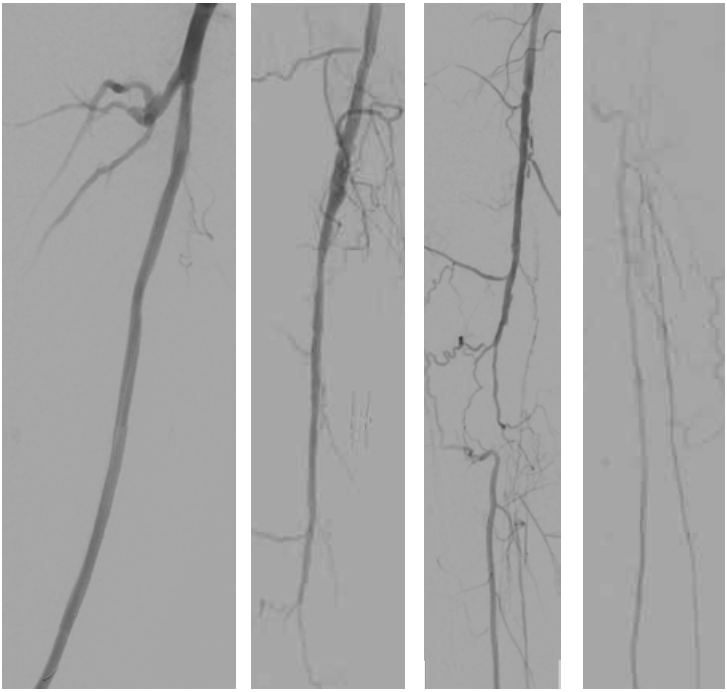
BTK retrograde intervention via peronal access

Patient data: Male patient, 63 years (H-M)

Operators: Andrej Schmidt
Axel Fischer

Clinical data: Ulcerations dig II and III right since 6 months, CLTI,
Severe claudication, walking capacity 100m,
ABI right 0.30; Rutherford class 5; PTA / stenting right SFA 5/2024,
Failed recanalization-attempt of the tibioperoneal trunk
Hypertonus, smoker, HLP

Risk factors: Angiography during PTA of the SFA:



Procedural steps:

1. Antegrade access right: ■ 6Fr-55cm sheath (COOK)
2. Retrograde access to the peroneal artery:
■ 7cm 21 Gauge needle (COOK)
■ Command 18 300cm Guidewire (ABBOTT Vascular)
■ Sergeant 0.018" 90 cm support-catheter (iVascular)
3. Atherectomy after guidewire-passage
■ Spider-filter protection (MEDTRONIC)
■ HawkOne-atherectomy 6Fr (MEDTRONIC)
4. DCB-PTA
■ In.Pact Pacific 4/80mm PTX-coated balloon (MEDTRONIC)

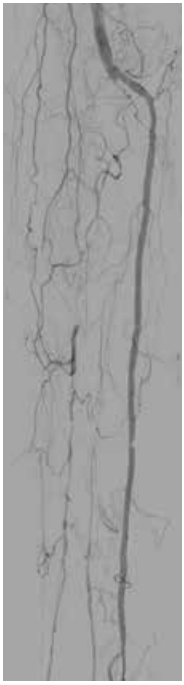
CLTI left, inframalleolar disease

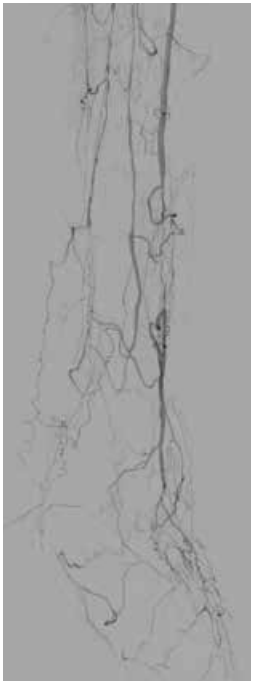
Patient data: Male patient, 83 years (CM-E)

Operators: Andrej Schmidt, Rinaldo Myrselaj

Clinical data: CLTI left, recurrent ulceration, Dig 3 left ulceration, Rutherford class 5
Amputation dig 2, angioplasty of the anterior tibial artery 9/2023
Diabetes mellitus type 2; Rheumatoid arthritis; Hypertension, HLP

Risk factors: Angiography obtained from admitting hospital:
reocclusion distal anterior tibial artery, occlusion of the tibioperoneal trunk and posterior tibial artery, reaching below the ankle





Procedural steps:
1. Antegrad access left groin ■ 6Fr-55cm sheath (COOK)
2. Guidewire-passage of the posterior tibial artery CTO
■ Command ES 300cm guidewire (ABBOTT Vascular)
■ Supported by Armada XT 2.0/20mm OTW-balloon (ABBOTT Vascular)
In case of failure: ■ Foot-loop-technique via the anterior tibial artery
3. Angioplasty of the posterior tibial artery:
■ Amphirion Deep 2.5-3.0/210mm Balloon (MEDTRONIC)
■ Acotec 3.0/300mm PTX-balloon (BOSTON SCIENTIFIC)
4. Additional treatment of the anterior tibial artery CTO:
■ Phoenix atherectomy system (PHILIPS)
■ Acotec 3.0/80mm PTX-balloon (BOSTON SCIENTIFIC)

Atherectomy of a complex BTK-bifurcation stenosis

Patient data: Male patient, 75 years (D-E)

Operators: Andrej Schmidt, Axel Fischer

Clinical data: Severe claudication left calf, walking capacity 100 meters, Rutherford class 3
Several PTAs SFA and politeal artery bilateral
PTA / atherectomy SFA bilateral, thrombendartherectomy right groin
Last treatment: SFA-atherectomy left 4/2024
CAD, MI 1999, PTCA 2014; Diabetes mellitus type 2; Hypertension
HLP; Former smoker

Risk factors: Angiography obtained during last SFA-treatment:
Severely calcified stenosis of the distal popliteal Artery / ATA / TPF

Procedural steps:
1. Antegrad access left groin ■ 7Fr-55cm sheath (COOK)
2. Peroneal artery retrograd access for embolic protection:
■ 4Fr thin-wall Halo-sheath 20cm (BD)
3. Guidewire-passage to the ATA:
■ Winn 200 T 300cm CTO-guidewire (ABBOTT Vascular)
■ 4Fr Berenstein-catheter (MERIT MEDICAL)
4. Filter-Protection and atherectomy
■ Emboshield NAV6 Filter-Protection into the anterio tibial artery (ABBOTT Vascular)
■ Jetstream™ 2.1/3.0 mm XC Atherectomy Catheter (BOSTON SCIENTIFIC)
■ Aspiration via the peroneal access during atherectomy
■ Atherectomy of the tibioperoneal trunk
5. PTA with DCBs ■ Luminor DCB (iVascular)

Severely calcified SFA-CTO, retrograde CTO-access and 'crack&pave' technique

Patient data: Male, 70 years (U-M)

Operators: Andrej Schmidt
Sandra Düsing

Clinical data: Severe claudication left right calf, minor ulceration right dig V and restpain during night
ABI 0.45, Rutherford class 5
Thrombendarterectomy right groin 1/2024 with only little improvement
Unsuccessful antegrad recanalization-attempt right SFA 4/2024
FEVAR 2018
CAD, MI 2008, PTCA 2008
Diabetes mellitus type 2
Hypertension, HLP, former smoker

Risk factors: Angiography during recanalization attempt right SFA-CTO:
severely calcified SFA-CTO right, highgrade stenosis right popliteal artery

Procedural steps:

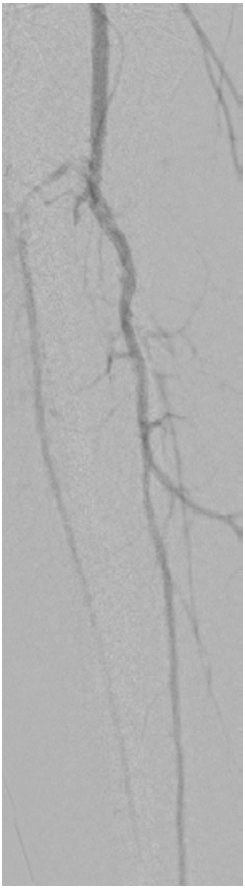
1. Antegrad access right groin
- 7Fr-10cm sheath (TERUMO)

2. Retrograde access to the occluded SFA-CTO mid SFA:
- 18 Gauge needle
- 0.013" stiff angled glidewire (TERUMO)
- 4Fr-10cm sheath (St. Jude)

3. Retrograde guidewire-passage to the comon femoral artery:
- Command 18 300cm guidewire (ABBOTT Vascular)
- Judkins Right 4Fr diagnostic catheter (CORDIS)
- BeBack Crossing-Catheter (BENTLEY)
- Snaring of the retrorade guidewire into the proximal 7Fr-steath

4. After establishing a through and through guidewire:
- Antegrade GW-passage to the distal SFA

5. PTA and stenting
- Predilatation with 4.0 or 5.0 Admiral balloon (MEDTRONIC)
- Viabahn covered stent (GORE)
- Conquest high-pressure-balloon (BD)
- Super interwoven nitinol-stent (ABBOTT Vascular)



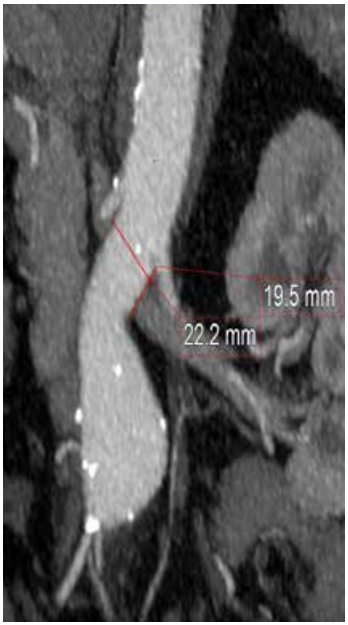
EVAR with inverted IBD to bridge accesory renal artery (ARA)

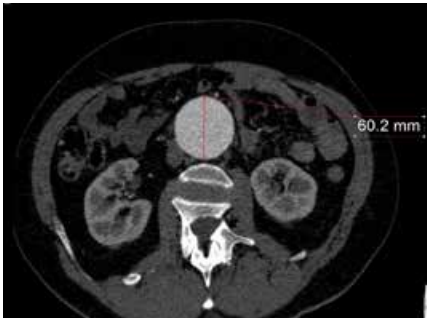
Patient data: Male patient, 60 years (IV)

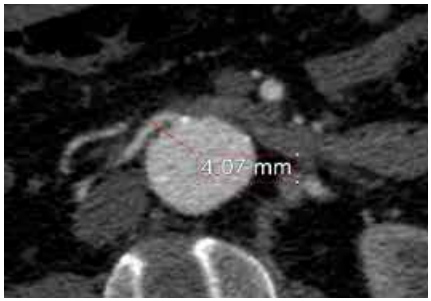
Operators: Giuseppe Panuccio
Jose Torrealba

Clinical data: 60 mm asymptomatic infrarenal AAA, 4 mm right ARA
HTN

Risk facts: Downwards facing right ARA







Procedural steps: **Modification of ZBIS iliac branch device (COOK), turning it upside down**

1. Bilateral percutaneous access
- with Prostar (ABBOTT)

2. Fusion
- with Vessel Navigator (PHILIPS)

3. TFFB 26-82 deployment

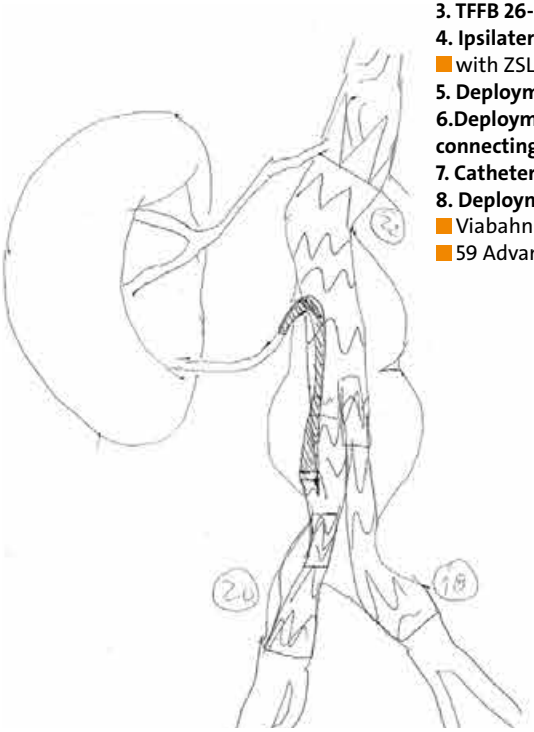
4. Ipsilateral compltion
- with ZSLE 24/90 iliac spiral limb (COOK)

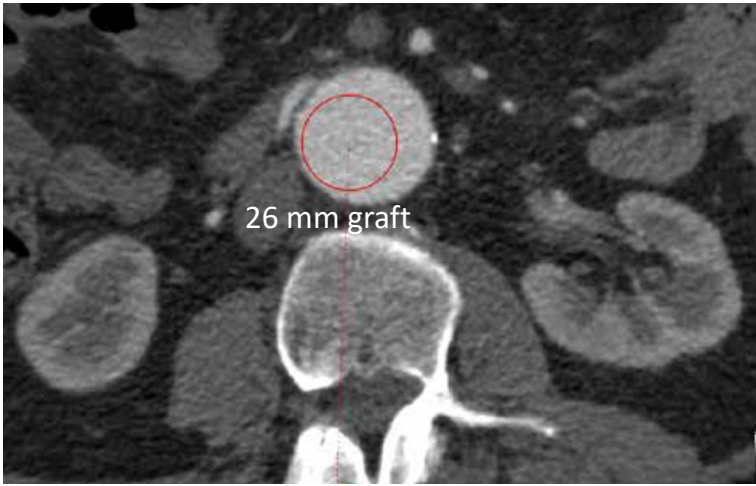
5. Deployment ZBIS 12/45/41 in the right side, facing anterior

6.Deployment ZSLE 24/56 spiral limb to extend to right CIA, connecting to ZBIS

7. Catheterization through the side branch the right ARA

8. Deployment briding stents, first
- Viabahn 5/75 (GORE) and then overlapping an 8/38 or
- 59 Advanta V12 to connect to the ZBIS side branch





Data will be published as soon as it is available

INDUSTRY SUPPORT

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