

LEIPZIG
INTERVENTIONAL
COURSE
2017

LIN C

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Messe-Allee 1, 04356 Leipzig,
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Guide to Live Case
Transmissions

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INTERVENTIONAL
COURSE
2017

L I N C

Tuesday,
January 24, 2017

Guide to Live Case Transmissions

During the Leipzig Interventional Course 2017 more than 85 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 or the choice of material may vary.

Case 01 – LEI 01: male, 68 years

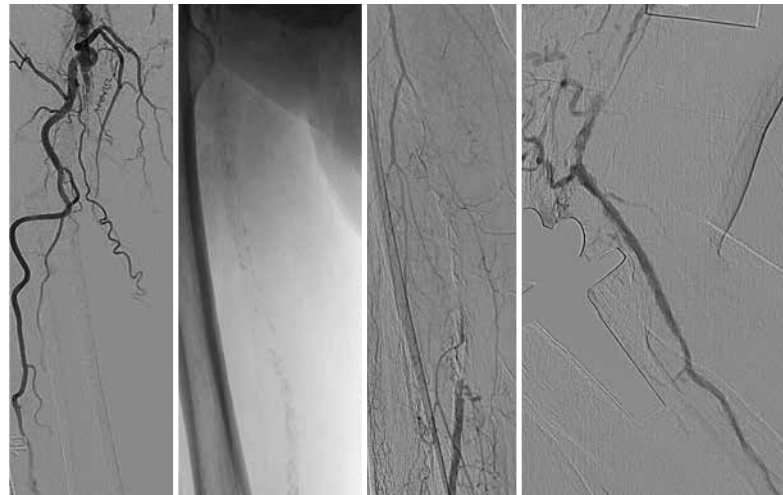
Severely calcified SFA-occlusion right

Operators: A. Schmidt, M. Ulrich

Clinical data: Severe claudication right calf, walking capacity 60 meters
ABI right 0.65
COPD, GOLD B
Permanent atrial fibrillation

Risk factors: Arterial hypertension, smoker

Angio: Angiography elsewhere: total occlusion right SFA, calcified



Procedural steps

- 1. Left groin retrograde and cross-over approach**
 - 0.035" SupraCore guidewire 190 cm (ABBOTT VASCULAR)
 - 7F-40 cm Balkin Up&Over Sheath (COOK MEDICAL)
- 2. Guidewire passage and PTA of the occlusion right SFA**
 - 4.0/120 mm Armada 35 balloon (ABBOTT VASCULAR)
 - 0.035" Radiofocus soft angled guidewire, 260 cm (TERUMO)
 - 6.0/40 mm Armada 35 balloon (ABBOTT VASCULAR)
 - Conquest high pressure balloon (BARD)

In case of failure to pass from antegrade:
- 3. Retrograde approach via the distal SFA right**
 - 21 Gauge 9 cm Micropuncture needle (COOK MEDICAL)
 - 0.018" Connect guidewire 300 cm (ABBOTT VASCULAR)
 - 0.018" QuickCross support catheter 90 cm (SPECTRANETICS)
- 4. Stenting**
 - 5.0 or 6.0/150 mm Supera Interwoven Selfexpanding Nitinol stent (ABBOTT VASCULAR)
 - Stenting of the SFA-ostium: 7.0/40 mm Absolute stent (ABBOTT VASCULAR)

Case 02 – DEN 01: male, 72 years (K-D)

CFA lesion left

Operators: K. Deloose, J. Callaert, L. Maene

Clinical data: Current smoker, hypercholesterolemia, art. hypertension

Duplex: Monophasic signal left CFA

CT-Angio: High grade stenosis/occlusion left CFA

Procedural steps

- 1. Cross-over access right CFA**
 - 6F 45 cm Destination sheath (TERUMO)
- 2. Antegrade CFA recanalization**
 - 0.018" 300 cm Connect-Connect 250T (ABBOTT VASCULAR)
- 3. Predilatation CFA lesion**
 - CO.018" Armada balloon (5, 6, 7 mm) (ABBOTT VASCULAR)
- 4. Stent implantation**
 - 0.018" 6/7 mm VMI Supera stent (ABBOTT VASCULAR)
- 5. Postdilatation**
 - 0.018" 5, 6, 7 mm Armada (ABBOTT VASCULAR)
- 6. Plan B: Retrograde prox SFA puncture**

Case 03 – DEN 02: male, 77 years (V-A)

Femoral occlusion left

Operators: K. DeLoose, J. Callaert, L. Maene

Clinical data: Rutherford 4 left leg since 6 months
History of bilateral CAS (2004)
PTA's left AIC and right SFA (2005)

Risk factors: Former smoker, arterial hypertension
Insulin dependent diabetes mellitus

Duplex: Triphasic signal left CFM, monophasic signal left popliteal distal

CT-Angio: Mid SFA occlusion severely calcified

- Procedural steps**
- 1. Cross-over access right CFA**
 - 6F 55 cm Flexor sheath (COOK MEDICAL)
 - 2. Antegrade recanalization left SFA occlusion**
 - 0.018" Advantage guidewire (TERUMO)
 - 3.1F CXI support catheter (COOK MEDICAL)
 - 3. Vessel preparation left SFA**
 - Advance LP balloon 0.018" (3, 4, 5 mm) (COOK MEDICAL)
 - 4. Primary stenting**
 - Zilver PTX 6 mm (COOK MEDICAL)
 - 5. Postdilatation left SFA**
 - 0.035" Advance LP balloon (COOK MEDICAL)
 - 6. Plan B: Retrograde access left ATA**

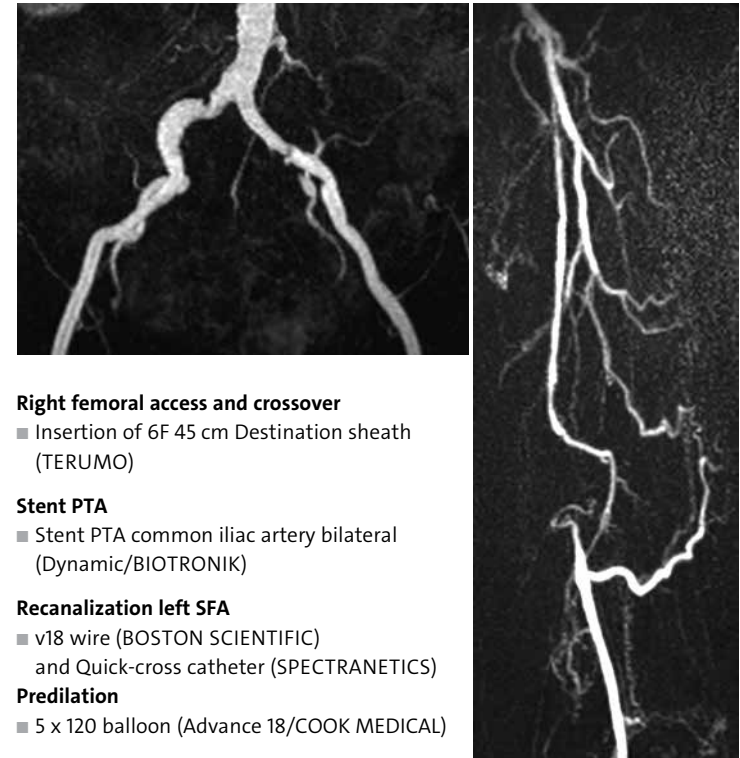
Case 04 – MUN 01: female, 76 years (K-M)

Treatment of 9 cm long SFA CTO with drug eluting stent

Operators: A. Schwindt, Ö. Sensebat

Clinical data: PAOD Rutherford IV left leg, rest pain at night, walking distance limited to 50 m
ABI: right leg 0,9; left leg 0,6

Risk factors: CVRF: hyperlipidemia, hypertension, nicotine
Carotid surgery 2013
MR-Angiogram: bilateral iliac stenosis, CTO of left SFA 9 cm long



- Procedural steps**
- 1. Right femoral access and crossover**
 - Insertion of 6F 45 cm Destination sheath (TERUMO)
 - 2. Stent PTA**
 - Stent PTA common iliac artery bilateral (Dynamic/BIOTRONIK)
 - 3. Recanalization left SFA**
 - v18 wire (BOSTON SCIENTIFIC) and Quick-cross catheter (SPECTRANETICS)
 - 4. Predilation**
 - 5 x 120 balloon (Advance 18/COOK MEDICAL)
 - 5. Stent implantation**
 - Zilver-PTX drug eluting stent (COOK MEDICAL)
 - 6. Puncture site closure with CELT 6F VCD**

Case 05 – LEI 02: male, 64 years (P-S)

Chronic total occlusion right SFA, CLI

Operators: S. Bräunlich, J. Schuster

Clinical data: Critical limb ischemia right, ulceration dig 4, Rutherford class 5
Severe claudication right calf, walking capacity 50 meters,
PTA/stenting left SFA 12/2015 for CLI left
Diabetes mellitus, type 2, art. hypertension, former smoker
ABI right: 0.2

Angio: Angiography (during PTA left):
long CTO right SFA, minimal calcification

Procedural steps

1. **Left groin retrograde and cross-over approach**
 - IMA-diagnostic 5F catheter (CORDIS/CARDINAL HEALTH)
 - 0.035" angled soft Radiofocus guidewire, 190 cm (TERUMO)
 - 0.035" SupraCore guidewire, 190 cm (ABBOTT VASCULAR)
 - 6F Balkin Up&Over Sheath, 40 cm (COOK MEDICAL)
2. **Passage of the occlusion left SFA**
 - 0.035" Radiofocus angled stiff guidewire, 260 cm (TERUMO)
 - 0.035" TrailBlazer supportcatheter, 135 cm (MEDTRONIC)
 - Exchange to 0.018" SteelCore guidewire (ABBOTT VASCULAR)
3. **PTA**
 - 5.0/120mm Pacific Plus PTA catheter, 130 cm (MEDTRONIC)
 - 6.0/120 mm In.Pact Pacific DCB (MEDTRONIC)
2. **Stenting on indication**
 - Complete Selfexpanding Nitinol stent (MEDTRONIC)



Case 06 – NY 01: female, 63 years (G-D)

Left SFA occlusion – mildly calcified

Operators: P. Krishnan, V. Kapur, K. Gujja, F. Majeed, R. Lascano

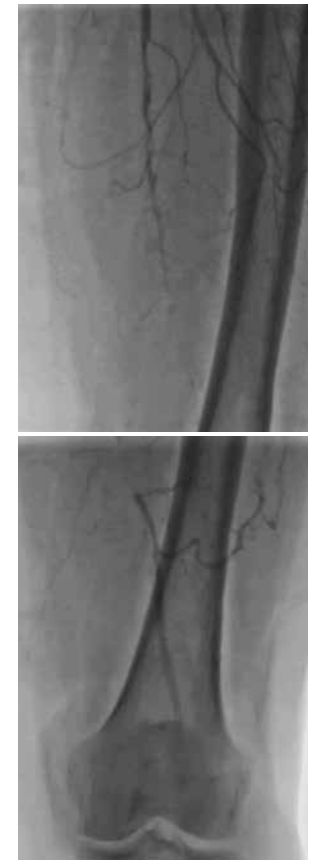
Clinical data: Patient presents with 1 block life-style limiting severe left lower extremity claudication
Rutherford Grade 1, Category 3. Fontaine Stage IIB
Claudication symptoms have been getting progressively worse
over the last few months
No rest pain or ischemic ulcers noted

ABI: Left ABI 0.58. Right ABI 0.65

Risk factors: PVD s/p right common iliac artery stent (10 x 40 mm Absolute stent)
Hypertension, hyperlipidemia, diabetes mellitus, sick sinus syndrome s/p Pacemaker

Procedural steps

1. **Right groin access with retrograde cross over approach**
 - UF 4F diagnostic catheter (ANGIODYNAMICS)
 - 0.035" SupraCore guidewire, 300 cm (ABBOTT VASCULAR)
 - 7 F – 45 cm Pinnacle Sheath (TERUMO)
2. **Passage through the left SFA occlusion**
 - 0.035" Tempo Aqua Vert support catheter, 125 cm (CORDIS)
 - 0.018" Connect 250 T guidewire, 300 cm (ABBOTT VASCULAR)
 - If unable to cross with 0.018" guidewire, switch to an 0.035" stiff angled guidewire (TERUMO)
3. **Filter placement**
 - Exchange to a Barewire through the support catheter (ABBOTT VASCULAR)
 - Emboshield Nav 6 filter placement (ABBOTT VASCULAR)
4. **Directional atherectomy**
 - Silver Hawk LS-M directional atherectomy - 4 quadrant cuts (MEDTRONIC)
5. **PTA with drug-coated balloon**
 - In.Pact Admiral 6.0 x 150 mm DCB (MEDTRONIC)
6. **Stenting on indication**
 - 5.5 x 150 mm Supera interwoven self-expanding Nitinol stent (ABBOTT VASCULAR)



Case 07 – LEI 03: male, 67 years (R-K)

Total occlusion left SFA

Operators: M. Ulrich, S. Bräunlich

Clinical data: Severe claudication left SFA, walking capacity 100 meters
Carotid stenting of a symptomatic carotid stenosis 12/2015

Risk factors: Art. hypertension, smoker

Angio: Angiography during CAS: distal SFA-CTO left
ABI left 0.56

Procedural steps

1. Right groin retrograde and cross-over approach

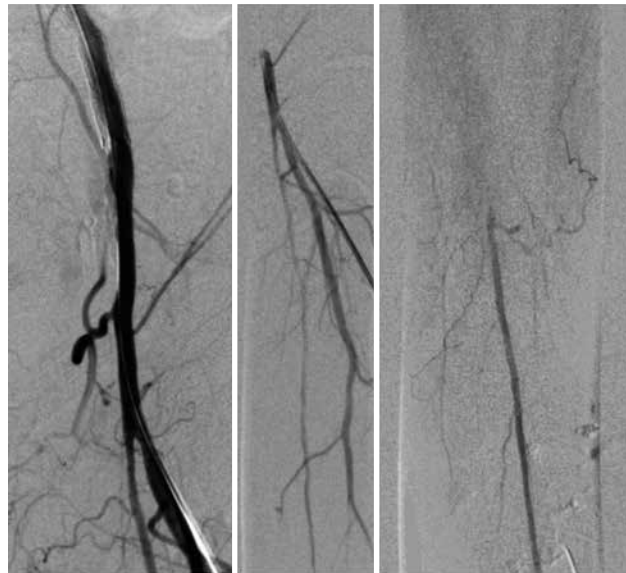
- IMA-diagnostic 5F catheter (CORDIS/CARDINAL HEALTH)
- 0.035" angled soft Radiofocus guidewire, 190 cm (TERUMO)
- 0.035" SupraCore guidewire, 190 cm (ABBOTT VASCULAR)
- 6F Balkin Up&Over Sheath, 40 cm (COOK MEDICAL)

2. Passage and predilatation of the SFA-occlusion left

- 4.0/100 mm Sterling OTW-PTA-balloon (BOSTON SCIENTIFIC)
- 0.018" V-18 Control guidewire 300 cm (BOSTON SCIENTIFIC)
- 0.018" Victory guidewire 18 gramm 300 cm (BOSTON SCIENTIFIC)

3. PTA/stenting SFA left

- Distal CTO: Eluvia drug-eluting stent (BOSTON SCIENTIFIC)
- Stenotic segments: Ranger DCB (BOSTON SCIENTIFIC)



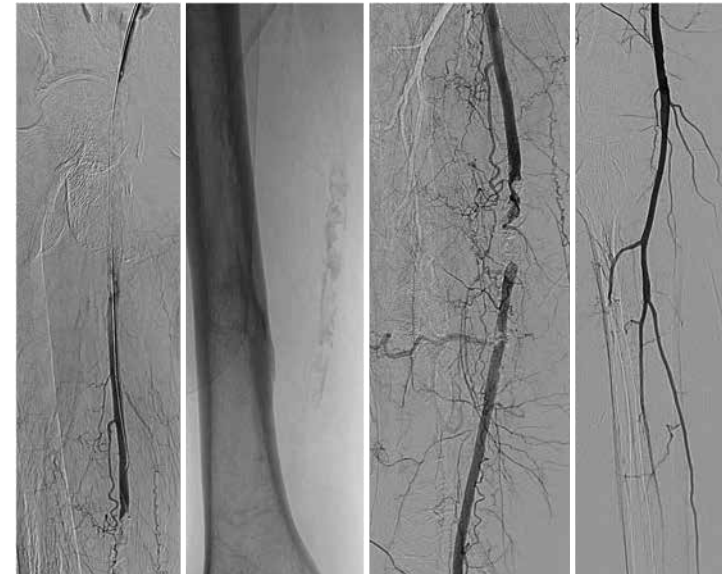
Case 08 – LEI 04: male, 69 years (R-P)

Severely calcified SFA-CTO right

Operators: A. Schmidt, M. Ulrich

Clinical data: Severe claudication right calf, walking capacity 150 meters
Thromendartherectomy both groins 2014
Stenting/PTA left SFA 11/2016
CAD, PTCA 2000, CABG 2000
Art. hypertension, former smoker

Angiography: Severely calcified distal SFA-CTO right
ABI right 0.51



Procedural steps

1. Left groin retrograde and cross-over approach

- IMA-diagnostic 5F catheter (CORDIS/CARDINAL HEALTH)
- 0.035" angled soft Radiofocus guidewire, 190 cm (TERUMO)
- 0.035" SupraCore guidewire, 190 cm (ABBOTT VASCULAR)
- 7F 55cm Flexor Check-Flo Introducer, Raabe Modification (COOK MEDICAL)

2. Passage of the distal SFA-CTO

- 0.018" Connect 250 T guidewire, 300 cm (ABBOTT VASCULAR)
- 0.018" QuickCross support catheter 135 cm (SPECTRANETICS)

3. Angioplasty

- 6.0/60 mm Lithoplasty balloon (SHOCKWAVE MEDICAL INC.)

4. Stenting only on indication

- Supera Interwoven Nitinol stent (ABBOTT VASCULAR)

Case 09 – NY 02: female, 78 years old (S-P)

Heavily calcified severe right SFA disease**Operators:** P. Krishnan, V. Kapur, K. Gujja, F. Majeed, R. Lascano**Clinical data:** Patient presents with right lower extremity ischemic rest pain
Rutherford grade 2, category 4
Fontaine stage III
Symptoms have been getting progressively worse over the last few weeks
No ischemic ulcers noted.

ABI: Right ABI 0.38.

Risk factors: Hypertension, hyperlipidemia, diabetes mellitus, previous history of tobacco use**Procedural steps**

- 1. Left groin access with retrograde cross over approach**
 - UF 4F diagnostic catheter (ANGIODYNAMICS)
 - 0.035" SupraCore guidewire, 300 cm (ABBOTT VASCULAR)
 - 7 F – 45 cm Pinnacle Sheath (TERUMO)
- 2. Passage through the right SFA calcified stenosis**
 - 0.018" Trailblazer Vert support catheter, 135 cm (MEDTRONIC)
 - 0.014" Fielder guidewire, 300 cm (ASAHI)
- 3. Filter placement**
 - Exchange to a Barewire through the support catheter (ABBOTT VASCULAR)
 - Emboshield Nav 6 filter placement (ABBOTT VASCULAR)
- 4. Jetstream atherectomy of the right SFA calcified disease**
 - Jetstream 2.4/3.4 mm atherectomy (BOSTON SCIENTIFIC)
- 5. PTA with a non-compliant balloon**
 - Dorado 6 x 200 mm balloon (BARD)
- 6. Stenting and postdilatation**
 - 5.5 x 150 mm Supera interwoven self-expanding Nitinol stent (ABBOTT VASCULAR)
 - Dorado 6 x 150 mm balloon (BARD)

Case 10 – BER 01: male, 37 years, (D-P)

Complex venous intervention of IVC and iliac vein**Operators:** N. Kucher, T. Fuss**Clinical data:** Iliofemoral DVT right side in 2014
Currently no anticoagulation therapy
Moderate renal insufficiency (atrophic left kidney)**Risk factors:** Venous claudication while standing and walking (works as a chef de cuisine)
Leg swelling right > left
Hyperpigmentation right lower leg**Procedural steps**

- 1. Venous access with ultrasound guidance in both femoral and right IJ veins**
 - 10F sheath
- 2. Wire crossage**
 - TERUMO 0.035" stiff angled
- 3. Phlebography, IVUS**
- 4. Predilation**
 - Atlas Balloon 14–20 mm (BARD)
- 5. Implantation of dedicated Iliac vein stents**
 - IVC: Sinus XL 22–24 mm (OPTIMED),
 - Sinus-XL Flex 14 mm (OPTIMED)
- 6. High-pressure postdilatation of stents**
 - Atlas balloon 14–20 mm (BARD)

Case 11 – GAL 01: male, 58 years

Acute left leg swelling x 1/52

Operators: G. O'Sullivan

CTPA: Positive for PE
Negative for RV strain



CTV: Expanded low attenuation left common iliac vein extending to left femoral vein lower thigh.
Note involvement of left Internal Iliac Vein and Profunda Femoris Vein



O/E: Phlegmasia Cerulea Dolens; palpable pulses, limb not threatened

Procedural steps

- Prone
- UltraSound guidance (SIEMENS)
- 10F sheath (CORDIS Brite Tip)
- 5000u IV Heparin
- Gentle ascending venography
- AngioJet Zelante (BSCI)- pulse spray- 30 mg tPA (Altpelase, Genentech) into 170cc N Saline
- Spray to all involved areas using a rotating direction over 5-10 minutes.
- WAIT 30 minutes
- AngioJet Zelante (BSCI)- Thrombectomy mode over 8 minutes
- Ascending venography
- Aspiration thrombectomy using an 8F Hockey Stick (CORDIS) concentrating on L IIV and L PFV
- IVUS (Volcano/PHILIPS)
- Pre-dilatation Bard Atlas 14/16 mm
- Stent underlying lesion (BARD Venovo; Veniti Vici, COOK MEDICAL Zilver Vena, OPTIMED Sinus Venous, BSCI Wallstent)
- Post dilatation: BARD Atlas 14/16mm to 20atm for 20 seconds
- IVUS (Volcano/PHILIPS)
- Cone Beam CTV (SIEMENS Artis Q)
- Pneumatic compression boots (TYCO)
- Class 2 thigh high compression stockings
- Ultrasound day 1 to confirm patency
- Full anticoagulation for 6/12

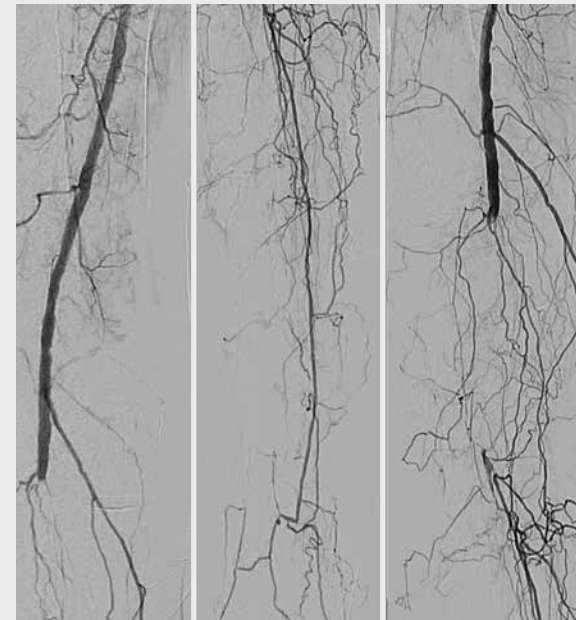
Case 12 – LEI 05: male, 78 years (M-M)

Acute on chronic ischemia right leg

Operators: S. Bräunlich, M. Ulrich

Clinical data: Very short walking capacity right since few weeks
Persistent atrial fibrillation
Diabetes mellitus, type 2
Nicotin abuse

Important items: Angiography: Thrombotic/embolic occlusion right popliteal artery
Chronic BTK-disease



Procedural steps

1. **Right antegrade femoral access**
 - 6F 55 cm Check-Flo Performer, Raab Modification (COOK MEDICAL)
2. **GW-passage and thrombectomy**
 - Rotarex 6F (STRAUB MEDICAL)
3. **PTA and stenting on indication**
 - Lutonix DCB (BARD)

Case 13 – MUN 02: male, 78 years (B-W)

Treatment of Tosaka III ISR right popliteal artery with Rotarex and drug eluting balloon

Operators: A. Schwindt, Ö. Sensebat

Clinical data: PAOD Rutherford III, painfree walking distance 150 m
Stent-PTA right popliteal artery 2009
ABI right: 0,5; left: 1,0

Risk factors: CVRF: arterial hypertension, nicotin
Angio-CT: ISR Tosaka III right popliteal artery

- Procedural steps**
1. **Left femoral access**
 - Crossover insertion 8F 45 cm TERUMO Destination sheath to right CFA
 2. **Crossing of ISR**
 - 0,035" Advantage wire (TERUMO) and Quick-cross support catheter (SPECTRANETICS)
 3. **Filter placement**
 - 6 mm Spider-Filter (MEDTRONIC) in distal right popliteal artery
 4. **Thrombectomy popliteal stent**
 - 8F Rotarex (STRAUB)
 5. **Postdilatation of stent**
 - Passeo 18 drug eluting balloon (BIOTRONIK)
 6. **Closure of puncture site**
 - Angioseal 8F (ST. JUDE)



Case 14 – BER 02: female, 37 years (E-B)

Iliofemoral venous intervention

Operators: N. Kucher, T. Fuss

Clinical data: Acute left-sided iliofemoral deep vein thrombosis in 04/2008

Risk factors: Long distance flight, estrogen-containing contraceptives, no known thrombophilia (negative testing)
Chronic venous insufficiency leg with Villalta Score: 9 points

- Procedural steps**
1. **Venous access with ultrasound guidance in left popliteal vein**
 - 10F sheath
 2. **Reconstruction of iliac veins**
 3. **Predilation**
 - Atlas balloon 12–14 mm (BARD)
 4. **Implantation of dedicated iliac vein stents**
 - MT stent: Sinus obliquus 14 mm (OPTIMED)
 - Iliac veins: Sinus-XL Flex 14 mm (OPTIMED)
 5. **High-pressure post-dilatation of stents**
 - Atlas balloon 14 mm (BARD)

Case 15 – GAL 02: male, 57 years

Chronic iliac venous occlusion

Operators: G. O'Sullivan

Clinical data: Prior Left ilio-femoral DVT
Subsequent leg swelling; significant weight gain and venous claudication
No ulceration
C4

Direct CTV: Synechiae with L EIV CIV; IVC normal; CFV scarred but patent; FV scarred; inflow dominant through Profunda



Pre operative angiogram demonstrating occlusion of L EIV CIV with cross pelvic filling

Procedural steps

Supine, general anaesthetic, urethral catheter

Right internal jugular venous access

- COOK MEDICAL 10F 35 cm sheath
- 8F 55 cm Hockey Stick
- 5F COOK MEDICAL Tri-Force CTO sheath/catheter

Wires:

- Angled Hydrophilic 180 cm (MERIT MEDICAL)
- Road Runner (COOK MEDICAL) 180 cm/Stiff Hydrophilic
- ASAHI Astatic 0.014" 30 g

Once across CONFIRM DOMINANT INFLOW

ASSESS CFV-IVUS (Volcano/PHILIPS)

- 260 cm Lunderquist

Predilatation

- BARD Atlas 14/16 mm balloon to high pressure

Stenting

- COOK MEDICAL ZV/Optimed SV/Boston Wallstent/Veniti Vici/Bard Venovo
- Post dilatation to nominal diameter stents with high pressure Bard Atlas balloons

Standard boots/stockings/US day 1/anticoagulation x 6/12

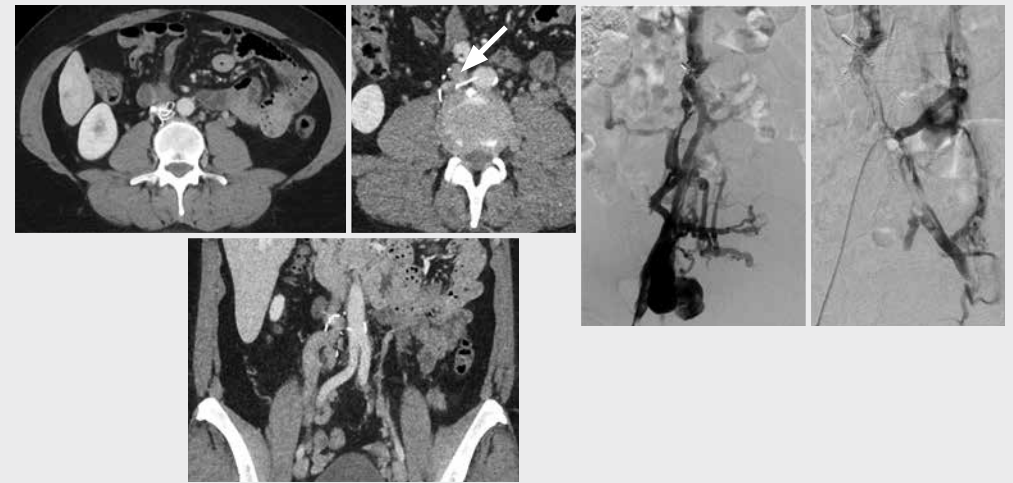
Case 16 – BER 03: female, 48 years (T-B)

Removal of tilted IVC filter (aortic penetration) and reconstruction of the IVC and iliac veins

Operators: N. Kucher, G. Walker

Clinical data: Protein S deficiency and factor V Leiden mutation
Ongoing anticoagulation therapy
Recurrent ilio-femoral thrombosis despite medical therapy
Implantation of permanent Simon™ filter (2004/USA)

Risk factors: Chronic venous insufficiency both legs with:
venous claudication, varicose veins, hyperpigmentation, leg swelling
Villalta-score: 6 points



Procedural steps

1. Venous access

- Venous access with ultrasound guidance in both femoral veins (10F sheath)
- Venous access IJ (18 F sheath)

2. Filter extraction with endobronchial forceps from IJ access

- Forceps Alligator 2.5 mm x 55 cm hard foreign body double action (KARL STORZ)

3. Reconstruction of IVC and iliac veins

4. Predilatation

- Atlas balloon 14–20 mm (BARD)

5. Implantation of dedicated IVC and Iliac vein stents

- IVC: Sinus XL 22 mm (OPTIMED),
- Iliac veins: Sinus-XL Flex 14 mm (OPTIMED)

6. High-pressure postdilatation of stents

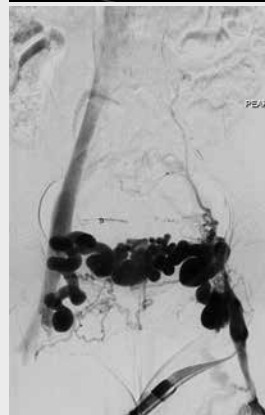
- Atlas balloon 14–20 mm (BARD)

Case 17 – GAL 03: female, 35 years

Endovascular therapy of chronic deep vein obstructions

Operators: G. O'Sullivan

Clinical data: Previously treated (in Germany) for a GIST with surgery and radiotherapy. Residual (PET –ve for > 3 years) LIF mass (Figure 1). Weight gain. Left leg swelling and venous claudication. Huge cross pelvic collaterals (Fig 2/3).



Initial pre-operative venography

Procedural steps

1. **Supine, general anaesthetic, urethral catheter**
2. **Right IJV; Left femoral Vein**
3. **Access using a CTO catheter**
 - Tri-Force Medical (COOK MEDICAL)
4. **Predilatation**
 - Atlas 14-16 mm to high pressure (BARD)
5. **Stenting**
 - Veniti Vici 16-120; 14-120
6. **Postdilatation**
 - Atlas 16 mm @16 atm for > 16 s (BARD)
 - IVUS (PHILIPS Volcano) and Cone Beam CT (SIEMENS Artis Q) to confirm stent expansion

Case 18 – MUN 03: male, 87 years (S-W)

Carotid artery stenting in high grade asymptomatic right ICA stenosis

Operators: A. Schwindt, Ö. Sensebat

Clinical data: CVRF: hypertension. CHD, RCA-PTCA 2016 with DES. Aortic valve stenosis

Risk factors: In CC-Duplex high grade right ICA stenosis with v_{max} of 290 cm/sec. MR-Angiogram: Type II aortic arch, 90% right ICA stenosis

Procedural steps

- Right femoral access, aortic arch angiogram, cannulation of right common carotid artery with 0,035 Advantage wire (TERUMO) and insertion of 6F 90cm shuttle-sheath (COOK MEDICAL)
- Angiogram of lesion, placement of 0,014 Choice PT wire (BOSTON SCIENTIFIC) distal to lesion
- Delivery of Nanoparasol filter (TERUMO) distal to lesion
- Implantation of Roadsaver micromesh stent (TERUMO)
- Postdilatation of stent (Sterling RX, BOSTON SCIENTIFIC)
- Filter capture and final angiogram



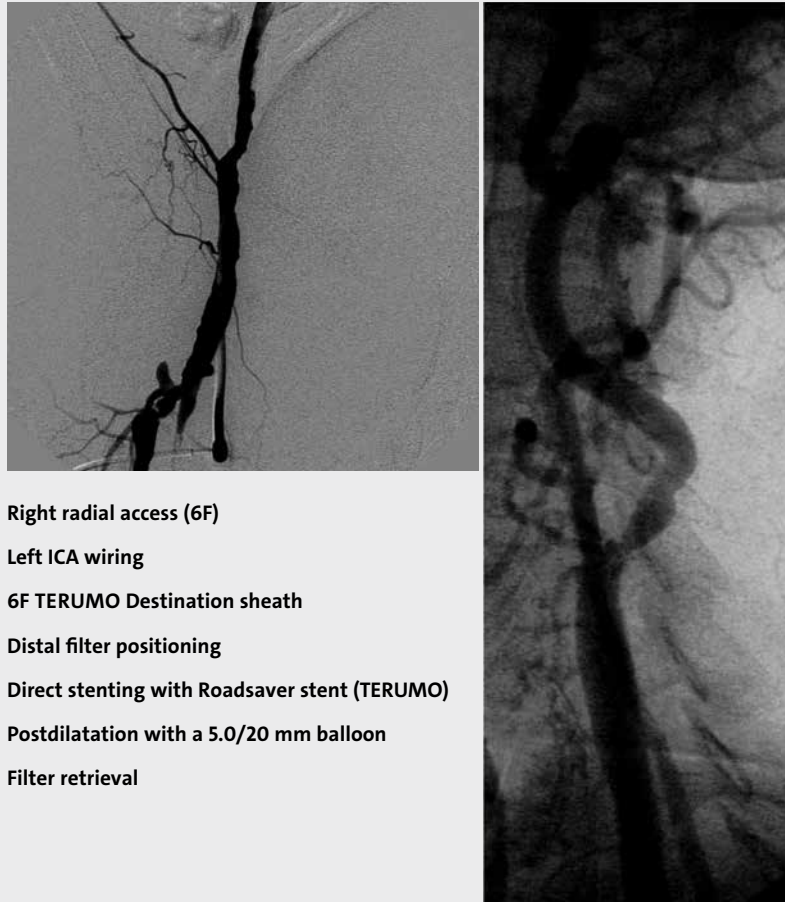
Case 19 – COT 01: male, 69 years (F-E)

Symptomatic left ICA disease in a patient with challenging access

Operators: A. Micari, F. Castriota

Clinical data: Previous right ICA PTA
In October 2016 right-sided haemiparesis (TIA)
Duplex: 85% stenosis with significant flow acceleration (> 2.5 m/sec)

Risk factors: Hypertension, hypercholesterolaemia
Known severe bilateral common femoral disease



Procedural steps

1. Right radial access (6F)
2. Left ICA wiring
3. 6F TERUMO Destination sheath
4. Distal filter positioning
5. Direct stenting with Roadsaver stent (TERUMO)
6. Postdilatation with a 5.0/20 mm balloon
7. Filter retrieval

Case 20 – BER 04: female, 46 years (D-C)

Thoracic inlet syndrome with instent thrombosis

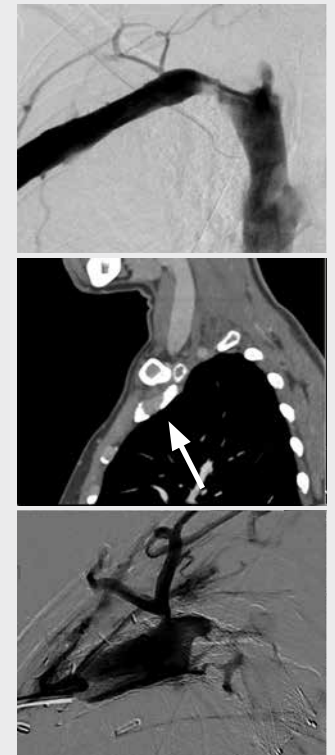
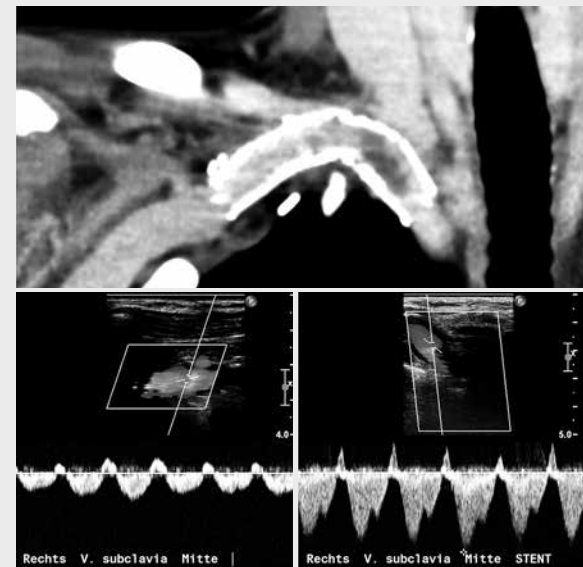
Operators: N. Kucher, T. Fuss

Clinical data: Primary (spontaneous) upper extremity deep vein thrombosis 06/15 (Paget-Schroetter syndrome) → lysis and anticoagulant therapy
Known bony exostosis of the first rib and the clavicle → resection the the first rib and stenting of the subclavian vein in 12/15
Recurrent swelling of the right arm → thrombus aspiration in a tertiary care hospital (11/16)

Present state: Swelling of the right arm since several weeks

Procedural steps

1. Venous access with ultrasound guidance in right femoral vein
 - 10F sheath
2. Wire crossage
 - TERUMO 0.035" stiff angled
3. Phlebography
4. Predilatation
 - Dorado balloon 10 mm (BARD)
5. Implantation of dedicated vein stent (stent-in-stent)
6. High pressure postdilatation of stent
 - Atlas balloon 12 mm (BARD)



Case 21 – GAL 04: female, 35 years

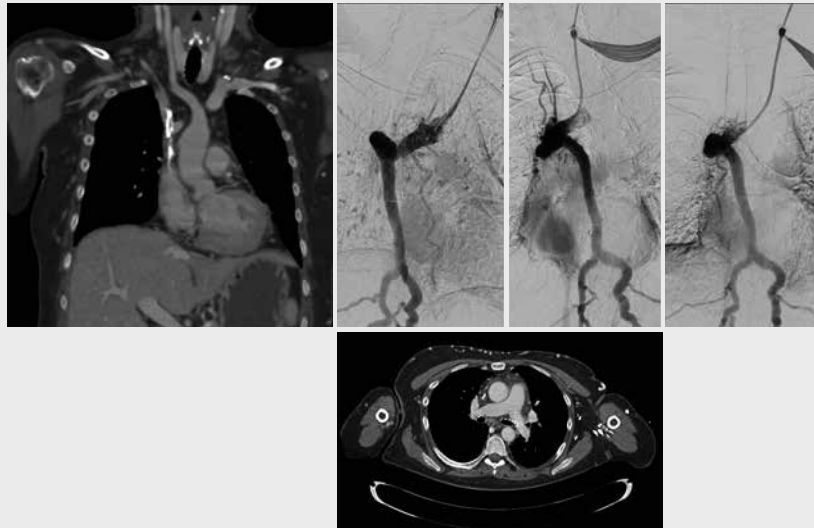
Central venous stenosis

Operators: G. O'Sullivan

Clinical data: 48 year old long term dialysis patient:
Removal R IJV dialysis catheter (2015) resulted in fragment being left behind.
Subsequent SVC occlusion
Angled venography shows complete occlusion SVC
Running out of venous access options

Pre-op imaging: CT Thorax post IV with multiplanar reformats
Short segment occlusion SVC with catheter fragment embedded in wall
Multi-planar venography reveals occlusion with no nipple

- Procedural steps**
- Access from above and below with radio-opaque sheaths**
 - Choose best angles
 - Cone Beam CT (SIEMENS Artis Q)
 - Attempt to cross**
 - Standard hydrophilic wires: CTO kit TriForce (COOK MEDICAL)
 - Back end of wires: TIPS set (COOK MEDICAL or GORE)
 - CardioThoracic back up and immediate pericardiocentesis tray**
If successful:
 - GENTLE balloon dilatation to 6/8/10 mm**
 - Stent placement**
 - Veniti Vici 14 mm diameter stent; back up: Gore Viabahn 13 mm diameter
 - IVUS to confirm patency**
 - Cone Beam CTV**



Case 22 – COT 02: male, 66 years (F-P)

Symptomatic left ICA stenosis

Operators: F. Castriota, A. Micari

Clinical data: Minor stroke in November 2016 (right-sided hemiparesis and dysarthria).
Previous right ICA PTA (2011)

Risk factors: Hypertension, family history of CV disease

Duplex: Good result of previous RICA stenting
Severe left ICA stenosis (PSV 3.2 m/sec)

- Procedural steps**
- Right femoral access**
 - Proximal protection**
 - MoMa 9F (MEDTRONIC)
 - Direct stenting with X-Act**
(ABBOTT VASCULAR)
 - Postdilatation**
with 5.0/20 mm balloon
 - Debris aspiration (if any)**



Case 23 – BLN 01: female, 80 years (Z-C)

Tripple protection approach in a high-grade left ICA stenosis

Operators: R. Langhoff, A. Behne

Clinical data: Coronary heart disease, aortocoronary bypass
PAD, PTA left SFA 2011, right SFA 2015

Risk factors: Hypertension, hyperlipidemia

Procedural steps

1. Transfemoral retrograde approach

- 8F short sheath (TERUMO)
- Diagnostic 5F catheter Weinberg shape (COOK MEDICAL)
- TERUMO stiff angled 0.035" wire into left ECA

2. Exchange to

- Vista Brite Tip IG guiding catheter MPA1 shape into left CCA (CORDIS)

3. Distal protection

- Filter Wire EZ (BOSTON SCIENTIFIC) into distal ICA left

4. Stenting

- Roadsaver Carotid Micromesh stent (TERUMO) 8 x 25 mm

5. Carotid postdilatation

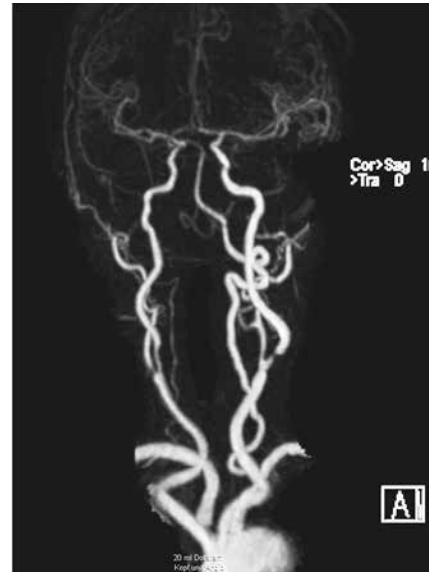
- 5 x 20 mm Paladin balloon with integrated embolic protection (40 micron pore size) (CONTEGO-MEDICAL)

6. Paladin filter closure and combined filter/balloon-system removal

- removal of the distal EPD-Filter Wire EZ
- removal of guiding catheter (wire controlled)

7. Closure of puncture site

- Angioseal 8F
- transfer patient to ICU



Case 24 – LEI 06: male, 57 years (H-F)

Flush-occlusion right SFA after CEA right groin

Operators: A. Schmidt, S. Bräunlich

Clinical data: Severe claudication right calf, walking capacity 50 meters
CEA and patch-plastic 9/2014 right groin
Stenting right SFA 2009
PTA left SFA (Lithoplasty)
CAD, MI and PTCA 2009
Art. hypertension, former smoker

Angio: Flush-occlusion right SFA, stent within the SFA-occlusion right
ABI right 0,57

Procedural steps

1. Left groin retrograde and cross-over approach

- IMA-diagnostic 5F-catheter (CORDIS/CARDINAL HEALTH)
- 0.035" angled soft Radiofocus guidewire, 190 cm (TERUMO)
- 0.035" SupraCore guidewire, 190 cm (ABBOTT VASCULAR)
- 7F Balkin Up&Over Sheath, 40 cm (COOK MEDICAL)

2. Right SFA CTO-puncture (stent-puncture)

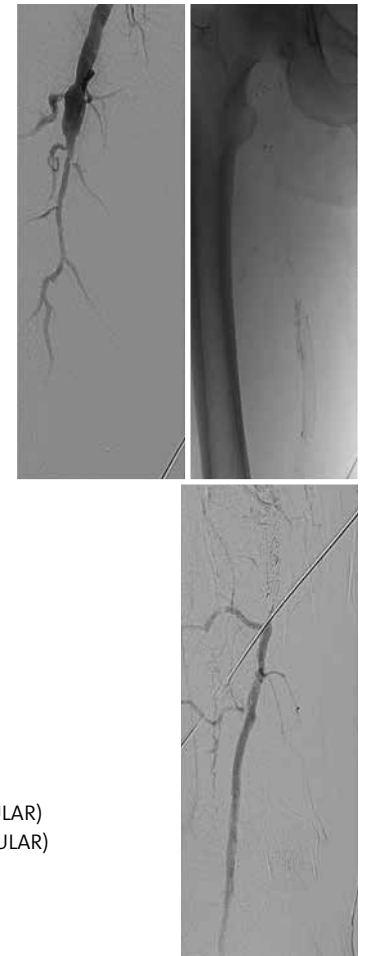
- 18 Gauge 7 cm needle
- 0.035" stiff angled Glidewire, 190 cm (TERUMO)
- 6F – 10 cm Radiofocus-Introducer (TERUMO)

3. Passage of the CTO

- Retrograde passage into the right CFA:
- Pioneer-Plus Reentry-system (VOLCANO)
 - 0.014" Floppy ES Guidewire, 300cm (ABBOTT VASCULAR)
 - Snaring if the retrograde guidewire into the the cross-over-sheath
- Final guidewire-passage into the popliteal artery from antegrade:
- 0.035" siff angled Glidewire 260 cm (TERUMO)

4. PTA/stenting

- Armada 35 5.0/100 mm balloon (ABBOTT VASCULAR)
- Supera Interwoven Nitinol stent (ABBOTT VASCULAR)
- SFA-ostium: Viabahn 7.0/50 mm (GORE) or Absolute stent (ABBOTT VASCULAR)



Case 25 – COT 03: male, 55 years (M-C)

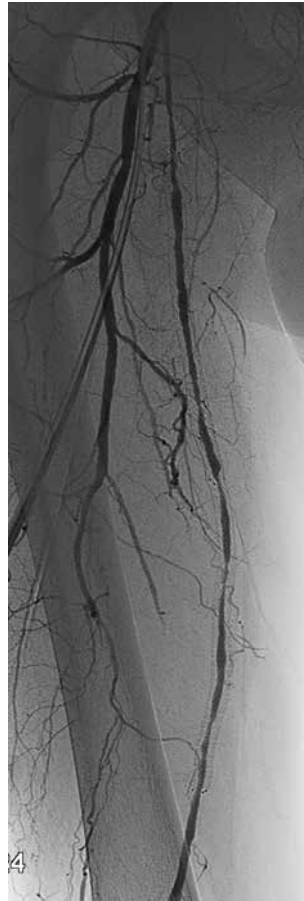
Severe right SFA ISR in a Rutherford III patient

Operators: A. Micari, F. Castriota

Clinical data: Known history of multiple iliac and femoral interventions (from 2012 to 2016)
Upper limbs chronic ischaemia
Rutherford III right limb ischaemia

Risk factors: Type II diabetes mellitus; hypertension; hypercholesterolaemia

- Procedural steps**
1. Left femoral access (cross-over approach)
 2. Spider filter distal positioning (MEDTRONIC)
 3. Lesion preparation through balloon dilation
 4. Drug-eluting balloons



Case 26 – BLN 02: male, 81 years (D-S)

Long SFA occlusion right

Operators: R. Langhoff, M. Boral

Clinical data: PAOD Rutherford 3, claudication right calf at 50 meters
Recanalization SFA stent and PTA with DCB for claudication 11/2016

Risk factors: Coronary heart disease, aortocoronary bypass
Hypertension, hyperlipidimia, diabetes type II
ABI 0,6 right, 1,0 left after intervention

Angiography: Distal SFA occlusion right side



Procedural steps

1. **Left femoral access and cross-over approach**
 - 6F 45 cm cross-over sheath Fortress (BIOTRONIK)
2. **Recanalisation right SFA**
 - 0.018" Advantage glidewire (TERUMO)
 - 0.018" CXI support catheter (COOK MEDICAL)
 - Back-up material:
 - Connect 250T CTO-wire (ABBOTT VASCULAR)
 - Outback reentry system (CORDIS)
3. **PTA**
 - Passeo18 ballon 3 x 150 mm (BIOTRONIK)
 - 5 mm Passeo18 Lux DEB (BIOTRONIK),
4. **Stenting**
 - Pulsar18 stent 5 x 200 mm (BIOTRONIK)
5. **Postdilatation**
 - 5 x 200 mm Passeo18 balloon (BIOTRONIK)
6. **Puncture site closure**
 - Angioseal 6F (TERUMO)

Case 27 – DEN 03: male, 81 years (W-E)

Femoropopliteal occlusion left: REACT**Operators:** K. Deloose, J. Callaert, L. Maene**Clinical data:** Rutherford 5 left leg since 3 months (non healing ulcers toes)
Hypercholesterolemia, smoking, art. hypertension
Previous angioplasty left fempop area**Duplex:** Triphasic signal left CFA, no signal popliteal (occlusion),
weak monophasic signal ATA left**CT-Angio:** 1 mm slice CT-Angio → occlusion Hunter's canal → Trifurcation**Procedural steps**

1. **Left CFA antegrade access**
2. **Antegrade recanalization**
 - 0.018" Advantage guidewire (TERUMO)
 - 3.6F CXI support catheter (COOK MEDICAL)
3. **Vessel preparation**
 - Passeo balloon (3, 4, 5 mm) (BIOTRONIC)
4. **Adding PTX**
 - Passeo Lux (5, 6 mm) (BIOTRONIC)
5. **Scaffolding: full lesion coverage (REACT)**
 - 6 mm Pulsar 18 (BIOTRONIC)
6. **Postdilatation**
 - 5, 6 mm Passeo balloon (BIOTRONIC)
7. **Plan B: Retrograde prox ATA access left**

Case 28 – COT 04: male, 66 years (M-B)

Rapid progression of right ICA stenosis in a 66 years old patient**Operators:** F. Castriota, A. Micari**Clinical data:** Known moderate carotid disease (regular FU assessments)
Dec 2016: severe RICA stenosis ('soft' plaque, PSV 3.0 m/sec), severely progressed from the previous evaluation (12 months before, PSV 1.9 m/sec)**Risk factors:** Hypertension, hypercholesterolaemia, family history of CV disease**Procedural steps**

1. **Right femoral access**
2. **MoMa 9F proximal protection (MEDTRONIC)**
3. **Direct stenting with Roadsaver stent (TERUMO)**
4. **Postdilatation with 5/20 mm balloon**
5. **Debris aspiration (if any)**



Case 29 – LEI 07: male, 71 years (M-Z)

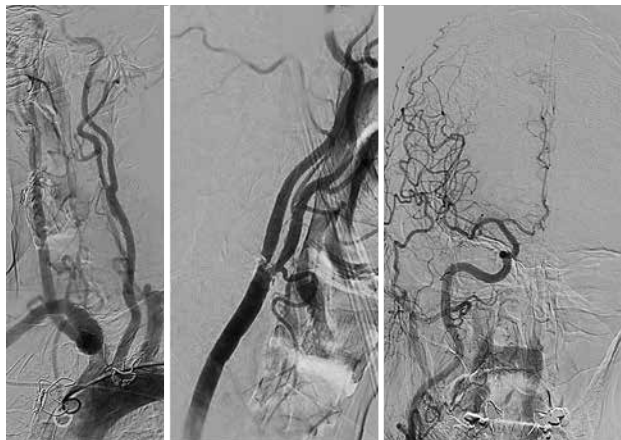
Progressive, asymptomatic internal carotid stenosis right

Operators: A. Schmidt, S. Bräunlich

Clinical data: Progressive ICA-stenosis right, peak systolic velocity 5.8 m/sec.
CAD with CABG 2000
PTCA stent 12/2016
Recurrent supraventricular arrhythmia, left atrial ablations 2014/2015
CEA left ICA 2010
Former smoker

Angiography: Angiography during PTCA 12/2016, short, high-grade stenosis right ICA

- Procedural steps**
- 1. Right groin access**
 - 9F 25 cm Radiofocus Introducer (TERUMO)
 - 5F Judkins Right diagnostic catheter (CORDIS/CARDINAL HEALTH)
 - 0.035" soft angled Glidewire, 190 cm (TERUMO)
 - 0.035" SupraCore 190 cm guidewire (ABBOTT VASCULAR)
 - 2. Cerebral protection**
 - MoMa proximal protection system (MEDTRONIC)
 - 3. Predilatation and stenting**
 - 3.5/20 mm MiniTrek Monorail balloon (ABBOTT VASCULAR)
 - 8/30 mm CGuard stent (InspireMD)
 - 4. Postdilatation**
 - Paladin® Carotid Post-Dilatation balloon with integrated embolic protection (CONTEGO MEDICAL)
 - 5. Aspiration and declamping with the Paladin-filter in place**
 - 6. Retrieval of the Paladin-system**



Case 30 – BLN 03: male, 81 years (HJ-S)

Popliteal reocclusion with impaired single vessel run-off

Operators: R. Langhoff, A. Behne

Clinical data: PAOD, Rutherford 3–4, ABI 0.63 right, 0.93 left, stenting of the distal SFA and P3-segment 2015, peripheral bBypass surgery left leg,

Risk factors: Art. hypertension, severe atherosclerosis of the aorta, severely impaired walking distance

- Procedural steps**
- 1. Antegrade access right common femoral**
 - 5F TERUMO Destination 45 cm
 - 2. Recanalisation of the occluded stent in the P3 segment**
 - 3. PTA and stenting**
 - Cr8 BTK 4 x 38 mm DES (ALVIMEDICA)
 - 4. Recanalisation of the ATA and peroneal, PTA with 2.5 and 3 mm balloon**
 - 5. Back-up: retrograde access via peroneal artery**
 - 6. Closure of puncture site by manual compression**



Calcified SFA-CTO right

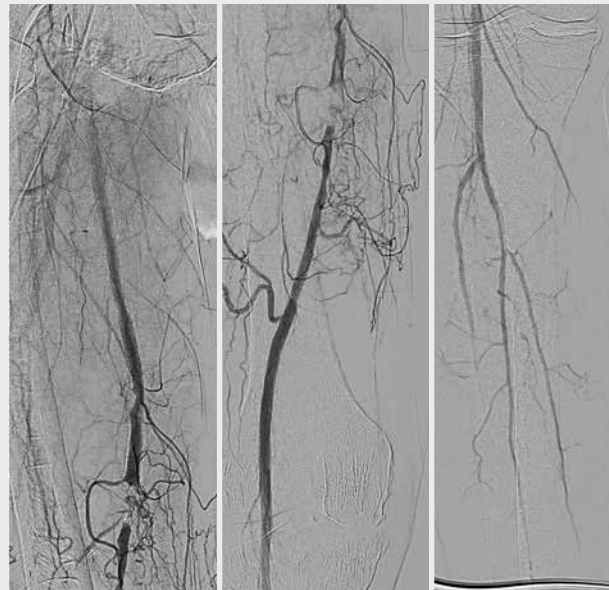
Operators: S. Bräunlich, J. Schuster

Clinical data: Severe claudication right calf, walking capacity 100 meters
PTA/stent left SFA 12/2015
Diabetes mellitus, type 2, insulin-dependent
Art. hypertension, former smoker

Angio: Angiography right SFA during PTA/stent left SFA:
short, moderately calcified SFA-CTO right
ABI right 0.61

Procedural steps

- 1. Left groin retrograde and cross-over approach**
 - IMA-diagnostic 5F catheter (CORDIS/CARDINAL HEALTH)
 - 0.035" angled soft Radiofocus guidewire, 190 cm (TERUMO)
 - 0.035" SupraCore guidewire, 190 cm (ABBOTT VASCULAR)
 - 6F 55 cm Flexor Check-Flo Introducer, Raabe Modification (COOK MEDICAL)
- 2. Guidewire passage and PTA of the occlusion right SFA**
 - 4.0/40 mm Pacific Plus balloon (MEDTRONIC)
 - 0.018" Connect 250 T guidewire, 300 cm (ABBOTT VASCULAR)
- 3. Stenting**
 - NitiDES drug-eluting stent (ALVIMEDICA)



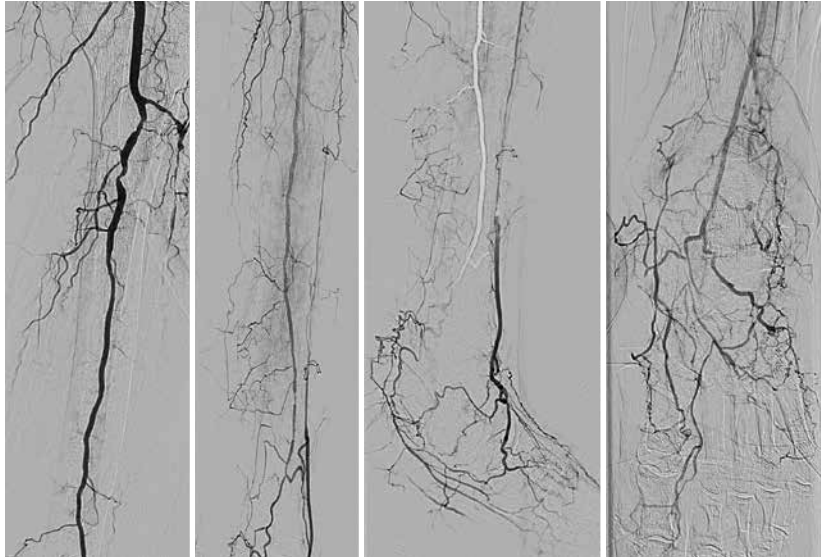
Case 32 – LEI 09: female, 75 years (R-K)

ATA recanalization and dexamethason-injection with a Bullfrog-Device

Operators: A. Schmidt, Y. Bausback

Clinical data: Critical limb ischemia left forefoot, ulceration dig I left
PTA of a tibioperoneal trunk stenosis left 12/2015, only minor healing tendency
Diabetes mellitus, type 2

Angiography: Total occlusion of the anterior tibial artery



Procedural steps

1. **Left antegrade access**
 - 6F 55 cm Flexor Check-Flo Introducer, Raabe Modification (COOK MEDICAL)
2. **Guidewire passage of the ATA-CTO**
 - 0.014" Command ES guidewire, 300 cm (ABBOTT VASCULAR)
 - 3.5/120 mm Armada 14 balloon (ABBOTT VASCULAR)
3. **Arterial wall-injection of dexamethason**
 - BullFrog Micro-Infusion-Device (MERCATOR MEDSYSTEMS)

Case 33 – LEI 10: male, 57 years

SFA-CTO right

Operators: A. Schmidt, Jia Xin

Clinical data: Severe claudication right calf, walking capacity 100 meters
CAD, PTCA 12/2015
Art. hypertension, former smoker, diabetes mellitus type 2

Duplex: AFS-occlusion right, approximately 15 cm in length
Minor calcifications
ABI right 0.67

Procedural steps

1. **Left groin retrograde and cross-over approach**
 - IMA-diagnostic 5F catheter (CORDIS/CARDINAL HEALTH)
 - 0.035" angled soft Radiofocus guidewire, 190 cm (TERUMO)
 - 0.035" SupraCore guidewire, 190 cm (ABBOTT VASCULAR)
 - 6F Balkin Up&Over Sheath, 40 cm (COOK MEDICAL)
2. **Guidewire passage of the SFA-CTO**
 - 0.018" CXC support catheter 135 cm (COOK MEDICAL)
 - 0.018" Connect guidewire, 300 cm (ABBOTT VASCULAR)
3. **Predilatation and DCB-treatment**
 - 5.0/120 mm Pacific Plus balloon (MEDTRONIC)
 - Orchid drug-coated balloon (ACOTEC)
4. **Stenting only on indication**
 - Epic Nitinol stent (BOSTON SCIENTIFIC)

Case 34 – MUN 04: female, 71 years (M-S)

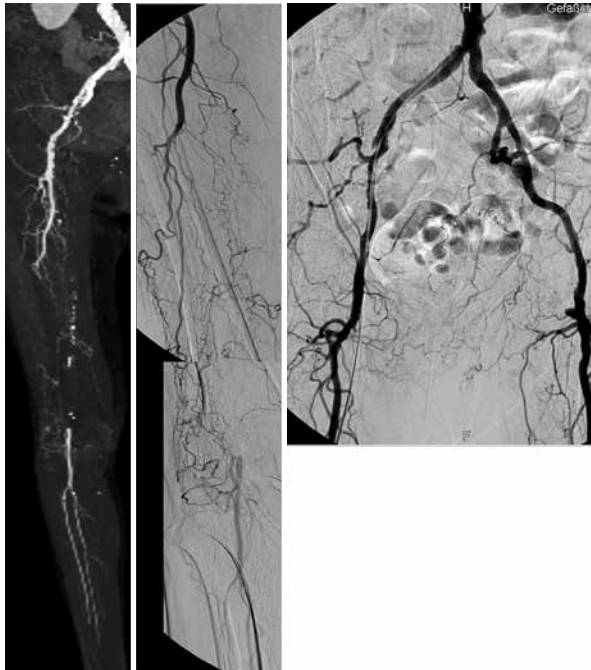
De novo long SFA occlusion

Operators: T. Bisdas, Ö. Sensebat, St. Stahlhoff

Clinical data: PAD Rutherford 4 right limb, ABI 0.4, pulses only in the right common femoral artery

Risk factors: Arterial hypertension, hyperlipidemia, past smoker, COPD/in Angio-CT Long occlusion of the right SFA with moderate calcification

- Procedural steps**
1. Puncture of the right CFA, 6F sheath (Destination, TERUMO), cross over approach
 2. Crossing the lesion with Quick Cross catheter (SPECTRANETICS), Advantage .035 wire (Terumo) or 0.018" (V18, BOSTON SCIENTIFIC) In case of subintimal recanalisation use of Outback recanalisation catheter (CORDIS/CARDINAL HEALTH) and 0.014" wire (Command, ABBOTT VASCULAR)
 3. Predilatation with 5 x 300 mm PTA
 4. Implantation of a 6 x 250 mm Viabahn stent-graft and use of additional Viabahn stent-grafts if necessary (GORE)
 5. Postdilatation with 5 x 250 mm PTA catheter
 6. Control angiography and closure of the puncture site with Angio-Seal closure device (ANGIOCLINIC)



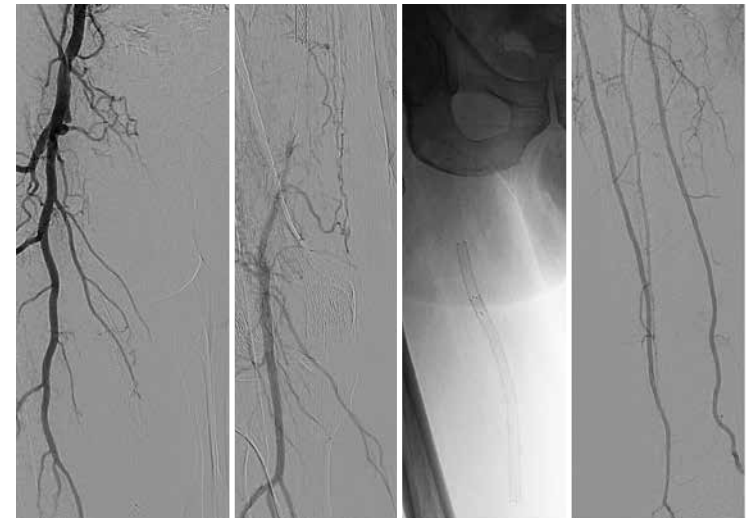
Case 35 – LEI 11: male, 71 years (D-K)

In-Stent reocclusion right SFA

Operators: A. Schmidt, M. Ulrich

Clinical data: Severe claudication right calf, walking capacity 150 meters PTA with DCB and spotstenting right SFA 12/2014 PTA and stenting left SFA 11/2014 CAD with PTCA 2003 Art. hypertension, current smoker

Angiography: SFA-reocclusion right, Nitinol stent within the occlusion



- Procedural steps**
1. **Left groin retrograde and cross-over approach**
 - 0.035" SupraCore guidewire 190 cm (ABBOTT VASCULAR)
 - 7F–40 cm Balkin Up&Over Sheath (COOK MEDICAL)
 2. **Guidewire passage**

GW-passage from antegrade:

 - 0.035" stiff angled Glidewire, 260 cm (TERUMO)
 - 4.0/120 mm Admiral balloon (MEDTRONIC)

in case of failure to pass from antegrade:

 - puncture of the occluded SFA-stent:
 - same wire and 0.035" TrailBlazer support catheter, 90 cm (MEDTRONIC)
 - snaring of the guidewire into the cross-over sheath and finalization guidewire passage of the occlusion from antegrade
 3. **PTA and stenting**
 - 6.0/80 mm Admiral balloon (MEDTRONIC)
 - 6.0/250 mm Viabahn (GORE)
 - 6.0/100 mm Tigris stent (GORE)

Case 36 – LEI 12: male, 60 years (F-F)

Total occlusion left SFA

Operators: S. Bräunlich, A. Schmidt

Clinical data: Critical limb ischemia left foot, minor ulcerations dig 1 and 3
Severe claudication left calf, walking capacity 60 meters
Rutherford class 5
PTA of a right SFA-stenosis 12/2016
CAD with PTCA 2014,
Art. hypertension, diabetes mellitus, current smoker

Angriography: During PTA right SFA:
Long SFA and P1-segment occlusion left, moderately calcified



Procedural steps

1. **Right groin retrograde and cross-over approach**
 - IMA-diagnostic 5F catheter (CORDIS/CARDINAL HEALTH)
 - 0.035" angled soft Radiofocus guidewire, 190 cm (TERUMO)
 - 0.035" SupraCore guidewire, 190 cm (ABBOTT VASCULAR)
 - 6F Balkin Up&Over Sheath, 40 cm (COOK MEDICAL)
2. **Guidewire passage**
 - 0.035" stiff, angled Glidewire, 260 cm (TERUMO)
 - 0.035" Seeker support catheter, 135 cm (BARD)
3. **Angioplasty**
 - VascuTrak 5.0/300 mm balloon (BARD)
 - Lutonix GEOALIGN marking system DCB 6.0/120 mm (BARD)
4. **Stenting on indication**
 - LifeStent (BARD)

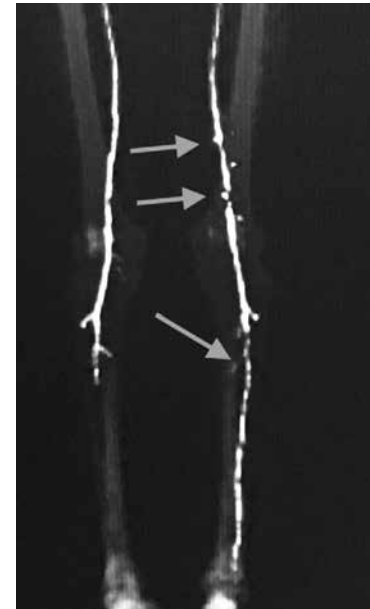
Case 37 – COL 01: male, 67 years

Popliteal occlusion left. Tibial disease yet to be defined

Operators: G. Ansel, M. Silver

Clinical data: PAD with Rutherford class 3 left calf claudication at 50 yards

Risk factors: DM II, CAD with stents, HIV, HTN, former smoker
CTA with mid popliteal occlusion and undefined tibial disease due to calcification
ABI right 1.0, left 0.53



Procedural steps

1. Right femoral access and cross over approach
Micropuncture technique (COOK MEDICAL)
2. 7F braided ANL sheath 45 cm (COOK MEDICAL)
3. .035" CXI support catheter (COOK MEDICAL), .035" hydrophilic wire (TERUMO)
If fails will utilize either Wingman CTO catheter (REFLOW MEDICAL) or Pioneer re-entry (VOLCANO)
4. Balloon angioplasty with Mustang PTA catheter (BSC) and Inpact DCB (MEDTRONIC)
If needs stent will use Supera (ABBOTT VASCULAR) reassess tibial for intervention at that time
5. Sheath removal with Perclose (ABBOTT VASCULAR)

Case 38 – COL 02: female, 83 years

Iliac and SFA disease

Operators: G. Ansel, Ch. Botti Jr, J. Phillips

Clinical data: CAD, DM II, HTN. Normal stress test 2014

Risk factors: ABI Rt .96, Lt .53. CTA with iliac and SFA disease

- Procedural steps**
1. Contralateral femoral access, micropuncture technique (COOK MEDICAL)
 2. Contralateral 7F braided ANL sheath (COOK MEDICAL)
 3. 0.035" hydrophilic wire (TERUMO). Balloon angioplasty SFA with Inpact DEB If stent SUPERA (ABBOTT VASCULAR). Balloon angioplasty Iliac with BMS from BSC
 4. Closure with Perclose (ABBOTT VASCULAR)



Case 39 – LEI 13: female, 57 years (B-B)

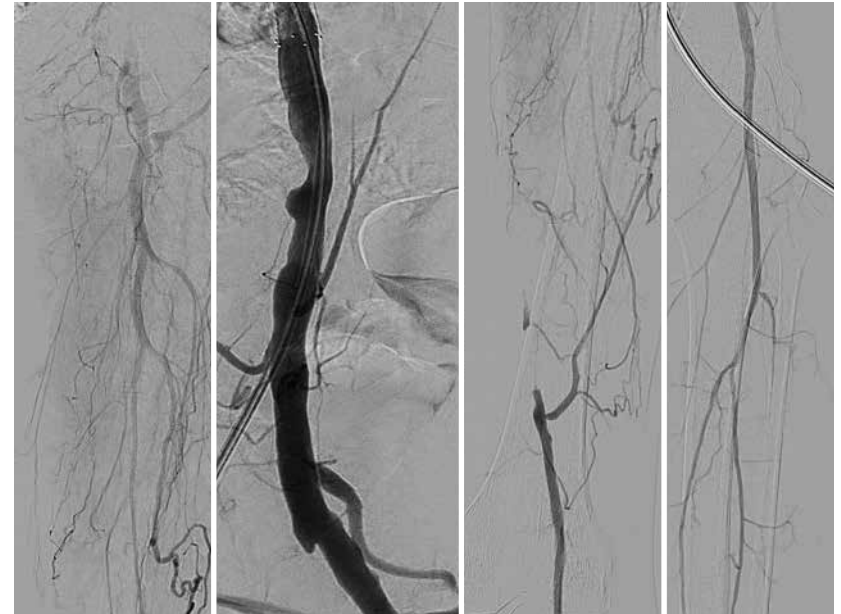
Total chronic occlusion left SFA

Operators: S. Bräunlich, M. Ulrich

Clinical data: Severe claudication left SFA, walking capacity 100 meters
PTA with stenting right SFA 1/2016
PTA with DCBs for restenosis right SFA 12/2016
PTA/stenting iliac arteries bilateral 2009
Art. hypertension, smoker

Angiography: During PTA right SFA: total occlusion left SFA

ABI left 0.67



Procedural steps

1. **Right groin retrograde and cross-over approach**
 - IMA-diagnostic 5F catheter (CORDIS/CARDINAL HEALTH)
 - 0.035" angled soft Radiofocus guidewire, 190 cm (TERUMO)
 - 0.035" SupraCore guidewire, 190 cm (ABBOTT VASCULAR)
 - 6F Balkin Up&Over Sheath, 40 cm (COOK MEDICAL)
2. **Passage of the occlusion left SFA**
 - 0.035" Radiofocus angled stiff guidewire, 260 cm (TERUMO)
 - 0.035" CXC support catheter, 135 cm (COOK MEDICAL)
 - Exchange to 0.018" SteelCore guidewire (ABBOTT VASCULAR)
3. **PTA and stenting on indication**
 - Luminor DCB 5.0/120 mm (iVASCULAR)
 - VascuFlex Multi-LOC (B.BRAUN)

Case 40 – COL 03: male, 75 years

SFA instent restenosis

Operators: G. Ansel, M. Jolly

Clinical data: HTN, hyperlipidemia, PAD. Previous aortic, bilateral iliac and SFA intervention now with recurrent right leg symptoms and angiographic restenosis of Rt SFA stent that was originally placed 3/2016. Recurrent Rutherford class 2 right calf symptoms

Risk factors: Duplex peak systolic velocity in stent 352 cm/sec
Resting ABI on left 0.97 decreased to 0.56 on treadmill

- Procedural steps**
1. Vascular access left groin with micropuncture (COOK MEDICAL)
 2. Contralateral access with 7F braided ANL sheath (COOK MEDICAL)
 3. Phoenix atherectomy (Volcano/PHILLIPS) of instent restenosis, DEB INPACT balloon (MEDTRONIC)
 4. Distal protection with Wirion (GARDIA)



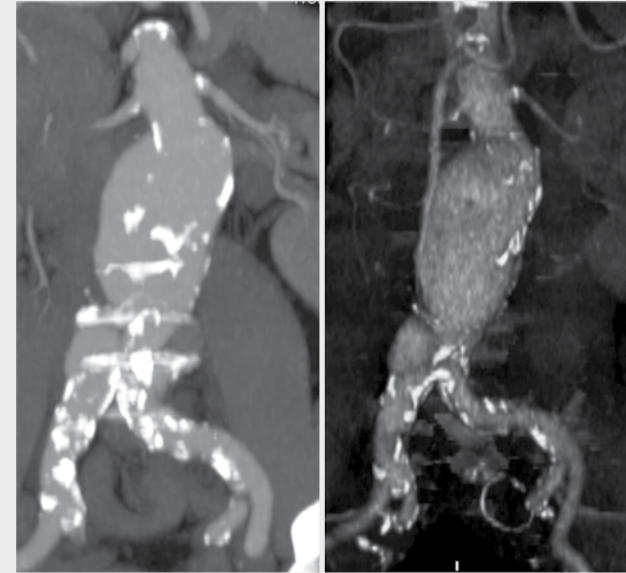
Case 41 – MUN 05: male, 64 years (H-P)

EVAR with Treo abdominal stent graft

Operators: T. Bisdas, M. Austermann, G.F. Torsello

Clinical data: Asymptomatic AAA (increase of diameter > 1 cm over the last year)

Risk factors: Arterial hypertension, smoking, hyperlipidemia, previous stroke, previous laparotomy for rectal Ca, CKD stage III, COPD



- Procedural steps**
1. Puncture of right and left CFA, percutaneous approach (Prostar XL, ABBOTT VASCULAR), control angiography
 2. Implantation of the main body of Treo abdominal stent graft (BOLTON MEDICAL) (bifurcated endograft)
 3. In situ sizing
 4. Implantation of the contralateral limb
 5. Implantation of the ipsilateral extension through the detachable sheath
 6. Closure of the puncture sites

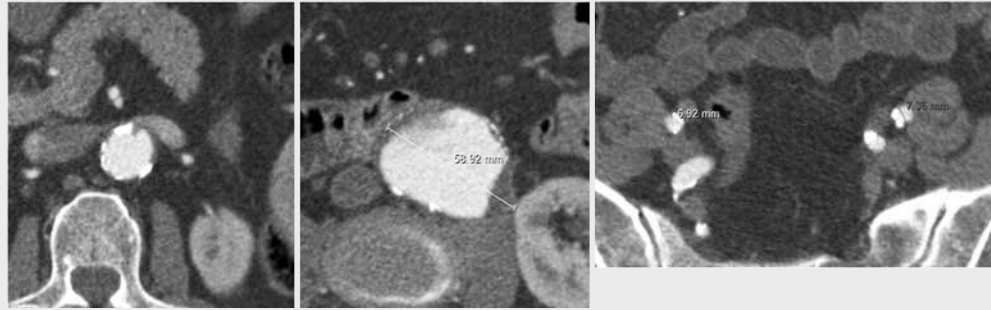
Case 42 – LEI 14: female, 67 years

Progressive abdominal aneurysm, 61 mm

Operators: A. Schmidt, D. Branzan

Clinical data: Progressive aneurysm of the infrarenal aortic aneurysm, now max. diameter 61 mm
Irregular neck distal of the renal arteries (calcification/thrombus)
Small caliber external iliac arteries bilateral
Minor stroke 2003, CEA carotid artery bilateral 2006 and 2007
Lung cancer with lobectomy 2013

CT-scan: Progressiv diameter from 50 mm (3/2016) to 61 mm (1/2017)



- Procedural steps**
1. **Bifemoral percutaneous approach in local anaesthesia**
 - Preclosing with 2 Proglide closure devices both sides (ABBOTT VASCULAR)
 2. **Guidewire positioning**
 - Lunderquist GW 180 cm (COOK MEDICAL)
 3. **Implantation of a bifurcational stentgraft**
 - Ovation Stentgraft (ENDOLOGIX)
 - Cannulation of the contralateral limb:
 - 5F Amplatz Left diagnostic catheter (CORDIS/CARDINAL HEALTH)
 - 0.035" soft angled short Radiofocus glidewire (TERUMO)
 4. **PTA**
 - Proximal seal: Reliant balloon (MEDTRONIC)
 - Graft-bifurcation: 12/40 mm Admiral balloon (MEDTRONIC)

Case 43 – LIL 01: male, 63 years, (L-D)

EVAR + left iliac branched device

Operators: S. Haulon

Clinical data: Incidental finding of AAA during work-up for intermittent claudication
CTA: AAA 51 mm , aneurysm proximal right CIA, dilatation distal left CIA
Plan: EVAR + left iliac branched device + embolisation right IIA

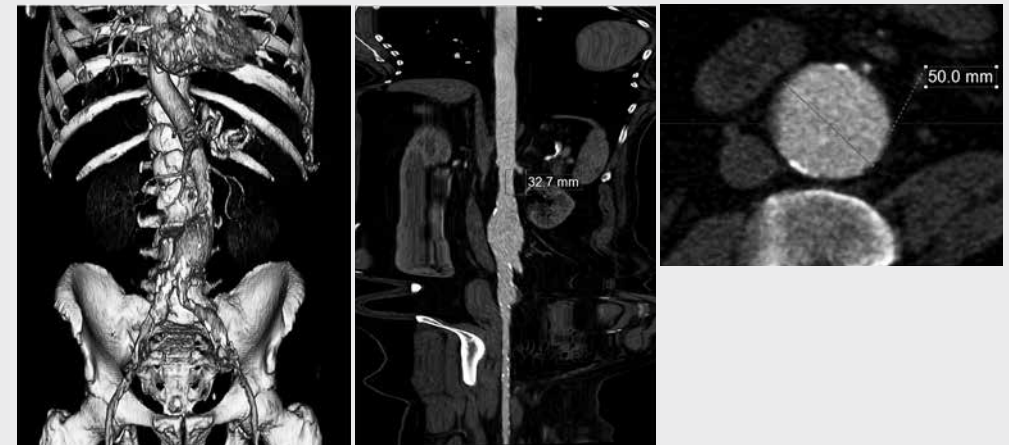
Risk factors: Former smoker, hypertension

History: Aortic valve stenosis, CVA, bilateral inguinal hernia repair, lumbar herniated disc repair

Present state: Duplex supra-aortic vessels: normal
Cardiac ultrasound: EF 74%, AS (3.13 cm²), Ao asc 45 mm

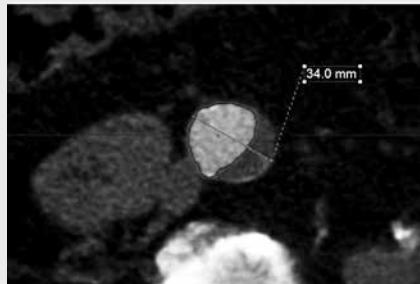
- Procedural steps**
1. L: 10F sheath, Lunderquist, dilators (up to 20F)
50 U/kg Heparin
 2. R: 5F55 sheath, TERUMO, SIM, AMI embolized (Amplatzer 6 mm)
 3. R: 10F Right IIA embolized (Coils 10 mm)
 4. R: 10F sheath, wire exchange: starter, TERUMO, Rosen-GW stiff wire (COOK MEDICAL), 12F sheath , 45cm; tip positioned above aortic bifurcation
 5. L: ZBIS advanced into distal aorta, unsheath until preloaded catheter of ZBIS appears; exchange wire of preloaded catheter for 260 cm TERUMO
 6. R: Snare through-and-through (tat)-wire (Terumo, 0.035") – advance dilator of 12F sheath
 7. R: 12F dilator connects to tip of preloaded catheter - secure both ends with clamps
 8. Position C-arm and open branch of ZBIS (COOK MEDICAL)
 9. Advance 12F dilator into ZBIS (pull & push, 'nobody holds the wire')
 10. Puncture valve of 12F TERUMO/catheter to catheterize IIA, angio
 11. Wire exchange/Rosen

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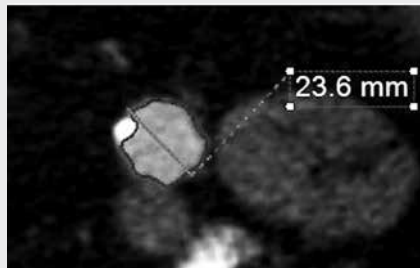


Case 43 – LIL 01 continued

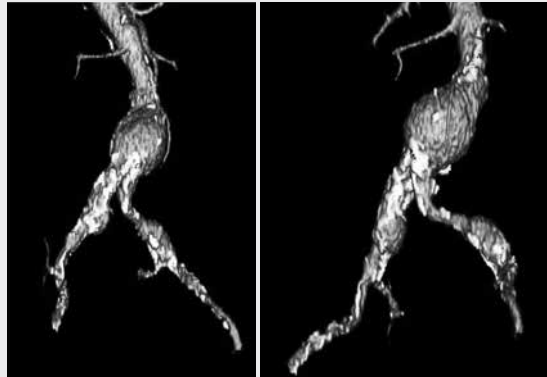
- Procedural steps (cont.)**
12. Over Rosen, advance 55 cm 7F sheath into 12F to IIA, tat-wire under tension
 13. Advance bridging stentgraft in 7F sheath,
 14. Remove tat-wire
 15. Pull down ZBIS, depending on angle of IIA
 16. Pull back 7F sheath and inflate bridging stent
 17. Advance 7F sheath again into stentgraft – dilate distal seal if required – Angio
 18. Finish deployment of ZBIS – release trigger wires
 19. Secure branch/stentgraft with balloon while removing nose cone
 20. Continue with EVAR
 21. R: release proximal stent
 22. L: iliac angiogram
 23. L: contralateral limb insertion holding the main body, deployment
 24. R: finish bifurcated endograft deployment + distal attachment release
 27. R: ipsilateral limb insertion & deployment + IIE stenting (Nitinol stent LUMINEX 10*60 mm)
 28. R+L: CODA balloon (COOK MEDICAL)
 29. L: Long angio catheter/Angiogram +/- non-contrast CBCT
 30. R+L: sheaths retrieval + close groins



Right iliac aneurysm

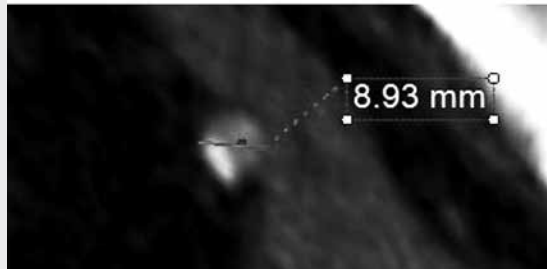


Left iliac aneurysm



Working position left iliac
Rao 30, CAU 10

Working position right iliac
Lao 20, CAU 20



Target vessel: Left internal iliac artery

Case 44 – MUN 06: male, 88 years (E-K-H)

3-fenestrated endovascular repair of a type Ia Endoleak after EVAR 2008 with preloaded delivery system

- Operators:** M. Austermann, T. Bisdas, G.F. Torsello
- Clinical data:** Rapidly growing abdominal aneurysm up to 9 cm in diameter after EVAR 2008
- Risk factors:** PAD, renal impairment, obesity, art. hypertension



Procedural steps

1. Percutaneous approach both groins (Prostar XL, ABBOTT VASCULAR) 14F sheath (COOK MEDICAL) both groins.
2. First angiography through the right groin and use of the fusion technique. Changing of the left 14F sheath for a 20F sheath in order to test the access
3. Placement of the 3-fenestrated Zenith-tube-endograft with a double wide scallop (COOK MEDICAL) via the left groin
4. Cannulation of the renal arteries through the delivery-system by means of the preloaded wire
Cannulation of the SMA through the fenestration from the right groin
5. Advancement of 7 F sheath into the SMA
Removal of the preloaded wire and advancement of the 6 F sheath into the RA's
6. Complete release of the endograft and stenting of the fenestrations with covered stents (Advanta V12, MAQUET) and flaring
7. Closure of the accesses. (Prostar XL, ABBOTT VASCULAR)

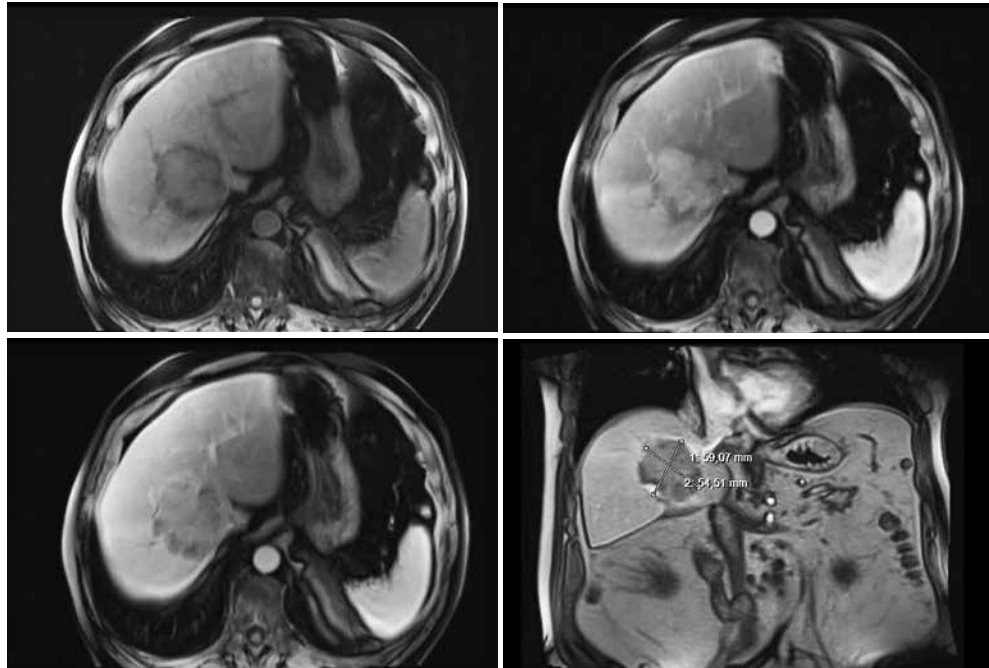
Case 45 – JEN 01: male, 80 years (M-H)

TACE in HCC

Operators: R. Aschenbach, F. Bürckenmeyer

Clinical data: 80 years old male with weight loss
CT and MRI proofed HCC in central right liver lobe

History: Child B cirrhosis



- Procedural steps**
1. **Canulation celiac trunk with guiding catheter**
 2. **Large FOV – Dyna-CT for feeder evaluation**
 3. **Chemoembolisation with doxorubicin**
 - Embozene Tandem 40µm

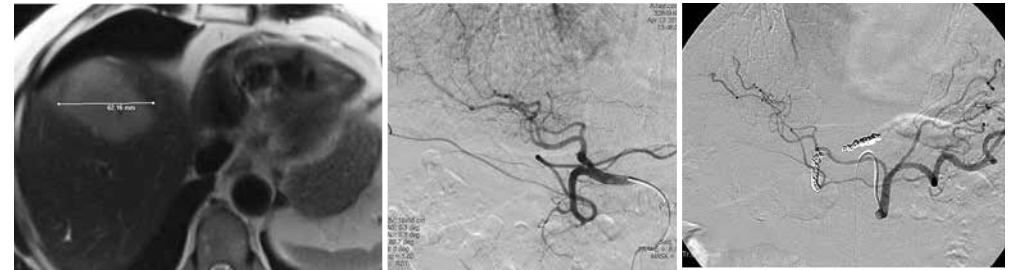
Case 46 – LEI 15: male, 82 years (N-C)

Chemosaturation of liver metastases

Operators: J. Fuchs, M. Moche

Clinical data: Uveal melanoma 07/2013, enucleation of the right eye 08/2013, unresectable liver metastases 03/2016, chemosaturation 04/2016, 06/2016, 11/2016, 12/2016

Risk factors: Type 2 diabetes mellitus, hypertension



- Procedural steps**
1. Evaluation procedure (some days) prior to treatment:
 - Anatomical mapping
 - Embolization (to avoid reflux or infusion into GI or visceral arteries)
 2. US-guided venous and arterial access to avoid multiple punctures
Establishment of 10F jugular venous return sheath, 18F femoral venous sheath for the venous isolation catheter and 4F femoral arterial sheath
 3. Full Heparinization (about 30.000 IE) with ACT control (> 450 sec!)
Arterial catheter placement for Infusion into hepatic artery
Connection and start of extracorporeal circuit
 4. Isolation of the hepatic veins by inflation of the double balloon catheter
Check for proper isolation with DSA (no leakage!) and fixation the catheter
 5. Closing the Bypass-line to bring the filters of the extracorporeal circuit online
CAVE: Watch out for blood pressure drop
 6. Start of arterial infusion of Melphalan (3 mg/kg) with injector (25 ml/min)
Check intermittently for arterial spasms (if any consider nitroglycerin)
After Melphalan is fully injected, 30 min wash-out period is applied
 7. Deflation of the balloons and disconnection of the filters
Removal of arterial and venous catheters
Removal of the sheaths after coagulation status has been normalized

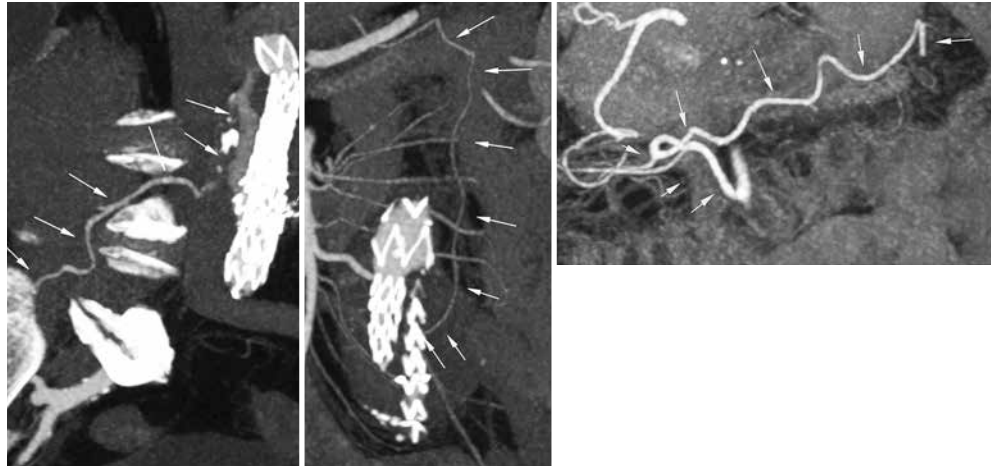
Case 47 – MUN 07: male, 69 years (N-K)

Embolization of persistent type II Endoleak via superior-inferior mesenteric artery and hypogastric artery with alcohol-copolymer

Operators: A. Schwindt, Ö. Sensebat

Clinical data: EVAR with INCRAFT-Endograft 12/2015 – in follow up aneurysm expansion from initially 53 mm to up to date 58 mm

Important items: Mitral and aortic valve insufficiency grade 1
 CVRF: arterial hypertension
 Angio-CT 12/2016: persisting flow in the aneurysm sac via IMA and lumbar L4



- Procedural steps**
1. Left transbrachial access, aortic angiogram in oblique projection, cannulation of superior mesenteric artery
 2. Insertion of 6F 90 cm shuttle sheath (COOK MEDICAL) into SMA, cannulation of middle colic artery with 4F 120 cm glidecath (TERUMO) and choice PT wire (BOSTON SCIENTIFIC)
 3. Insertion of Echelon microcatheter (MEDTRONIC) into endoleak, preparation of catheter with DMSO, embolization of endoleak with Onyx L 34 (MEDTRONIC)
 4. Retrieval of microcatheter, selective angiogram of right hypogastric artery; if necessary selective embolization of lumbar arteries L4 with Onyx L34 in case of remaining endoleak

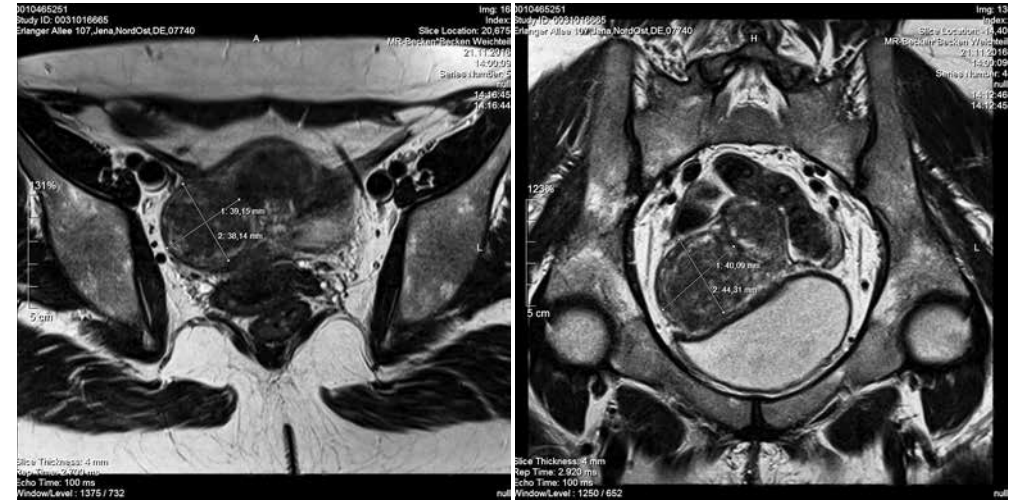
Case 48 – JEN 02: female, 44 years (G-D)

Pre-operative uterine fibroid embolisation

Operators: R. Aschenbach, F. Bürckenmeyer

Clinical data: Abdominal pain and abnormal intermenstrual bleeding

Imaging: MRI proofed a 4 cm right-sided uterine fibroid



- Procedural steps**
1. **Cannulation of both uterine arteries**
 - RIM-catheter
 - 2.7 F Progeat Microcatheter (TERUMO)
 2. **Embolisation**
 - Gelatine Sponge/Gelbeads 500-700 µm (VASCULAR SOLUTIONS)

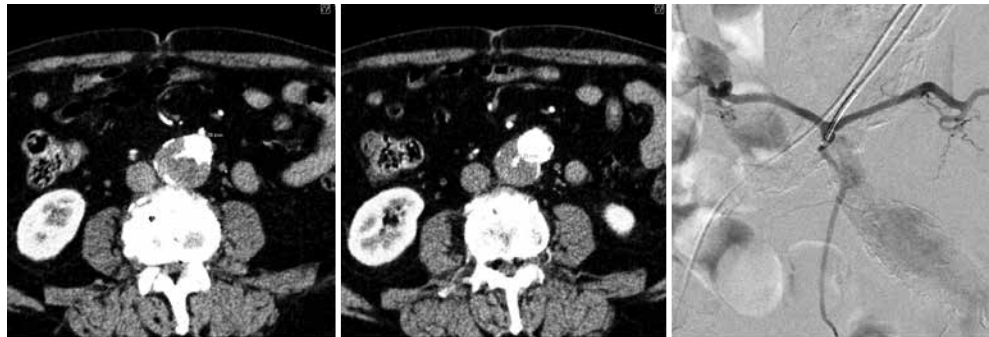
Case 49 – LEI 16: male, 68 years

Coiling of lumbar arteries and inferior mesenteric artery before EVAR

Operators: M. Moche, J. Fuchs

Clinical data: Incidental finding of an eccentric infrarenal AAA with 5.1 cm diameter
4.5 mm IMA
3 mm lumbar artery 3 (already embolised)
4 mm lumbar artery 5 with common trunc
Art. hypertension, hyperlipidemia, former smoker

CT-scan: AAA with max. 51 mm diameter, eccentric, potentially old contain rupture



Inferior mesenteric artery

Lumbar arteries 3

Lumbar arteries 5

Procedural steps

1. **Right groin access**
 - 4F sheath CFA
 - 4F sidewinder cath
2. **Embolisation of IMA**
 - 4F sidewinder cath.
 - 5 mm Amplatzer Vascular Plug4 (AGA MEDICAL CORPORATION)
3. **Embolisation of lumbar arteries 5**
 - VortX Diamond Coils (BOSTON SCIENTIFIC)
 - POD Anchor Coil (PENUMBRA)

Case 50 – COL 04: male, 87 years

Tibial occlusion

Operators: G. Ansel, M. Silver

Clinical data: 87 year old male with nonhealing ulceration of the bilateral feet
The patient was treated successfully 3 weeks ago for the right foot with opening of the infrainguinal vasculature and now presents for the the left leg Rutherford class VI due to location and depth

Current state: CAD, cardiomyopathy with ejection fraction of 17%, DM II, HTN, hyperlipidemia

Procedural steps

1. **Antegrade femoral access with micropuncture (COOK MEDICAL)**
 - 6 F short sheath (Terumo)
2. **If needed balloon angioplasty and drug coated balloon of proximal popliteal artery (BARD)**
3. **CTO traversal**
 - 0.018" gold tippid glide wire (TERUMO)
 - 0.018" CXI catheter (COOK MEDICAL)
4. **Angioplasty of anterior tibial artery (MEDTRONIC)**
5. **If tibioperoneal trunk is attempted with use CTO catheter (REFLOW MEDICAL)**
6. **Sheath removal**
 - Mynx system (CARDINAL/CORDIS)



Case 51 – LEI 17: male, 78 years (M-G)

Restenosis right SFA after DCB-treatment

Operators: S. Bräunlich, M. Ulrich

Clinical data: CLI with ulceration D5 and restpain right foot
PTA with DCBs 3/2016 right SFA
PTA left SFA 2/2015
DAC, PTCA 2012
Diabetes mellitus, type 2

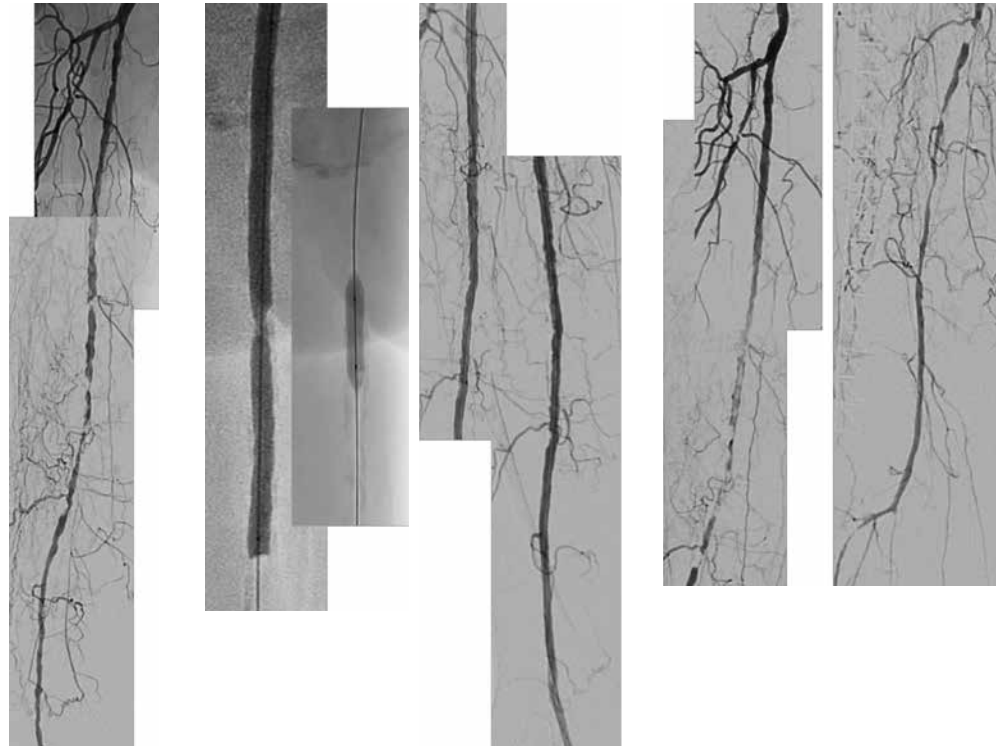
Procedural steps

1. **Left femoral retrograde and cross-over approach**
 - 6F 55 cm Check-Flo Performer, Raab Modification (COOK MEDICAL)
2. **Guidewire passage of the SFA-restenosis and filter positioning**
 - PT2 0.014" guidewire, 300 cm (BOSTON SCIENTIFIC)
 - Wirion protection system (GARDIA MEDICAL)
3. **Atherectomy and PTA with DCBs**
 - Jetstream XC (BOSTON SCIENTIFIC)
 - Legflow drug-coated balloon (CARDIONOVUM)

Angiography and PTA right SFA 3/2016

SFA-stenosis 3-2016 with high-pressure balloon and DCBs

Restenosis 1/2017



Case 52 – JEN 03: male, 59 years (J-V)

The role of photoablation and DCB for in-stent restenosis

Operators: U. Teichgräber, R. Aschenbach

Clinical data: 59y old male with PAD after Supera stent implantation in 2015 in the distal femoral-popliteal artery. Presenting now with a chronic stent occlusion.

Imaging: DSA and Duplex are demonstrating a chronic stent occlusion

Procedural steps

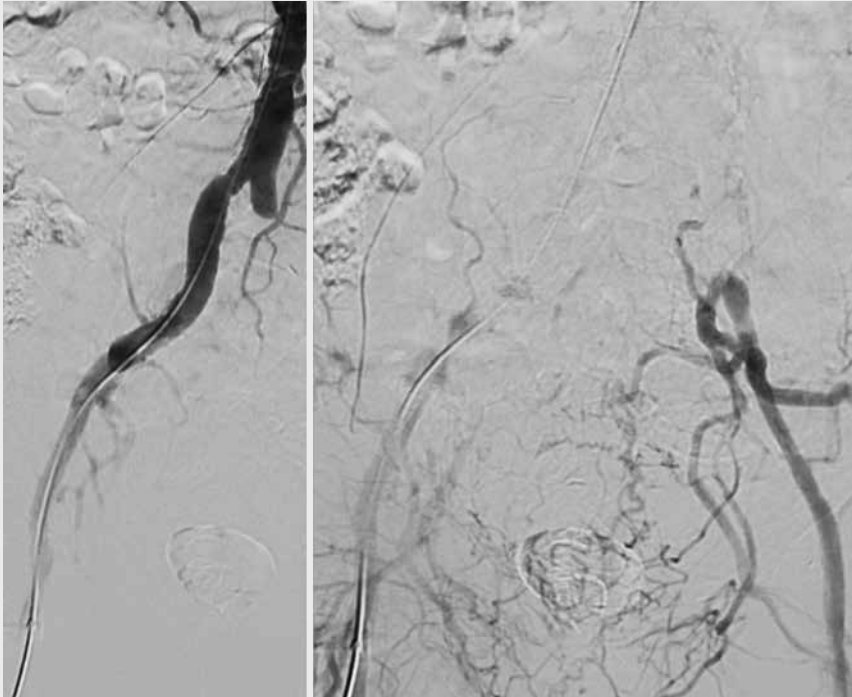
1. **Guidewire crossing of the occluded in-stent segment**
 - 0.035"stiff hydrophilic guidewire (TERUMO)
 - Quick-Cross support catheter (SPECTRANETICS)
2. **Laser atherectomy**
 - 2.5 mm Turbo Elite laser catheter (SPECTRANETICS)
3. **Balloon PTA**
 - Two 6/80 mm Stellarex DCB catheter (SPECTRANETICS)

Case 53 – LEI 18: male, 65 years (V-D)

Total occlusion of the common iliac artery

Operators: S. Bräunlich, M. Ulrich

Clinical data: Severe claudication left leg, Rutherford class 3
Diabetes mellitus, type 2
Art. Hypertension, former smoker



Procedural steps

1. **Brachial approach**
 - 6Fr. 90cm Check-Flo Performer (COOK MEDICAL)
2. **Left femoral approach**
 - 7Fr 25cm Sheath (TERUMO)
3. **Guidewire passage**
 - Connect Flex 0.018" 300cm Guidewire /ABBOTT VASCULAR)
 - Pacific 4.0/40mm-Ballon (MEDTRONIC)
4. **Stenting**
 - LifeStream covered stent (BARD)

Case 54 – LEI 19: female, 71 years (E-D)

SFA-occlusion right

Operators: S. Bräunlich, M. Ulrich

Clinical data: Severe claudication right leg, walking capacity 100 meters
PTA/stenting left SFA 12/2016
PTA iliac left 12/2015
Art. hypertension, current smoker

Angiography: During PTA left SFA 12/2016: Long SFA-occlusion right, moderately calcified



Procedural steps

1. **Left groin retrograde and cross-over approach**
 - IMA-diagnostic 5F catheter (CORDIS/CARDINAL HEALTH)
 - 0.035" angled soft Radiofocus guidewire, 190 cm (TERUMO)
 - 0.035" SupraCore guidewire, 190 cm (ABBOTT VASCULAR)
 - 6F Balkin Up&Over Sheath, 40 cm (COOK MEDICAL)
2. **Passage of the occlusion right SFA**
 - 0.035" Radiofocus angled stiff guidewire, 260 cm (TERUMO)
 - 0.035" TrailBlazer support catheter, 135 cm (MEDTRONIC)
 - Exchange to 0.018" SteelCore guidewire (ABBOTT VASCULAR)
3. **PTA and stenting on indication**
 - Luminor DCB 5.0/120 mm (iVASCULAR)
 - VascuFlex Multi-LOC (B.BRAUN)

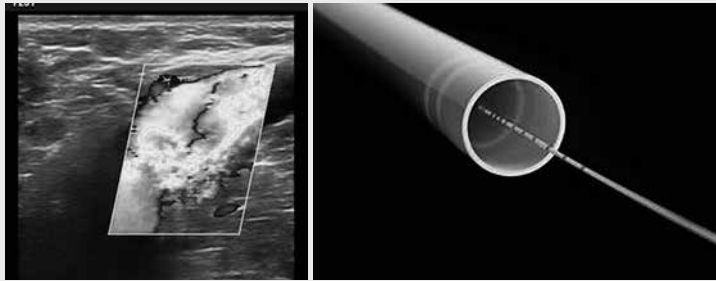
Case 55 – LEI 20: male, 26 years old, (N-S)

Treatment of the left GSV with ELVeS Radial slim™

Operators: M. Ulrich, C. Harzendorf

Clinical data: Chronic venous disease C2EpAs2Pr (CEAP)
Symptoms: feeling of heaviness and dysesthesia in the left leg

Duplex: Complete insufficiency of the left great saphenous vein Hach 2
Side branch varicose veins below the left knee
Competent deep veins
No Thrombosis



Procedural steps

1. Puncture of the distal GSV with 16G Introducer
Puncture of sidebranches with 18G Introducer
Introducing of Laser Fiber (ELVeS Radial slim™ BIOLITEC)
Ultrasound control of the tip position at GSV junction
2. Application of the tumescent anesthesia around the left great saphenous vein
3. Treatment of the left GSV with 10 W/70Joul/cm
4. Foam sklerotherapy of sidebranches with Aethoxysklerol
5. Applying compression bandage left leg
6. Injection of a LMWH for thrombosis prophylaxis

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INTERVENTIONAL
COURSE
2017

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Thursday,
January 26, 2017

Case 56 – LEI 21: male, 72 years (P-F)

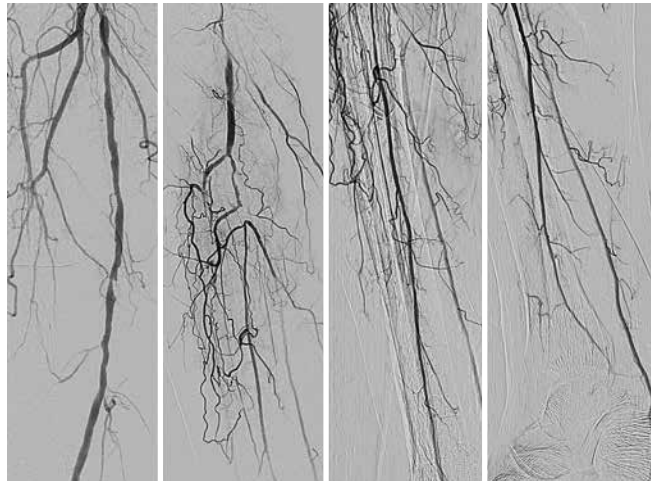
Multilevel disease with CLI right

Operators: A. Schmidt, Y. Bausback

Clinical data: Critical limb ischemia right leg, restpain, Rutherford class 4
PTA SFA and popliteal artery right and failed antegrade recanalization of a tibioperoneal trunk occlusion right elsewhere 12/2015
Persistent atrial fibrillation

Angiography: high-grade stenosis SFA and popliteal artery right, occlusion of the tibioperoneal trunk

ABI 0,21



Procedural steps

1. **Left groin retrograde and cross-over approach**
 - 0.035" SupraCore guidewire 190 cm (ABBOTT VASCULAR)
 - 6F-40 cm Balkin Up&Over Sheath (COOK MEDICAL)
2. **Guidewire-passage of the SFA/popliteal stenoses and PTA**
 - predilatation with 0.014" NanoCross balloon (MEDTRONIC)

After failed antegrade GW-passage:
3. **Retrograde passage via the peroneal artery**
 - 21 Gauge 7 cm needle (COOK MEDICAL)
 - 0.018" V-18 Controll-GW 300 cm (BOSTON SCIENTIFIC)
 - 0.018" QuickCross support catheter 90 cm (SPECTRANETICS)
4. **PTA with a drug-coated balloon**
 - Chocolate Touch 6.0/120 mm (TriREME MEDICAL)

Case 57 – ABT 01: male, 81 years (B-L)

Multilevel stenotic disease and Long PT and plantars/arch occlusion

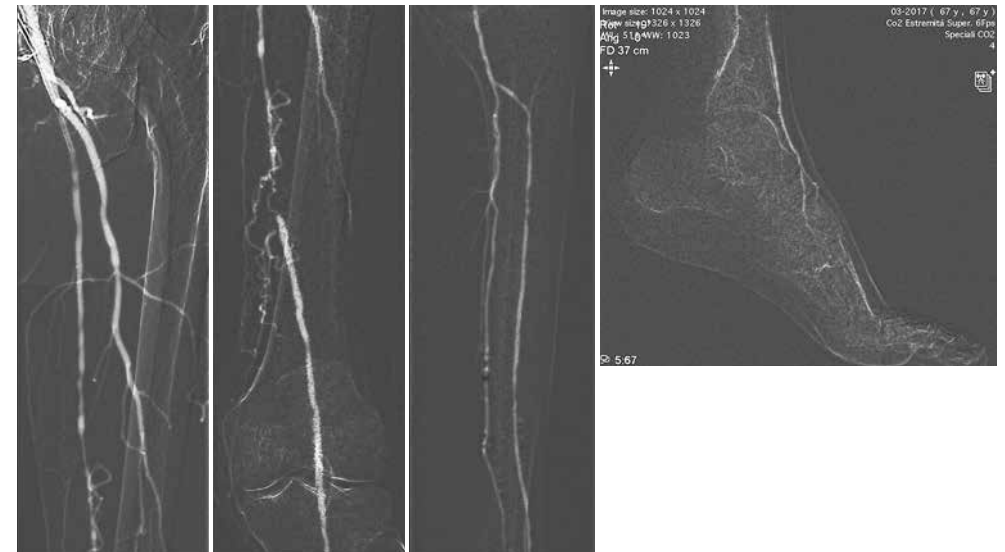
Operators: M. Manzi, L.M. Palena, C. Brigato

Clinical data: Rutherford 5, TcPO2 = 17 mmHg
TUC 3c 1° toe and heel

Angiography: US guided left antegrade CFA access 6F, CO2 angiography

Procedural steps

1. **US guided left antegrade CFA access 6F, CO2 angiography**
2. **4F BER, V18 CW intraluminal, subintimal when failure Command 0.014" (ABBOTT VASCULAR) re-enter Retrograde distal when failure**
3. **SFA and POP treatment with POBA or DEB (discussion)**
4. **US guided closure device deployment**



Case 58 – BK 01: male, 66 years (K-K)

Excimer laser assisted drug coated balloon recanalisation of popliteal ISR**Operators:** T. Zeller**Clinical data:** Calf claudication left leg after 100m since 3 months (PAOD Fontaine IIb/Rutherford 3)
Stent recanalisation left popliteal artery 2012
DCB angioplasty and stent-in-stent angioplasty of left popliteal ISR 01/2016**Present state:** CVRF: arterial hypertension, ex nicotine, hypercholesterinemia
ABI at rest: right leg: 1.1; left leg: 0.3
Duplex: instent reocclusion of left popliteal artery**Procedural steps**

1. **Antegrade access, 6F, left CFA**
2. **Crossing attempt of the popliteal artery occlusion**
 - 0.014" Advantage 14 GW (TERUMO)
3. **Laser debulking of the occlusion**
 - Turbo elite, 2.3 mm (SPECTRANETICS)
4. **Postdilatation**
 - 5/100 mm Stellarex DCB (SPECTRANETICS)

Case 59 – LEI 22: male, 71 years

Diffuse subtotal stenosis distal SFA / popliteal artery**Operators:** S. Bräunlich, M. Ulrich**Clinical data:** Restpain and Severe claudication left leg, Rutherford class 4
CAD, PTCA 2012, Chronic heart failure, EF 35%
Diabetes mellitus, type 2
Art. hypertension, former smoker**Duplex:** Left distal SFA and popliteal artery with long subtotal stenosis,
Moderately calcified, diffuse BTK-stenoses
ABI left 0.32**Procedural steps**

1. **Right groin retrograde and cross-over approach**
 - 6F 55 cm Check-Flo Performer, Raabe Modification (COOK MEDICAL)
2. **Guidewire passage**
 - PT2 0.014" 300cm guidewire (BOSTON SCIENTIFIC)
 - QuickCross support catheter (SPECTRANETICS)
3. **PTA**
 - AngioSculpt scoring balloon 5.0/100 mm (SPECTRANETICS)
 - Exchange to a 0.035" SupraCore guidewire (ABBOTT VASCULAR)
 - Stellarex DCB (SPECTRANETICS)

Case 60 – BK 02: female, 75 years (E-I)

Stent recanalisation of right SFA with implantation of a 3-dimensional helical stent

Operators: Dr. Rastan, Dr. Noory

Clinical data: PAOD Rutherford 3 / Fontaine IIb right leg (walking distance 30 m)
Mild aneurysm ascending aorta (45 mm)

Present state: CVRF: arterial hypertension
ABI at rest: right leg: 0.5; left leg: 0.7
Duplex: occlusion of distal SFA with reperfusion proximal popliteal artery

- Procedural steps**
1. **Right antegrade access**
 - 6F Avanti sheath (CORDIS)
 2. **Intraluminal crossing attempt distal SFA**
 - 0.035" TERUMO guidewire
 3. **Predilatation**
 - 4 mm Powerflex balloon (CORDIS)
 4. **Implantation of a BioMimics stent (VERYAN)**
 5. **Postdilatation**
 - 6/20 mm Powerflex balloon (CORDIS)
 6. **Sheath removal with Femoseal (TERUMO)**

Case 61 – MUN 08: male, 77 years (K-H-G)

OCT-guided atherectomy for popliteal artery CTO with Pantheris150

Operators: A. Schwindt, N. Abu-Bakr

Clinical data: PAOD Rutherford III right leg, painfree walking distance 150 m
ABI right: 0,6; left: 1,3

Present state: CVRF: hyperlipidemia, hypertension
Carotid TEA right 2010, left 2016
bilateral DVT, warfarin therapy
CCD and Angio-CT: occlusion of right popliteal artery

- Procedural steps**
1. **Right antegrade access**
 - After angiogram insertion of 7F 45 cm Destination sheath (TERUMO)
 2. **Recanalization of popliteal artery**
 - Ocelot 200 OCT guided recanalization catheter (AVINGER)
 3. **Filter placement**
 - 6 mm Spiderfilter (MEDTRONIC) in PIII segment
 4. **OCT-guided atherectomy of lesion**
 - 7F Pantheris calcium cutter with aim of residual stenosis of less than 30%
 5. **Post PTA**
 - Passeo Lux drug eluting balloon (BIOTRONIK)
 6. **Filter removal**
 7. **Closure of puncture site**
 - 8F Angioseal (STJUDE)



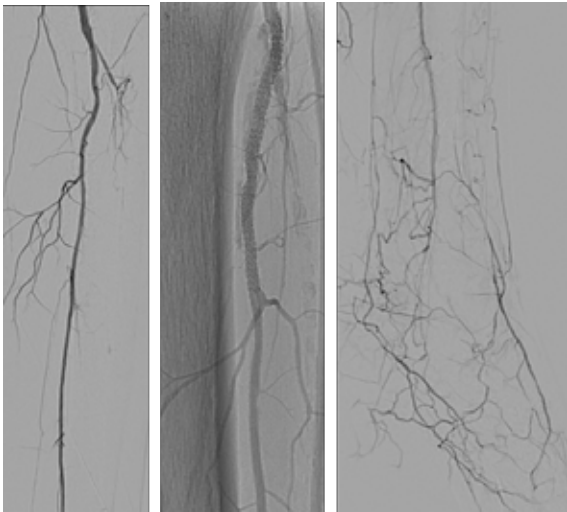
Case 61b – LEI 22b: male, 72 years (W-J)

Total ATA-occlusion, CLI left forefoot

Operators: A. Schmidt and S. Bräunlich

Clinical data: Critical limb ischemia left, gangrene Dig 2-4, CAD, PTCA 2012, chronic heart failure, NYHA II-III
Art. Hypertension, diabetes mellitus type 2
Previous PTA / stenting BTK for CLI 2010
Failed recanalization-attempt 1/2017

Angiography: from previous unsuccessful recanalization attempt



Procedural steps

1. **Left antegrade access:**
 - 6Fr-55cm Check-Flo Sheath, Raabe Modification (COOK MEDICAL)
2. **Retrograde access via dorsalis pedis artery**
 - 2.9 Pedal Introducer Access Set (COOK MEDICAL)
3. **Passage of the occlusion (retrograde)**
 - CXI support-catheter, 0.018", 90 cm (COOK MEDICAL)
 - Hydro-ST 0.014" Guidewire, 300cm (COOK MEDICAL)
 - Approach CTO 25gramm Guidewire, 300cm (COOK MEDICAL)
4. **PTA (BTK-bifurcation in kissing technique)**
 - retrograde: Advance Micro Balloon 3.0/120mm, 90cm (COOK MEDICAL)
 - antegrade: Advance LP 3.0/40mm Balloon (COOK MEDICAL)

Case 62 – LEI 23: female, 70 years (C-L)

Total occlusion of the common iliac artery left

Operators: S. Bräunlich, A. Schmidt

Clinical data: Severe claudication left, walking capacity 50-100 meters
Art. hypertension, nicotine-abuse
CAD, PTCA 11/2015

Angiography elsewhere: Common iliac artery occlusion left
moderately calcified

Procedural steps

1. Left femoral access

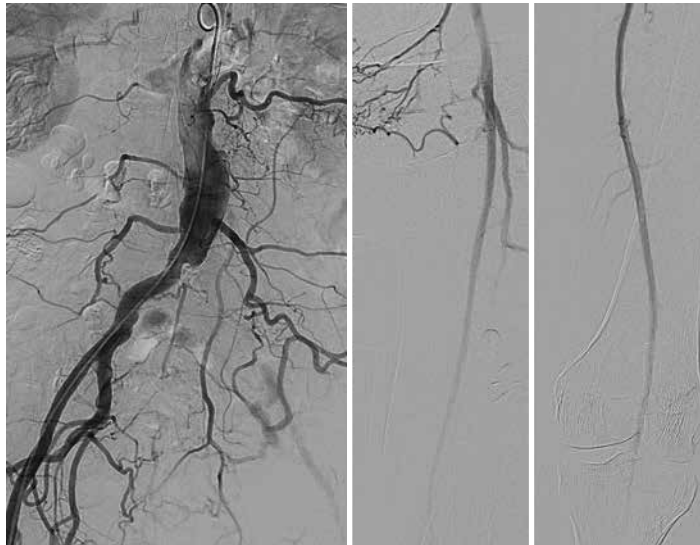
- 7F 25 cm Radiofocus Introducer (TERUMO)
 - 0.035" SupraCore guidewire 300 cm (ABBOTT VASCULAR)
- Left brachial approach:
- 7F 90 cm Check-Flo Performer (COOK MEDICAL)

2. Antegrade and retrograde guidewire passage

- brachial:
- 5F Judkins Right diagnostic catheter 125 cm (CORDIS/CARDINAL HEALTH)
- from femoral:
- 5F Multipurpose diagnostic catheter 80 cm (CORDIS/CARDINAL HEALTH)
 - 0.035" stiff angled guidewire, 260 cm (TERUMO)

3. Predilatation and stenting of the aorto-iliac bifurcation

- Armada 35 6/40 mm ballon (ABBOTT VASCULAR)
- LifeStream covered stent 7/58 bilateral in kissing-technique (BARD)



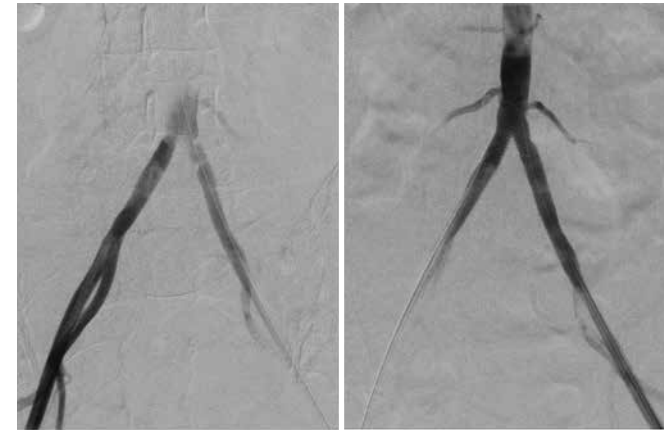
Case 63 – BK 03: female, 41 years (G-A)

Stentgraft reconstruction of ISR of aortic bifurcation

Operators: Dr. Noory, PD Dr. Rastan

Clinical data: Bilateral PAOD Rutherford 2 / Fontaine IIa
Bilateral CIA stent-angioplasty 10/2014
Bilateral chronic venous insufficiency

Present state: CVRF: ex-smoker, hyperlipidemia, obesity
ABI at rest: right leg: 0.8; left leg: 0.6
Duplex: Bilateral high grade ISR at the origin of the CIA



Baseline angio 10/2014

Result after implantation of 8mm balloon expandable stents into each CIA origin

Procedural steps

1. Bilateral retrograde access

- 23 cm long 7F sheath into the CFA (CORDIS)

2. Crossing of ISR

- 0.035" guidewire (TERUMO)

3. Bilateral stentgraft implantation in a modified kissing stent fashion

- BeGraft 8 mm (BENTLEY)

4. Sheath removal

- Femoseal (TERUMO)

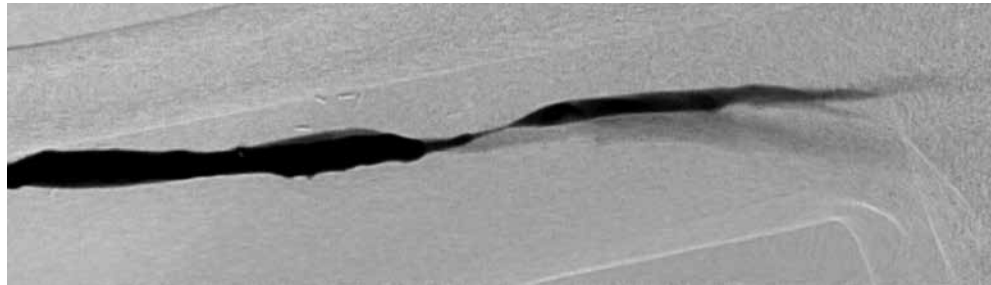
Case 64 – Mun 09: male, 57 years (M-J)

High grade shunt stenosis treated with scoring balloon, provisional stenting with covered self-expandable stent

Operators: A. Schwindt, G.F. Torsello

Clinical data: Endoshunt-creation with EverlinQ-System 9/2015
Surgical elevation of brachial vein 4/2016
Since 5/2016 double puncture use of endoshunt

Risk factors: High grade stenosis of shunt-vein mid upper arm in CCD with resulting shunt dysfunction



Procedural steps

1. **Antegade puncture of shunt-vein at cubital fossa**
2. **Sheath insertion**
 - 6F 10 cm sheath (TERUMO)
3. **Passage of lesion**
 - 0.014" wire (choice PT, BOSTON SCIENTIFIC)
4. **PTA**
 - Angiosculpt scoring balloon (SPECTRANETICS)
5. **Bailout stenting**
 - Covera-covered stent (BARD)

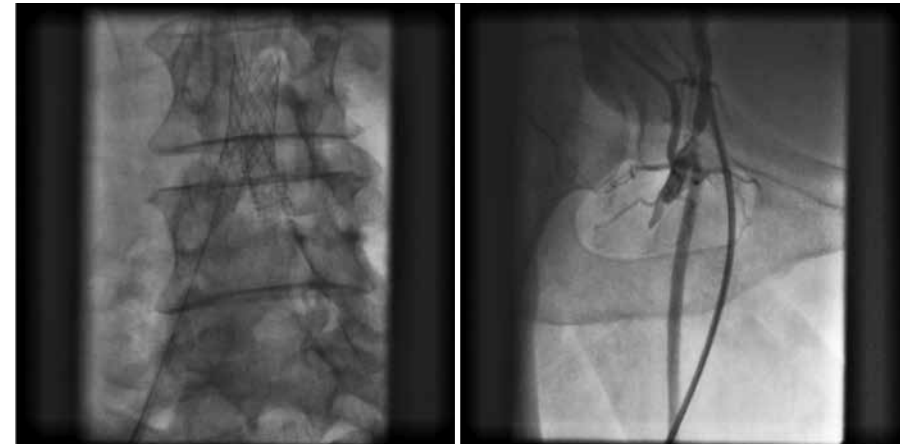
Case 65 – BK 04: female, 56 years (B-M)

Directional atherectomy & DCB of right CFA

Operators: A. Rastan, T. Zeller

Clinical data: PAOD Rutherford 2 / Fontaine IIb right leg
Recanalisation left CIA 12/2016
Stent reconstruction of aortic bifurcation 2014

Present state: CVRF: ex-smoker, hyperlipidemia
ABI right leg: 0.6; left leg: 1.0
Duplex: high grade stenosis of right CFA



Stent reconstruction of aortic bifurcation

Right CFA stenosis

Procedural steps

1. **Left transbrachial retrograde access**
 - 6F 90 cm shuttle sheath (COOK MEDICAL)
2. **Filter placement**
 - 6 mm Spider filter (MEDTRONIC) distal right SFA
3. **Directional atherectomy**
 - Turbohawk SX-C (MEDTRONIC)
4. **Drug coated balloon angioplasty**
 - 7/40 mm Inpact Pacific (MEDTRONIC)
5. **Stenting on indication**

Case 66 – LEI 24: female, 79 years (A-M)

Popliteal occlusion left

Operators: A. Schmidt, M. Ulrich

Clinical data: Restpain left foot, Rutherford class 4
PTA/stenting aortic bifurcation 11/2016
Diabetes mellitus, type 2
Art. hypertension

Angiography: During PTA of the aortic bifurcation:
moderately calcified distal SFA/P1-occlusion left



Procedural steps

1. **Antegrade approach left**
 - 7F 55 cm Check-Flo Sheath, Raabe Modification (COOK MEDICAL)
2. **Guidewire passage**
 - 5.0/40 mm Pacific Plus balloon, 90 cm (MEDTRONIC)
 - 0.018" Victory guidewire, 18 gramm, 30 cm (BOSTON SCIENTIFIC)
3. **PTA and stenting**
 - 6.0/40mm Pacific Plus balloon, 90 cm (MEDTRONIC)
 - Supera Interwoven Nitinol stent (ABBOTT VASCULAR)

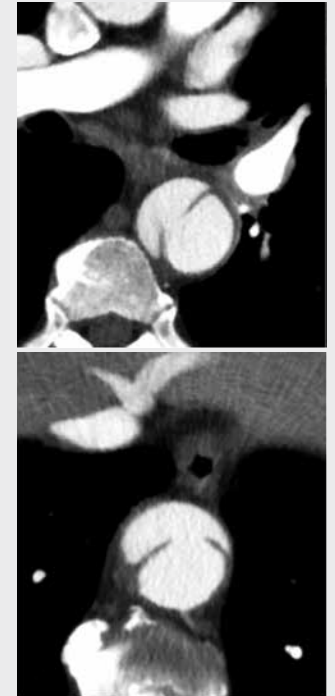
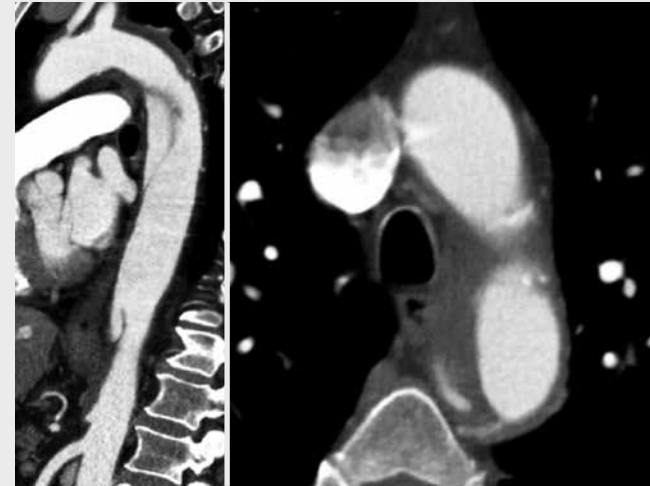
Case 67 – LEI 25: male, 64 years

TEVAR of a subacute Type B aortic dissection

Operators: A. Schmidt, D. Branzan

Clinical data: Acute Type-B dissection 6 weeks ago, since then intermittend thoracic pain
CT 4 weeks later: diameter-increase of the descending aorta of 5 mm
Coiling of intercostal arteries to reduce the risk of spinal cord ischemia during TEVAR
Art. hypertension, former smoker

CT-scan: 2 focal dissections of the descending thoracic aorta, both have an entry without reentry, max. diameter of the aorta 46m



Procedural steps

1. **Bilateral femoral access**
 - Preloading of Proglide-Systems right (ABBOTT VASCULAR)
2. **Positioning of guidewire**
 - LunderQuist 0.035" 260 cm (COOK MEDICAL)
3. **Implantation of 2 thoracic stentgrafts**
 - Ankura thoracic graft (LifeTech)
 - Stengraft from left subclavian artery to the celiac trunk

Case 68 – BK 05

For case information please download the LINC 2017 App or visit the LINC 2017 website.

Case 69 – MUN 10: female, years (H-R)

Endovascular repair of an AAA with Endurant Endograft and additional proximal fixation with Heli-FX EndoAnchors

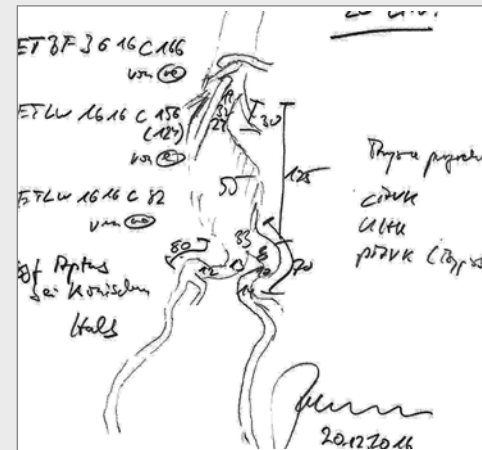
Operators: M. Austermann, Ö. Sensebat, St. Stahlhoff

Clinical data: Growing abdominal aortic aneurysm with conical neck from 4,5 cm to 5,5 cm PAD with severe calcified and stenosed iliac arteries

Risk factors: CAD – PTCA and PM-Implantation 5/16, chronic heart failure, carotid stenosis both sides, PAD – venous bypass 11/06

Procedural steps

1. **Percutaneous approach both groins**
 - Prostar XL (ABBOTT VASCULAR)
 - Placement of 14F sheath (COOK MEDICAL)
2. **Placement of Endurant bifurcated endograft (MEDTRONIC) just below the RA`s**
3. **Additional fixation of the proximal sealing zone**
 - Heli-FX Endoanchors (MEDTRONIC)
4. **Closure of the groin**
 - Prostar XL (ABBOTT VASCULAR)



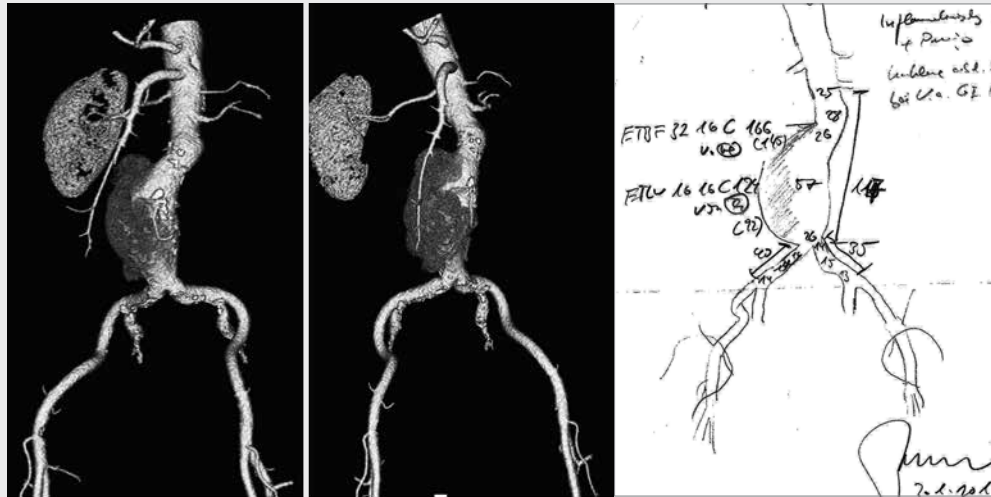
Case 70 – MUN 11: male, 71 years (P-R)

Endovascular repair of an inflammatory AAA 5,7 cm with Endurant Endograft

Operators: M. Austermann, T. Bisdas, G.F. Torsello

Clinical data: Inflammatory abdominal aortic aneurysm with abdominal pain

Risk factors: Art. hypertension, obesity



Procedural steps

1. Percutaneous approach both groins
 - Prostar XL (ABBOTT VASCULAR)
 - Placement of 14 F sheath (COOK MEDICAL)
2. Placement of Endurant bifurcated endograft (MEDTRONIC) just below the RA's
3. Closure of the groin

Case 71 – LIL 02: male, 61, years (H-M)

FEVAR for dissecting TAAA

Operators: S. Haulon

Clinical data: 2013: type B aortic dissection, conservative treatment
 Acute tubular necrosis and occlusion right renal artery with atrophic right kidney
 2014 aneurysmatic evolution infrarenal aorta : Open AAA tubular repair
 Aneurysmatic evolution descending thoracic and thoraco-abdominal aorta, with a maximum diameter 61 mm
 November 2016: TEVAR
 January 2017 : FEVAR

Risk factors: Smoker, hypertension

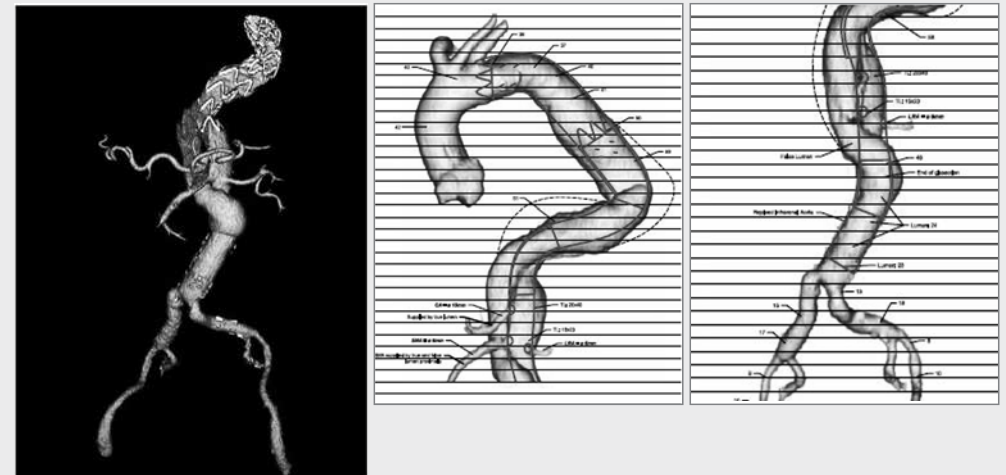
History: Gastric ulcers, pancreatitis, OSA, GORD

Present state: At present asymptomatic
 Renal function: creatinine 12 mg/l, GFR 64
 Cardiac ultrasound: normal EF, mild AI, otherwise normal
 Duplex carotid arteries: normal
 Spirometry: mild obstructive pattern

Procedural steps

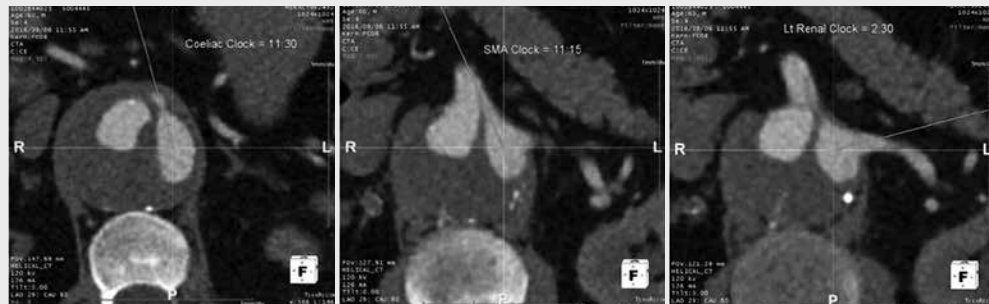
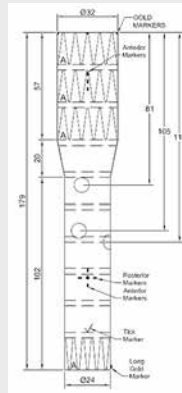
1. L: 7F sheath/Lunderquist/dilators (up to 20F) + 100 U/kg Heparin (Target ACT≥250)
2. L: 20F sheath above the aortic bifurcation
3. L (through 20F): Two 7F sheaths, one 6F sheath
4. L (through 20F): Advance marked angio catheter through 7F sheath
5. R: 10F sheath/Lunderquist/dilators up to 20F
6. Fluoroscopy to locate fenestrated endograft markers
7. R: Advanced fenestrated endograft (COOK MEDICAL)
8. Aortic angiogram/fenestrated endograft deployment

Continued on next page ►



Case 71 – LIL 02 continued

- Procedural steps (cont.)**
9. L: Catheterization of the fenestrated endograft lumen through 6F sheath with C2/KMP catheter and TERUMO wire
 10. Advance 6F sheath to the endograft lumen
 11. C2/RIM/DAV + TERUMO/Roadrunner through 6F for renal artery catheterisation
 12. Renal angiogram +/- nitro injection
 13. Exchange TERUMO for a Rosen
 14. Advance 6F to the renal artery
 15. Advance stent into the parking position
 16. L: Through last 7F sheath advance C2+ Terumo to catheterize fenestrated endograft lumen
 17. Advance 7F below the fenestration of SMA
 18. C2/VS1 + TERUMO/Roadrunner through 7F sheath to catheterize SMA
 19. Vessel angiogram to check position in main trunk
 20. Exchange Terumo for Amplatz (BOSTON SCIENTIFIC) wire
 21. Advance 7F in the target vessel
 22. Advance stent into parking position
 23. 16-19 for the coeliac trunk
 24. R: Release reducing ties / proximal attachment and distal attachment
 25. R: Nose capture & retrieval under fluoroscopy/Molding with CODA balloon (COOK MEDICAL)
 26. L: Renal artery stent deployment (1/3 aortic lumen) after 6F retrieval
 27. L: Flare the stent inside the aortic portion with 10–20 mm balloon
 28. L: Advance 6F in the renal stent/selective angiogram
 29. L: SMA stent deployment (1/3 aortic lumen) after 7F retrieval
 30. L: CT stent deployment (1/3 aortic lumen) after 7F retrieval
 31. L: Flare the stent inside the aortic portion with 10–20 mm balloon
 33. R: Remove fenestrated device delivery system
 34. L: Pull back 20F sheath in common iliac
 35. Continue with EVAR procedure
 36. CODA balloon at the level of overlaps (COOK MEDICAL)
 37. L: Long angio catheter/Angiogram +/- non-contrast CBCT

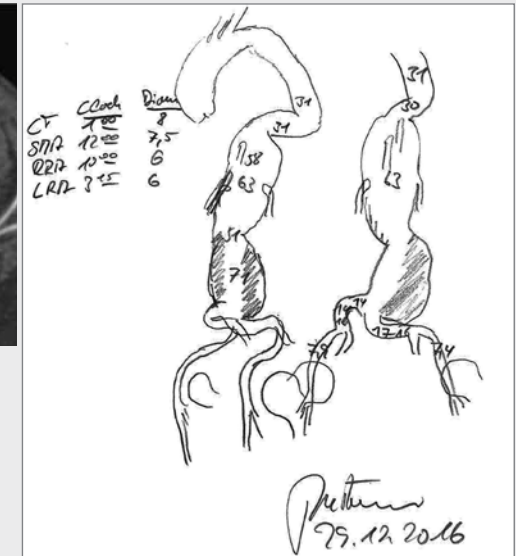
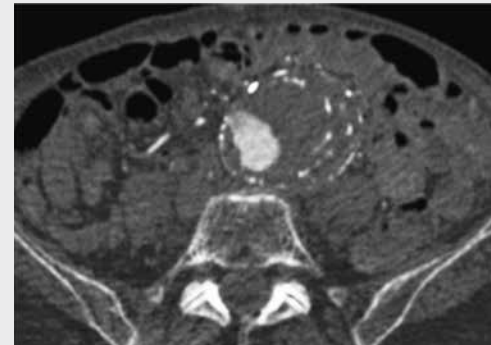


Case 72 – MUN 12: female, 74 years (D-I)

Standard branched-EVAR for a TAAA-type Crawford 3

- Operators:** M. Austermann, Ö. Sensebat, G.F. Torsello
- Clinical data:** Rapidly growing TAAA Crawford 3 now 71 mm in diameter with chronic back pain
- Risk factors:** Art. hypertension, COLD, epilepsy under med. therapy, osteoporosis, hostile abdomen

- Procedural steps**
1. Percutaneous approach both groins Prostar XL (ABBOTT VASCULAR) 14F (COOK MEDICAL) both groins
 2. Left axillary access 5F sheath via cut down
 3. Placement of the T-Branch-endograft (COOK MEDICAL) with four branches and the bifurcated device (Unibody with the iliac limbs-COOK MEDICAL) and direct closure of the groins to avoid SCI
 4. Cannulation of celiac trunk, SMA and renal arteries through the branches and implantation of the bridging stentgrafts (Advanta V12 – MARQUET, Viabahn – GORE, Covera – BARD)
 5. Final angiography, closure left axillary access (Prostar XL, ABBOTT VASCULAR)

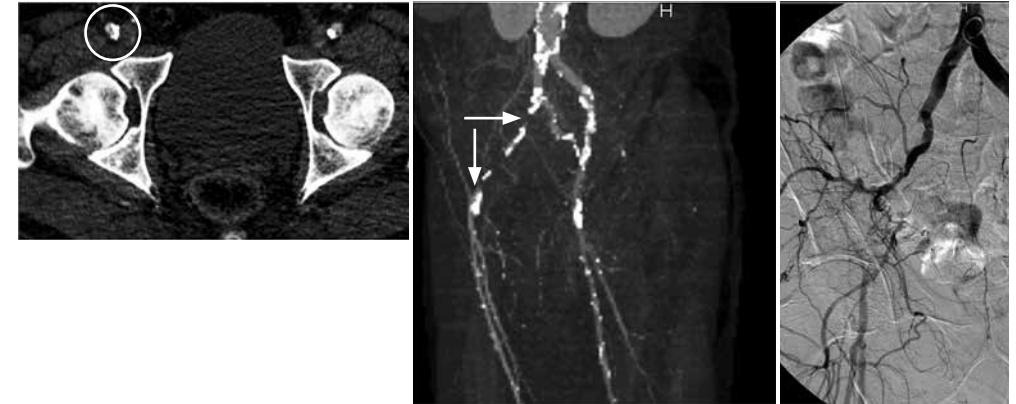


Case 73 – BK 06: female, 55 years (B-I-M)

Stent reconstruction of aortic bifurcation in a patient with Leriche syndrome**Operators:** Prof. Zeller, Dr. Noory**Clinical data:** Bilateral buttock and leg claudication after 50 to 100 meters (PAOD Rutherford 2 / Fontaine IIb) since a couple of months**Present state:** CVRF: arterial hypertension, ex nicotine
ABI at rest: right leg: 0.8; left leg: 0.8; post exercise 0.6 / 0.6
Duplex: distal occlusion of infrarenal abdominal aorta and the origins of both CIAs
Patent inferior mesenteric artery, bilateral internal and external iliac arteries**Procedural steps**

- 1. Retrograde access**
 - Insertion of 6F 90 cm shuttle sheath via left brachial artery and insertion of a 23 cm long 7F sheath into each CFA
- 2. Antegrade crossing attempt of the aortic occlusion**
 - 5F vertebral catheter, 0.035" Glidewire (TERUMO) into one of the CIAs
- 3. Predilatation**
 - 5 mm Admiral balloon (MEDTRONIC)
- 4. Retrograde crossing attempt of the contralateral CIA**
- 5. Predilatation**
 - 5 mm Powerflex balloon (CORDIS)
- 6. Stenting of distal abdominal aorta**
 - Smart 14/40 mm stent (CORDIS)
- 7. Stenting of both CIAs**
 - Isthmus balloon expandable stents (ALVIMEDICA)

Case 74 – MUN 13: male, 58 years (H-H)

Hybrid operation for ilio-femoral occlusion**Operators:** T. Bisdas, M. Austermann, St. Stahlhoff**Clinical data:** Rutherford 3 right limb, ABI:0.4, no peripheral pulses**Risk factors:** Arterial hypertension, hyperlipidemia, current smoker (30 p/y)**Procedural steps**

- 1.** Cut down right groin, Puncture of the CFA and recanalisation of the EIA occlusion with a 0.035" wire (Advantage, TERUMO) or an 0.018" wire (V18, BOSTON SCIENTIFIC)
Use of a Quick Cross catheter (SPECTRANETICS)
- 2.** Arteriotomy and endarterectomy of CFA and proximal SFA
Use of a ring stripper and a Fogarty catheter for endarterectomy of the EIA
- 3.** Stenting of the EIA with a 7 x 80 mm Complete stent (MEDTRONIC)
- 4.** Patchplasty of the CFA with a Dacron Patch (MAQUET) and control angiography
- 5.** Wound closure

Case 75 – ABT 02: female, 77 years (M-G)

AT and PT long occlusion, lateral plantar and DP occlusion revascularization

Operators: M. Manzi, L.M. Palena, C. Brigato

Clinical data: PAOD Rutherford 5
TUC 3c lesion in non healing TMA
TcPO2= 8 mmHg

Risk factors: DM, hypertension

- Procedural steps**
1. US guided Left antegrade CFA access 6F, CO2 angiography
 2. 4F BER, V18 CW intraluminal, subintimal when failure
Command 0,014 re-enter (ABBOTT VASCULAR)
Retrograde distal when failure
 3. POBA or DEB discussion
 4. US guided closure device deployment



Case 76 – LEI 26: male, 81 years (H-L)

CLI, popliteal artery occlusion

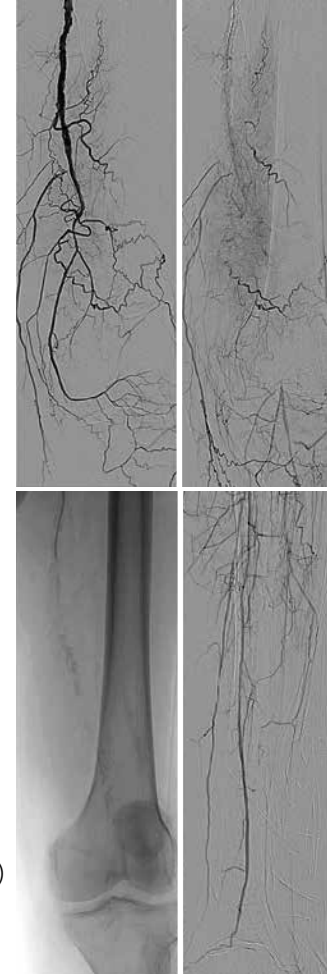
Operators: A. Schmidt, S. Bräunlich

Clinical data: Critical limb ischemia with gangrene dig 4/5 left, Rutherford 5
Failed recanalization of a popliteal occlusion left
CEA left femoral bifurcation 1/2017
CAD, PTCA 2004
Chronic heart failure, EF 40%
Diabetes mellitus, type 2
Chronic renal insufficiency with GFR 55 ml/min

Present state: Angiography before CEA left groin
ABI left 1.3, mediasclerosis

- Procedural steps**
1. **Left groin retrograde and cross-over approach**
 - IMA-diagnostic 5F catheter (CORDIS/CARDINAL HEALTH)
 - 0.035" angled soft Radiofocus guidewire, 190 cm (TERUMO)
 - 0.035" SupraCore guidewire, 190 cm (ABBOTT VASCULAR)
 - 6F 55 cm Check-Flow Performer, Raabe Modification (COOK MEDICAL)
 2. **Guidewire passage**
second attempt from antegrade:
 - 0.018" Connect Flex guidewire, 300 cm (ABBOTT VASCULAR)
 - 0.018" Seeker support catheter, 135 cm (BARD)

In case of failure of GW-passage from antegrade:
 3. **Retrograde approach via the posterior tibial artery**
 - 2.9F sheath (pedal puncture set) (COOK MEDICAL)
 - 0.014" CTO-Approach 25 gramm guidewire, 300 cm (COOK MEDICAL)
 - 0.018" CXI support catheter 90 cm (COOK MEDICAL)
 - Advance Micro-Balloon 3.0/120 mm, 90 cm (COOK MEDICAL)
 4. **PTA of the distal SFA/popliteal artery occlusion**
 - AngioSculpt 4.0/100 mm Scoring balloon (SPECTRANETICS)
 - Stellarex 4.0 or 5.0/120 mm DCB (SPECTRANETICS)
 5. **Stenting on indication**
 - Supera Interwoven Nitinol stent (ABBOTT VASCULAR)



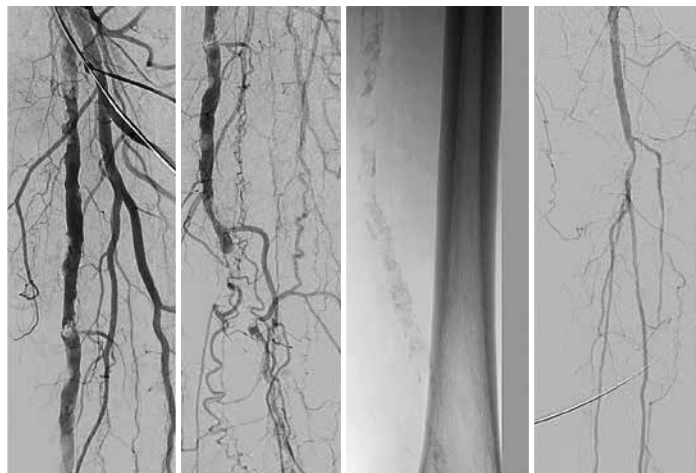
Case 77 – LEI 27: male, 69 years (S-F)

Extremely calcified SFA CTO left, "pave and crack"-technique

Operators: A. Schmidt, M. Ulrich

Clinical data: Restpain during night and severe calcification left, Rutherford 4
Failed recanalization attempt left leg 11/2015
PTA/stenting right SFA-CTO 12/2016
Art. hypertension, diabetes mellitus, type 2
Former smoker

- Procedural steps**
- 1. Right groin retrograde and cross-over approach**
 - IMA 5F diagnostic catheter (CORDIS/CARDINAL HEALTH)
 - 0.035" soft angled Radiofocus guidewire, 190 cm (TERUMO)
 - 0.035" SupraCore guidewire 190 cm (ABBOTT VASCULAR)
 - 7F 55 Check-Flo Performer Sheath, Raabe Modification (COOK MEDICAL)
 - 2. Antegrade guidewire passage**
 - 0.035" Stiff angled Glidewire, 260 cm (TERUMO)
 - CXC 0.035" support catheter, 135 cm (COOK MEDICAL)
 - 3. Retrograde guidewire passage:**
Access via the proximal anterior tibial artery:
 - 7 cm 21 Gauge needle (COOK MEDICAL)
 - 0.018" V-18 Control guidewire, 300 cm (BOSTON SCIENTIFIC)
 - 4Fr-10cm Radiofocus Introducer (TERUMO)
 - Pacific Plus 4.0/40 mm balloon, 90 cm (MEDTRONIC)
 - 4. PTA and stenting**
 - 6.0/20mm Admiral Xtreme Balloon (MEDTRONIC)
 - 7.0/20 Conquest non-compliant high-pressure balloon (BARD)
 - In case of inability to open the balloons fully implantation of a Viabahn 7.0/100 mm (GORE)
 - Relining with Supera Interwoven Nitinol stent (ABBOTT VASCULAR)



Case 78 – BK 07: male, 62 years, (B-N)

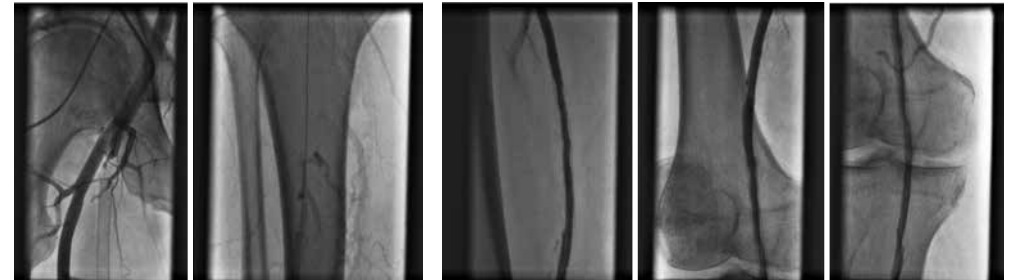
Combined antegrade and retrograde recanalisation of right ATA & PTA

Operators: T. Zeller

Clinical data: Non-healing crural ulcer right calf (PAOD Fontaine IV / Rutherford 5)
11/2016 recanalisation of right SFA, popliteal artery & TPT
11/2014 recanalisation of right SFA, popliteal artery & TPT (DCB and spot stenting)
DVT right leg 10/2014

Risk factors: CVRF: hyperlipidemia, obesity
ABI at rest: right leg: 0.6; left leg: 1.0
Duplex: persistent occlusion of right ATA /& PTA

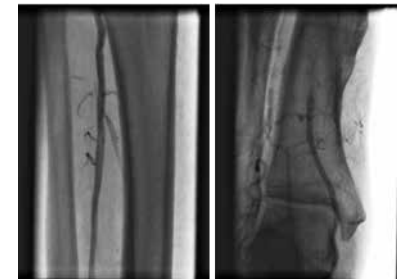
- Procedural steps**
- 1. Antegrade sheath insertion 6F, right CFA**
Insertion of a 5F Envoy guiding catheter (CORDIS)
 - 2. Attempt to antegradely recanalise the PTA**
(predilatation followed by DCB, Chocolate touch, TRIREME)
 - 3. Retrograde recanalisation of ATA** (predilatation followed by DCB)
 - 4. Sheath removal in the groin with Femoseal** (TERUMO)



Baseline angio 11/2016
Instant-reocclusion

Reperfusion
of right peroneal artery

Result after complex femoro-popliteal recanalisation 11/2016



Persistent occlusion of right ATA & PTA)

Case 79 – ABT 03: male, 82 years (C-A)

BTK and BA calcified long occlusion; distal atero-venous fistula?

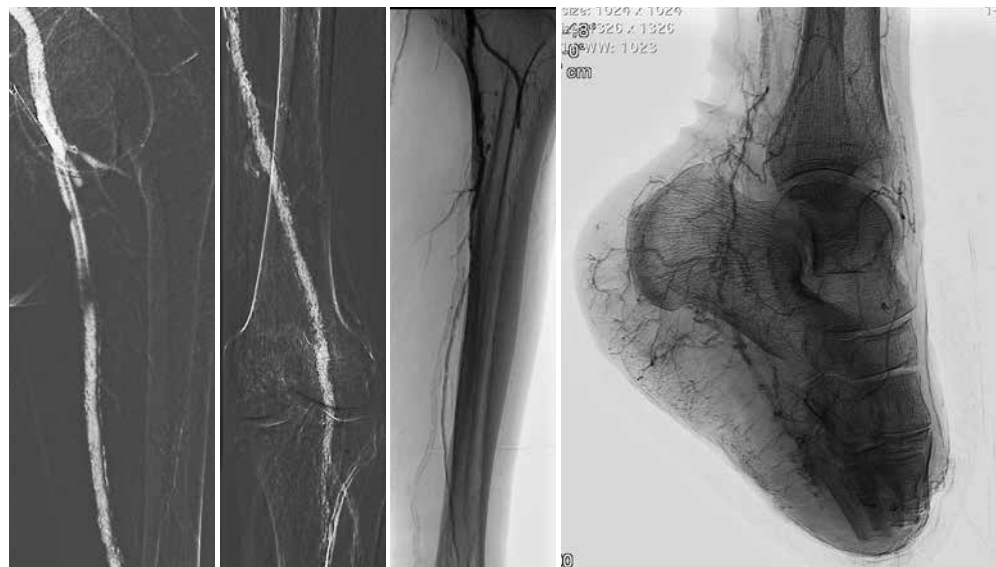
Operators: M. Manzi, L.M. Palena, C. Brigato

Clinical data: Non Healing TMA
CLI
Previous antegrade and retrograde revascularization attempts with rupture of balloon, retrieval failure and stent deployment to fix it

Risk factors: DM, hypertension, ischemic cardiac disease, chronic renal failure;

Procedural steps

1. **US guided antegrade CFA access and 6F sheath**
2. **CTO 0,014" wire for antegrade AV creation in mid proximal PT**
When failure occurred: US guided distal retrograde tibial vein puncture, retrograde vein wiring, antegrade PT artery wall to wall puncture reaching the vein
Retrograde wire externalization through the needle and in-artery retrieval
3. **Antegrade wire progression in the foot vein and outflow check**
4. **High pressure POBA for valves rupture**
5. **Discussion for stenting (covered, Supera)**
6. **US guided closure device deployment**

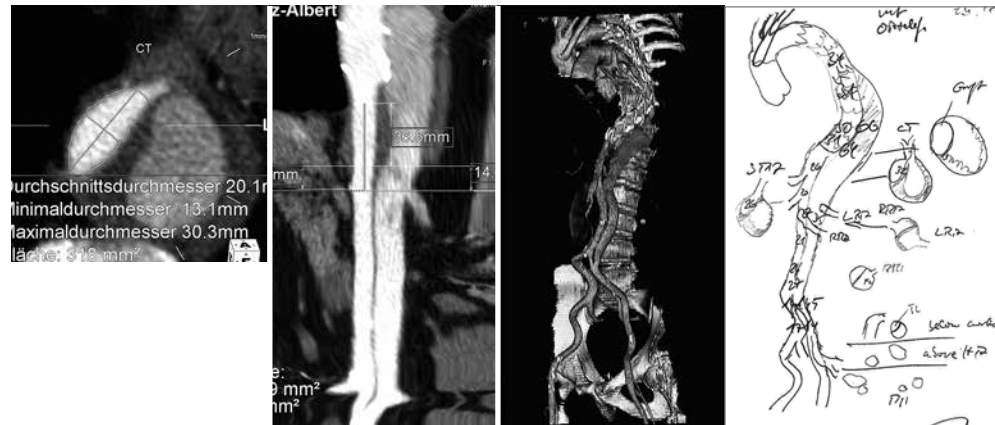


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INTERVENTIONAL
COURSE
2017

L I N C

Friday,
January 27, 2017

Case 80 – MUN 14: male, 76 years, (W-H)

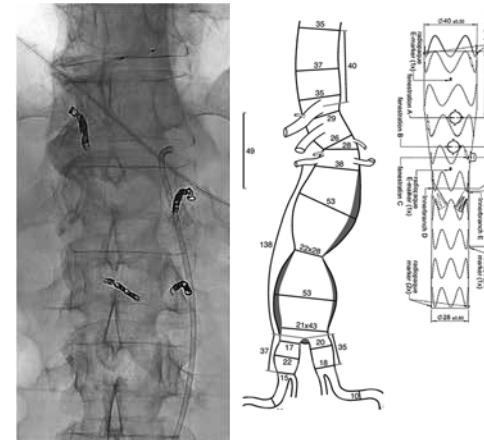
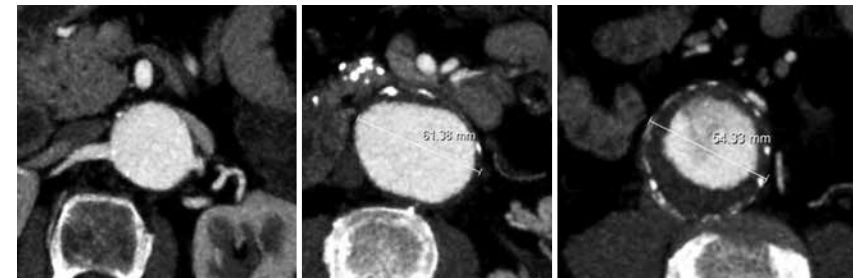
4-fenestrated endovascular repair of a 7 cm post-dissection TAAA**Operators:** M. Austermann, T. Bisdas, St. Stahlhoff**Clinical data:** Post-dissection thorakoabdominal aneurysm with a diameter of 7 cm
Aszendens and aortic arch repair by frozen elephant trunk in the acute phase
and endovascular extension to open the true lumen but still increase of the
still perfused false lumen.**Risk factors:** Art. hypertension, CAD

- Procedural steps**
1. Percutaneous approach both groins (Prostar XL, ABBOTT VASCULAR)
14 F (COOK MEDICAL) both groins
Careful cannulation of the true lumen
 2. Angiography to locate CT, SMA and RRA coming out of the true lumen
and use of fusion technology
 3. Changing the left 14F sheath for a 22F sheath
Placement of three 5F sheaths into the 22F sheath and pre-cannulation
of the right renal artery and SMA by using fusion technology.
 4. Placement of the 4-fenestrated Zenith-endograft (tube) (COOK MEDICAL) via the right
groin Cannulation of the SMA and RRA through the fenestrations
 5. Advancement of 7 and 8 F sheaths into the target vessels
Complete release of the endograft and stenting of the fenestrations
for the SMA and RRA with covered stents (Advanta V12-Maquet) and flaring
Cannulation of the CT and stenting
 6. Cannulation of the fenestration for the LRA, perforation of dissectionmembrane
and cannulation of the LRA coming out of the false lumen and implantation
of another bridging stentgraft (Advanta V12)
 7. Placement of the distal bifurcated graft and the iliac extensions
Closure of the accesses

Case 81 – LEI 28: male, 67 years

FEVAR of a juxtarenal aneurysm**Operators:** A. Schmidt, D. Branzan**Clinical data:** Incidental finding of a juxtarenal aortic aneurysm
with progression to 61 mm max. diameter
Accessory renal arteris on both sides
Coiling of intercostal and lumbar arteries before FEVAR
to reduce the risk of spinal ischemia
Coiling of the accessory right renal artery
CAD, PTCA 2012 heart failure, EF 40%
Thyroidectomy 1/2017**Important items:** CT-scans and Stentgraft-plan

- Procedural steps**
1. **Bilateral femoral access and left axillar percutaneous access**
■ Preloading of Proglide-Systems (ABBOTT VASCULAR) for all 3 access-sites
 2. **Implantation of the CMD thoracoabdominal stentgraft (JOTEC)**
 3. **Implantation of E-ventus covered stents into the visveral arteries (JOTEC)**
 4. **Implantation of the bifurcated component
with extension into the common iliac arteries**



Case 82 – MUN 15: female, 52 years (S-M)

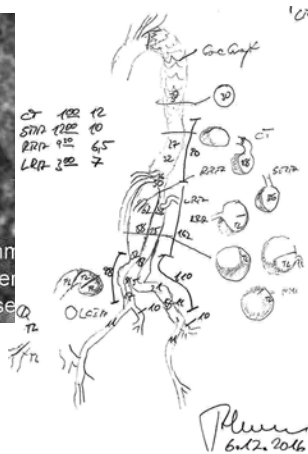
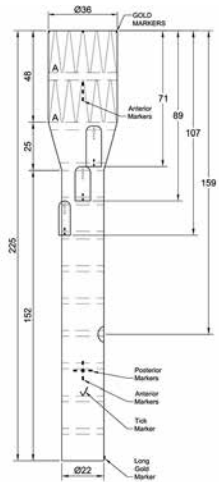
1-fenestrated and 3-branched endovascular repair of a postdissection

Operators: M. Austermann, Ö. Sensebat, G.F. Torsello

Clinical data: TEVAR for a acute Dissection Stanford B 8/2015 in another clinic
Now rapid growing thoracoabdominal aneurysm distal of the graft with involvement of the iliac arteries

Risk factors: Marfan's disease, art. hypertension, DM 2

- Procedural steps**
1. Percutaneous approach both groins (Prostar XL, ABBOTT VASCULAR)
14 F (COOK MEDICAL) both groins
Careful cannulation of the true lumen
Left axillary access 5 F sheath via cut down
 2. Angiography via the right groin and use of fusion technology
Precannulation of the left renal artery
 3. Placement of the 1-fenestrated and 3 branched CMD-Zenith-endograft (tube) (COOK MEDICAL) via the left groin and cannulation of the LRA through the fenestration and placement of the bridging stentgraft
 4. Placement of the distal bifurcated graft and the iliac side branch on the right side and closure of the groins to avoid SCI
 5. Cannulation of celiac trunk, SMA, right renal artery and the right hypogastric artery through the branches and implantation of the bridging stentgrafts (Advanta V12 – MARQUET, Viabahn – GORE, Covera – BARD)
 6. Closure of the axillary access



Case 83 – LEI 29: female, 65 years (H-T)

Severely calcified SFA occlusion, "pave and crack"-technique

Operators: S. Bräunlich, A. Schmidt

Clinical data: Critical limb ischemia right, ulcerations dig 2 / 3, Rutherford 5
Endstage renal failure, chronic hemodialysis until 1997
Renal transplantation 1997
Art. hypertension

Present state: CO2-angiography
ABI right: mediasclerosis

Procedural steps

1. **Left groin retrograde and cross-over approach**

- IMA 5F diagnostic catheter (CORDIS/CARDINAL HEALTH)
- 0.035" soft angled Radiofocus guidewire, 190 cm (TERUMO)
- 0.035" SupraCore Guidewire 190 cm (ABBOTT VASCULAR)
- 6F-55 cm Check-Flo Sheath, Raabe Configuration (COOK MEDICAL)

2. **Antegrade guidewire passage**

- 0.035" Stiff angled Glidewire, 260 cm (TERUMO)
- CXC 0.035" support catheter, 135 cm (COOK MEDICAL)

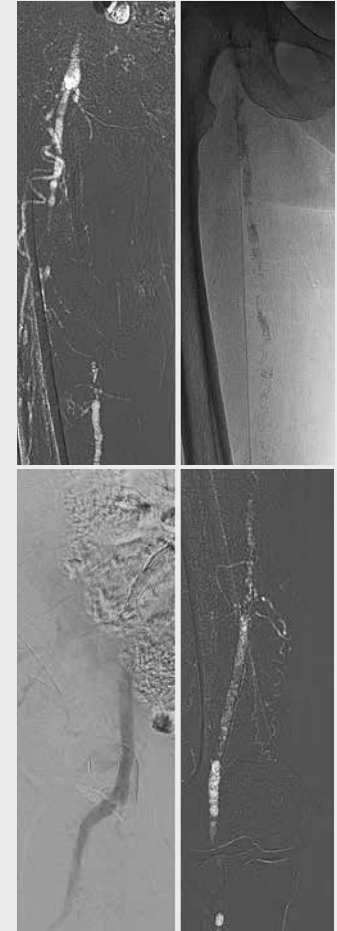
In case of guidewire passage failure:

3. **Retrograde approach via the distal SFA**

- 9 cm 21 Gauge needle (COOK MEDICAL)
- 0.018" V-18 Control guidewire, 300 cm (BOSTON SCIENTIFIC)

4. **PTA and stenting**

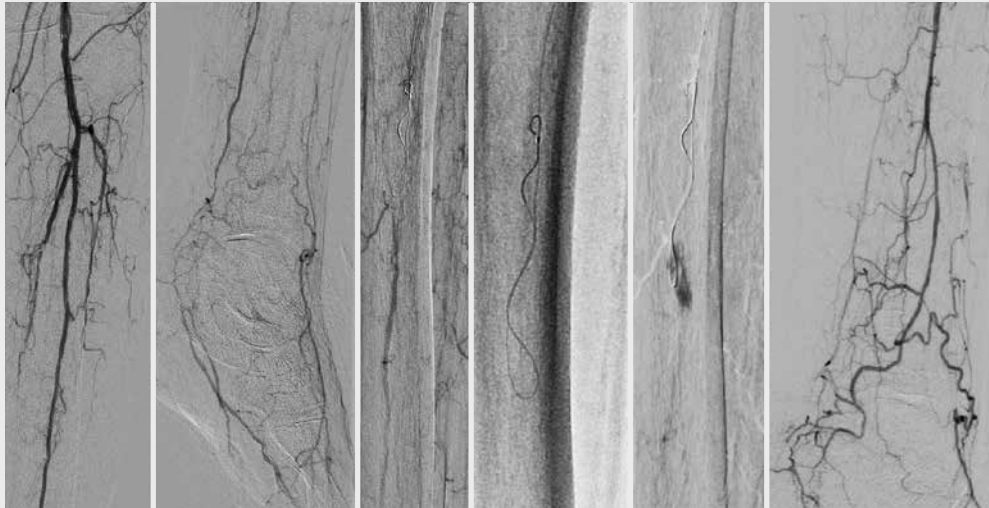
- 6.0/20 mm Admiral Xtreme balloon (MEDTRONIC)
- 7.0/20 Conquest non-compliant high-pressure balloon (BARD)
- In case of inability to open the balloons fully implantation of a Viabahn 7.0/100 mm (GORE)
- Relining with Supera Interwoven Nitinol stent (ABBOTT VASCULAR)



Case 84 – LEI 30: female, 82 years (B-W)**Calcified BTK-CTOs, CLI****Operators:** A. Schmidt, M. Ulrich

Clinical data: Critical limb ischemia left foot, ulcerations at the forefoot, Rutherford 5
 PTA/stenting left SFA 11/2015 and 7/2016
 Failed recanalization attempt right posterior tibial artery 1/2017
 Diabetes mellitus, type 2,
 CAD, PTCA 2005, chronic heart failure, EF 45%
 Chronic renal insufficiency, GFR 41ml/min
 Intermittent atrial fibrillation

Present state: Angiography during recanalization attempt left elsewhere
 with GW-perforation of the posterior tibial artery

**Procedural steps**

- 1. Left antegrade access**
 - 5F 55 cm Flexor Check-Flo Sheath, Raabe Modification (COOK MEDICAL)
- 2. Retrograde access via the posterior tibial artery**
 - 2.9F sheath (pedal puncture set) (COOK MEDICAL)
 - 0.014" CTO-Approach 25 gramm guidewire, 300 cm (COOK MEDICAL)
 - 0.018" CXI support catheter 90 cm (COOK MEDICAL)
 - Advance Micro-Balloon 3.0/120 mm, 90 cm (COOK MEDICAL)
- 3. PTA of the posterior tibial artery**
 - Lutonix drug-coated balloon (BARD)

Case 85 – LEI 31: male, 60 years (M-P)**Common carotid artery ostium stenosis****Operators:** S. Bräunlich, M. Ulrich

Clinical data: Asymptomatic highgrade stenosis of the ostium of the common carotid artery left
 Art. hypertension, diabetes mellitus, type 2
 Former smoker

Duplex: Duplex-sonography because of recurrent dizziness:
 severe flow-disturbance of the proximal common carotid artery and slow flow

Procedural steps

- 1. Right groin access**
 - 5F Judkins Right diagnostic catheter (CORDIS/CARDINAL HEALTH)
 - Intubation of the CCA left
 - In case of failure: no-touch-technique using a
 8F Judkins Right guiding catheter (MEDTRONIC)
 - 0.035" soft angled guidewire, 190 cm (TERUMO)
 - 0.018" V-18 Control guidewire, 300 cm (BOSTON SCIENTIFIC)
- 2. Predilatation and stenting**
 - 5.0/20 mm Sterling Monorail balloon (BOSTON SCIENTIFIC)
 - 8.0/28 mm LifeStream covered stent (BARD)

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