VASCUPEDIA

Endovascular options for the treatment of AIOD and popliteal artery thrombosis in a case of acute limb ischemia

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Case presentation

- 51 yr. male patient
- Active smoker
- Left acute limb ischemia

CT scan (*other hospital*):

- Partial thrombosis of the aortic carre-four
- Occlusion of the left common, internal and external iliac arteries
- Patency of the left common femoral artery
- Patency of the right iliac axis and common femoral artery

06.03.2018

Admitted to our hospital for left lower limb ischemia

Duplex US:
- left iliac axis acute thrombosis
- patency of femoral and popliteal arteries
- post-occlusive flow along the tibial vessels

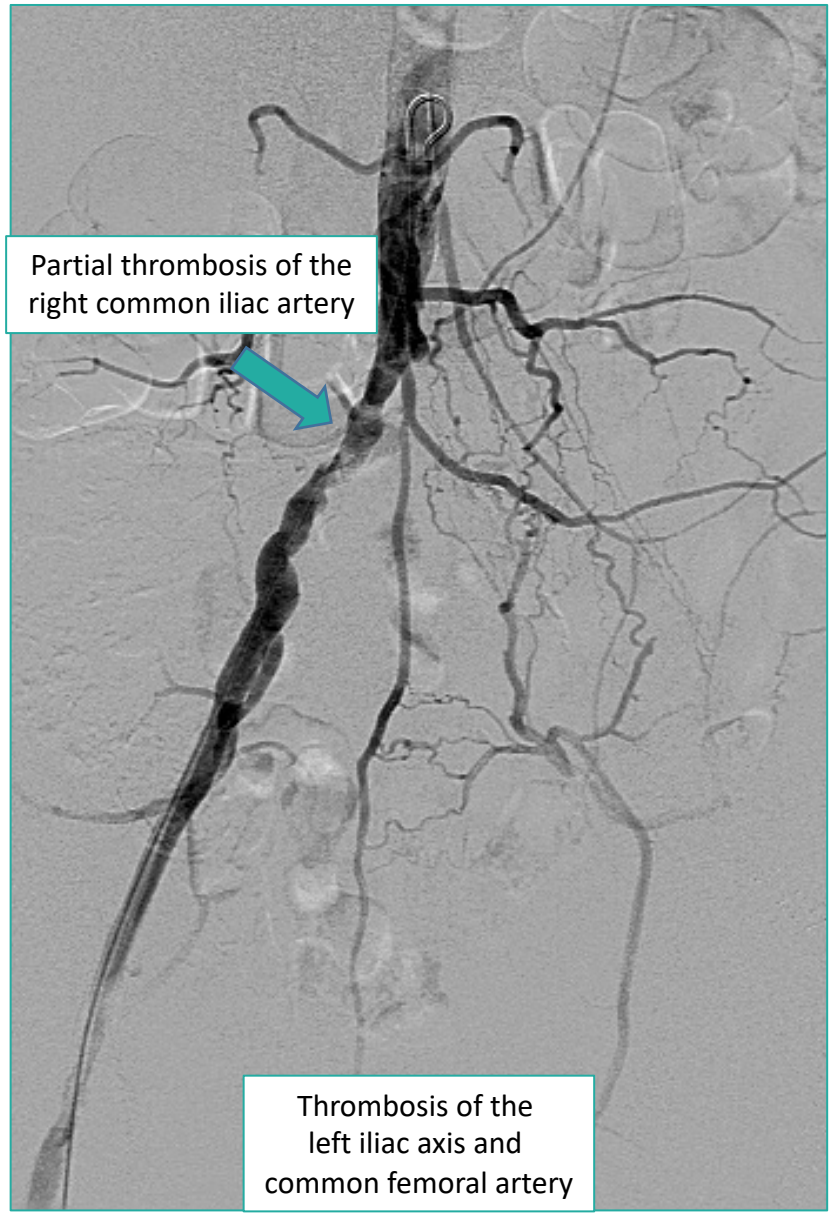
Surgical thrombectomy of the left iliac axis with good clinical results

06.04.2018

Cyanosis of the left lower limb, no femoral and popliteal pulses

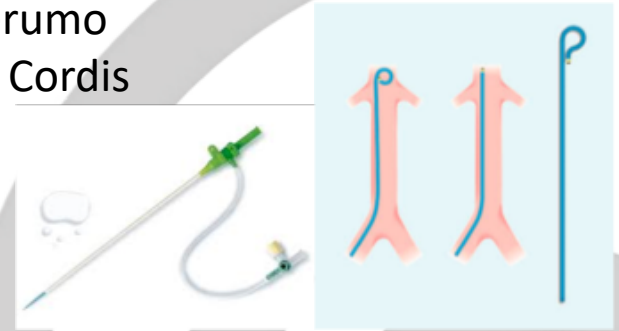
Duplex US:
- left iliac axis acute re-obstruction
- distal popliteal artery occlusion
- post-occlusive flow along the tibial vessels

06.04.2018: angiography



STEP 1: right femoral access

- 5 F sheath Radifocus® Introducer II Terumo
- 4 F catheter Universal Flush Tempo™ Cordis
- angiography



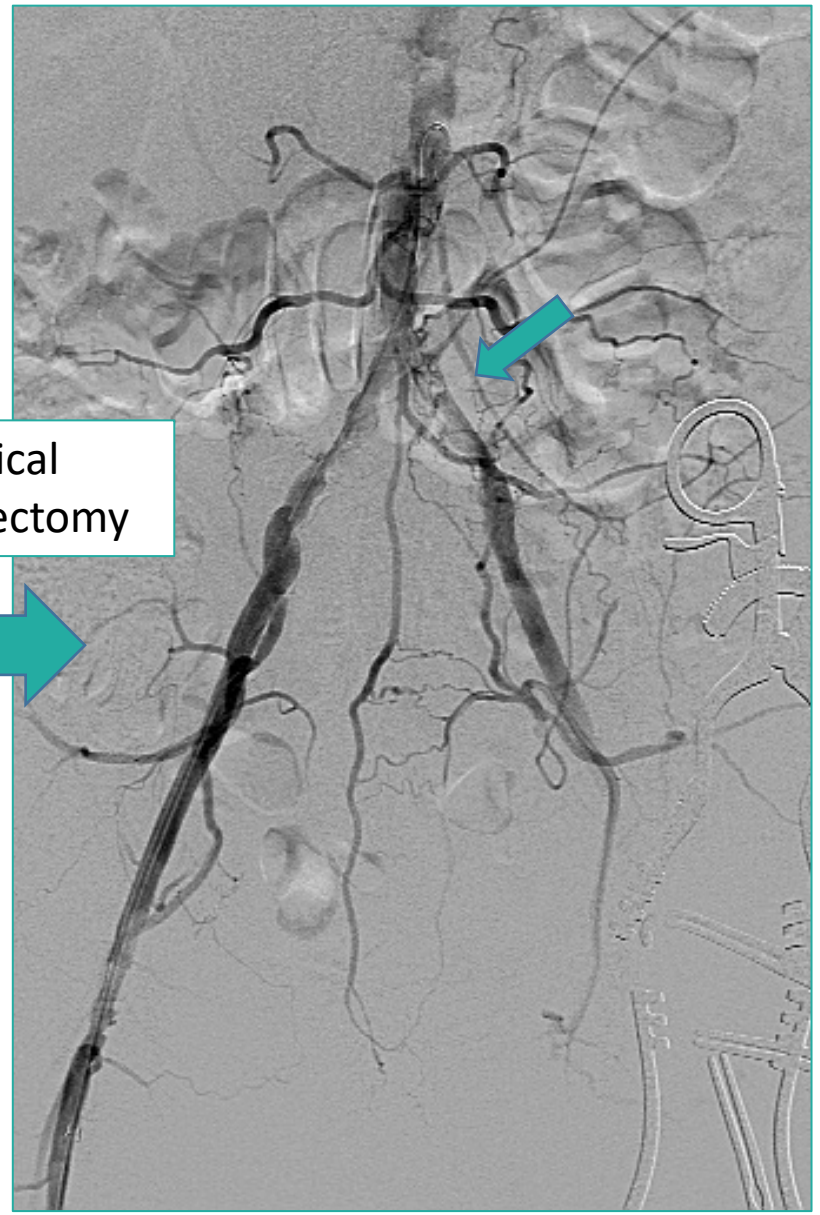
STEP 2: left femoral access

- surgical exposure of the CFA

STEP 3: transfemoral thrombectomy of the left iliac vessels

- over-the-wire thru-Lumen embolectomy catheter (Edwards, Lifescience)

Surgical thrombectomy



Residual thrombosis of the left common iliac artery

WHICH TREATMENT OPTIONS?

- OPEN SURGERY:
  - *SURGICAL THROMBECTOMY?*
  - *AORTO-FEMORAL BYPASS?*
  - *RIGHT TO LEFT FEM-FEM CROSSOVER BYPASS?*
- ENDOVASCULAR:
  - *PERCUTANEOUS THROMBECTOMY?*
  - *BIFURCATED AORTIC GRAFT?*
  - *KISSING STENTING WITH BMS?*
  - *KISSING STENTING WITH STENTGRAFT?*
  - *OTHER?*

OUR OPTION: CERAB with BeGraft stentgrafts

Three-year outcome of the covered endovascular reconstruction of the aortic bifurcation technique for aortoiliac occlusive disease

Kim Taeymans, MD,[a] Erik Groot Jebbink, MSc,[b,c] Suzanne Holewijn, PhD,[b] Jasper M. Martens, MD,[d] Michel Versluis, PhD,[c] Peter C. J. M. Goverde, MD,[a] *and* Michel M. P. J. Reijnen, MD, PhD,[b] *Antwerp, Belgium; and Arnhem and Enschede, The Netherlands*

ABSTRACT

Objective: The objective of this study was to demonstrate the 3-year outcome of the covered endovascular reconstruction of the aortic bifurcation (CERAB) technique for the treatment of extensive aortoiliac occlusive disease (AIOD).

Methods: Between February 2009 and July 2016, all patients treated with the CERAB technique for AIOD were identified in the local databases of two centers and analyzed. Demographics and lesion characteristics were scored. Follow-up consisted of clinical assessment, duplex ultrasound, and ankle-brachial indices. Patency rates and clinically driven target lesion revascularization were calculated by Kaplan-Meier analysis.

Results: Of 130 patients (69 male and 61 female) treated, 68% were diagnosed with intermittent claudication and 32% suffered from critical limb ischemia. The majority (89%) were TransAtlantic Inter-Society Consensus II D lesions, and the remaining were B and C lesions (both 5%). Median follow-up was 24 months (range, 0-67 months). The technical success rate was 97%, and 67% of cases were performed completely percutaneously. The ankle-brachial index improved significantly from 0.65 ± 0.22 preoperatively to 0.88 ± 0.15 after the procedure. The 30-day minor and major complication rate was 33% and 7%. The median hospital stay was 2 days (range, 1-76 days). At 1 year and 3 years of follow-up, 94% and 96% of the patients clinically improved at least one Rutherford category (2% and 0% unchanged, 4% and 4% worsened). Limb salvage rate was 98% at 1 year and 97% at 3 years of follow-up. Primary, primary assisted, and secondary patency was 86%, 91%, and 97% at 1 year; 84%, 89%, and 97% at 2 years; and 82%, 87%, and 97% at 3 years. Freedom from clinically driven target lesion revascularization was 87% at 1-year follow-up and 86% at both 2-year and 3-year follow-up.

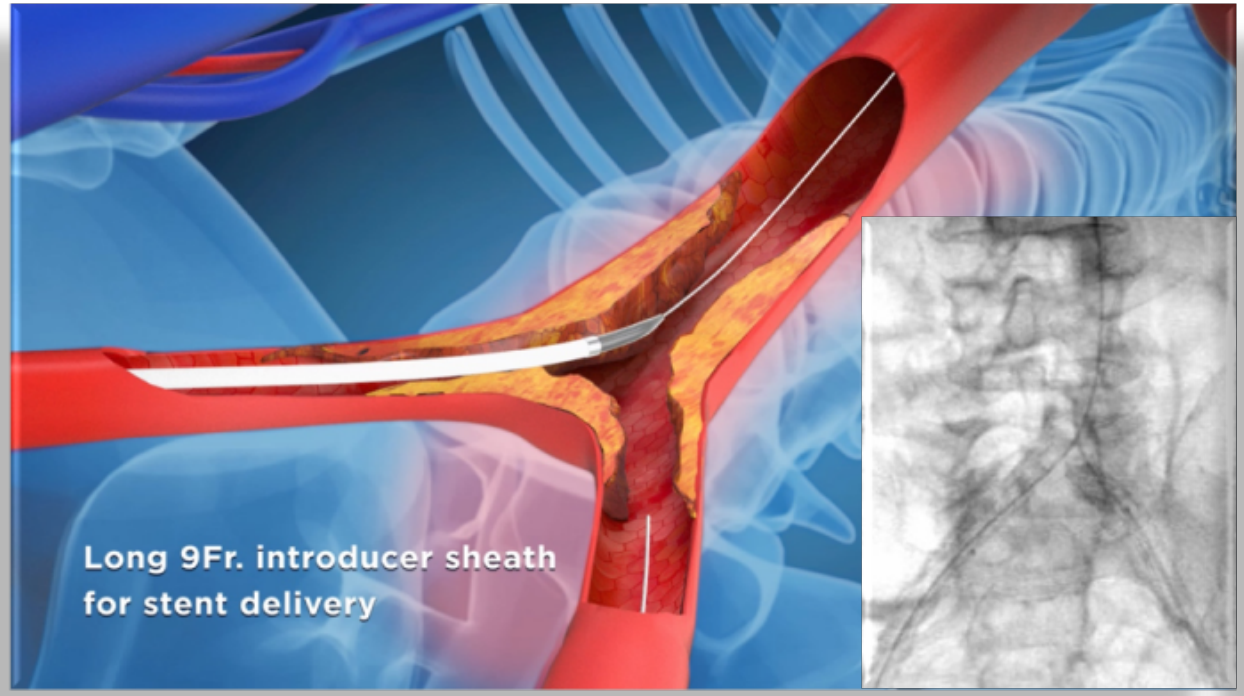
Conclusions: The CERAB technique is a safe and feasible technique for the treatment of extensive AIOD with good 3-year results regarding patency and clinical improvement. (J Vasc Surg 2017;■:1-10.)

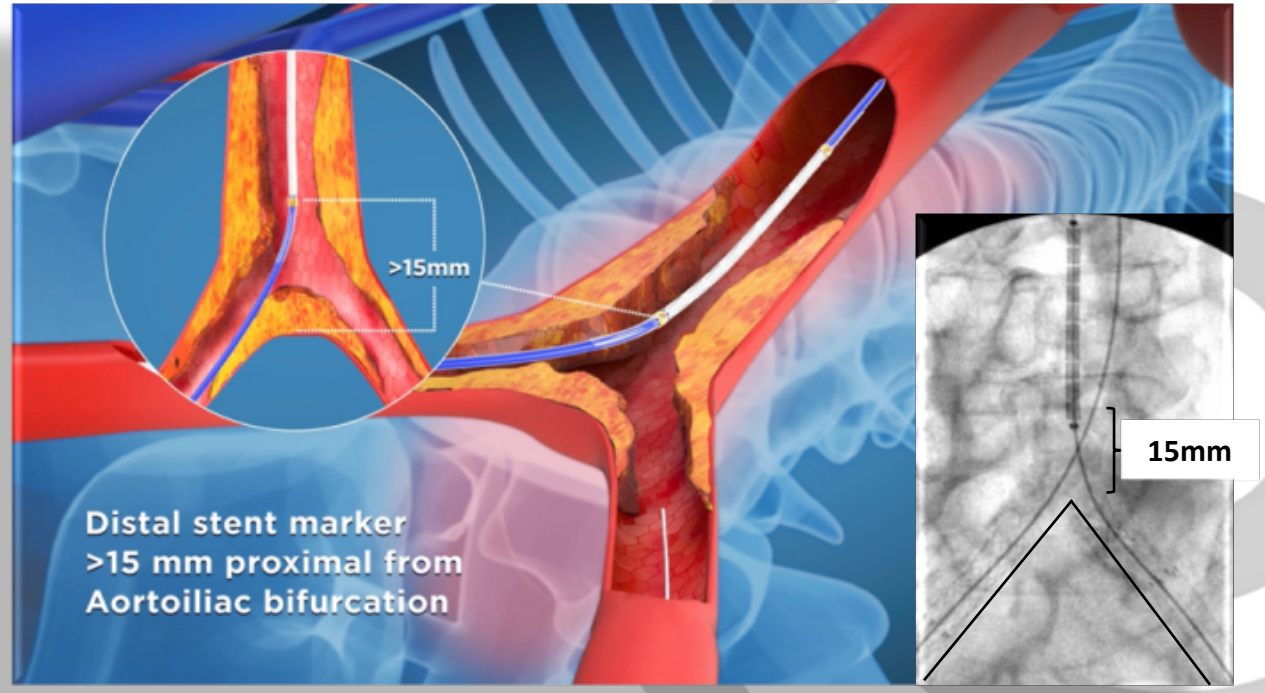
Data:

ZNA hospital	*Antwerp – Belgium*
Rijnstate hospital	*Arnhem – The Netherlands*

BeGraft Stentgraft
Bentley InnoMed, Hechingen

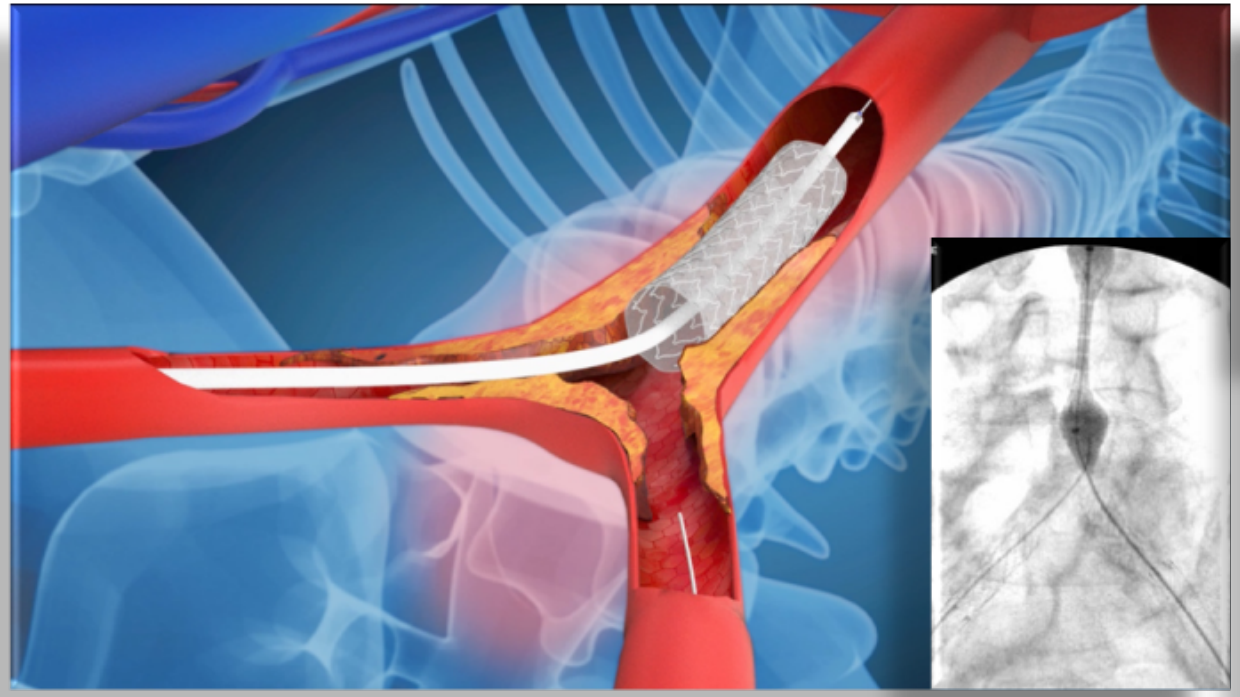
CERAB TECHNIQUE

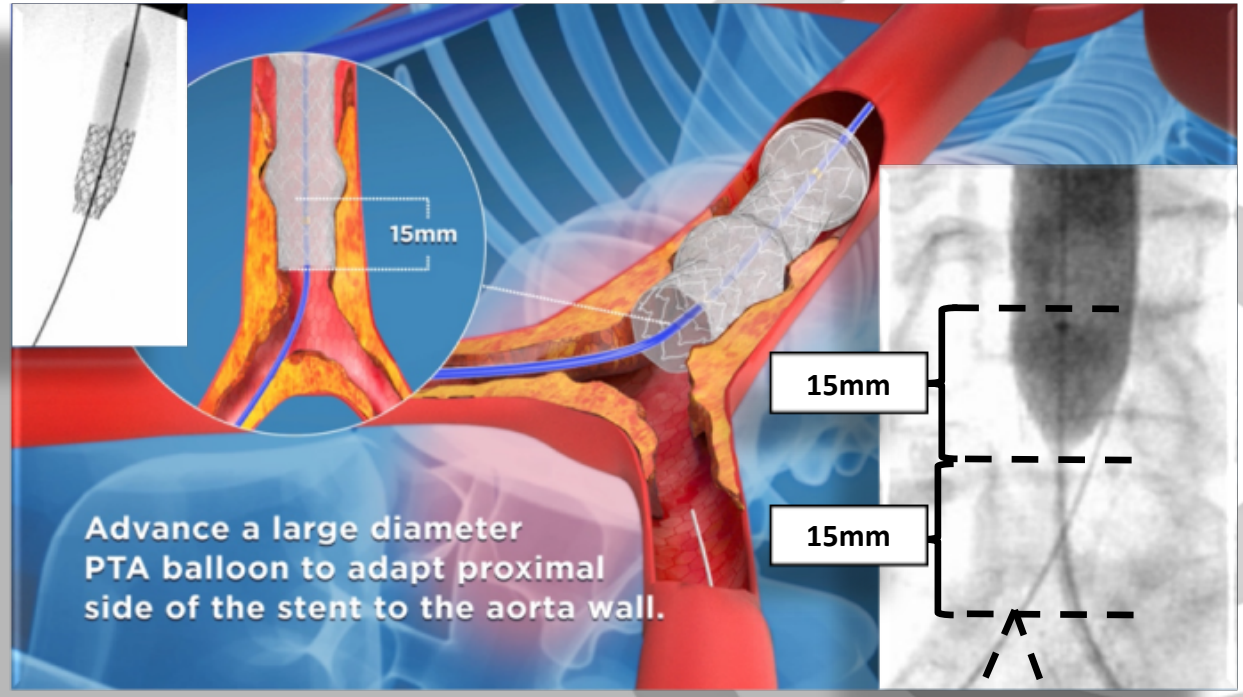




Courtesy Dr. P. Goverde
Source www.youtube.com

CERAB TECHNIQUE





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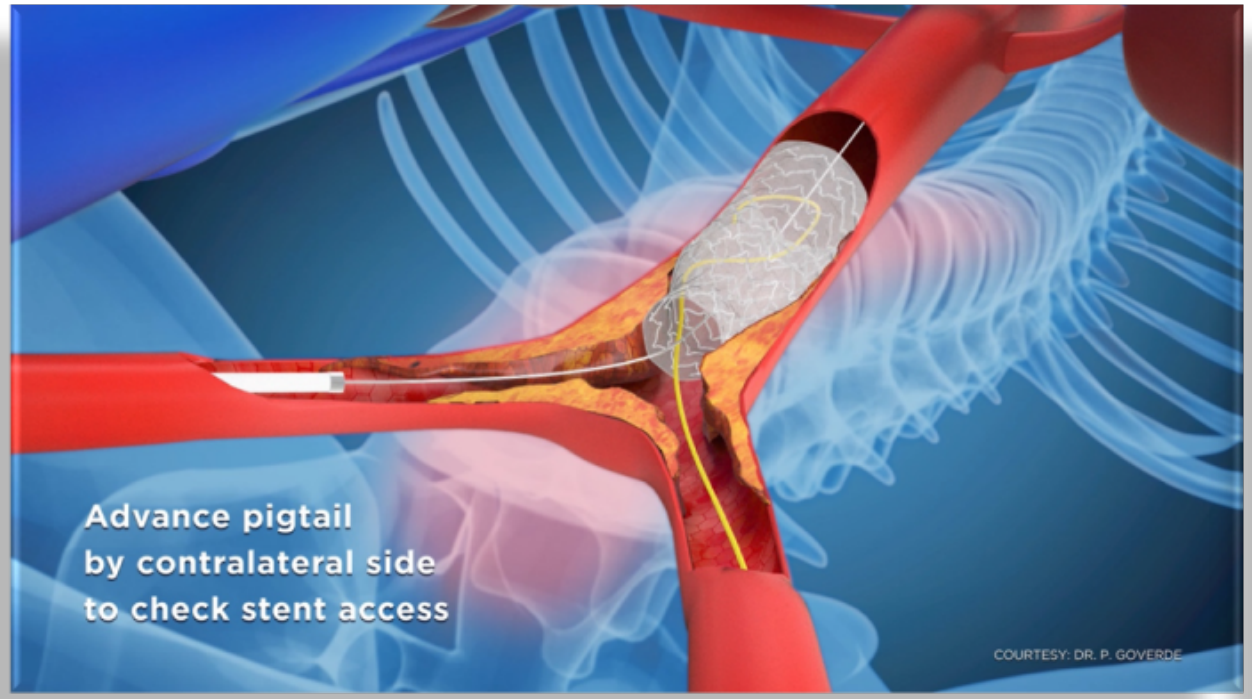
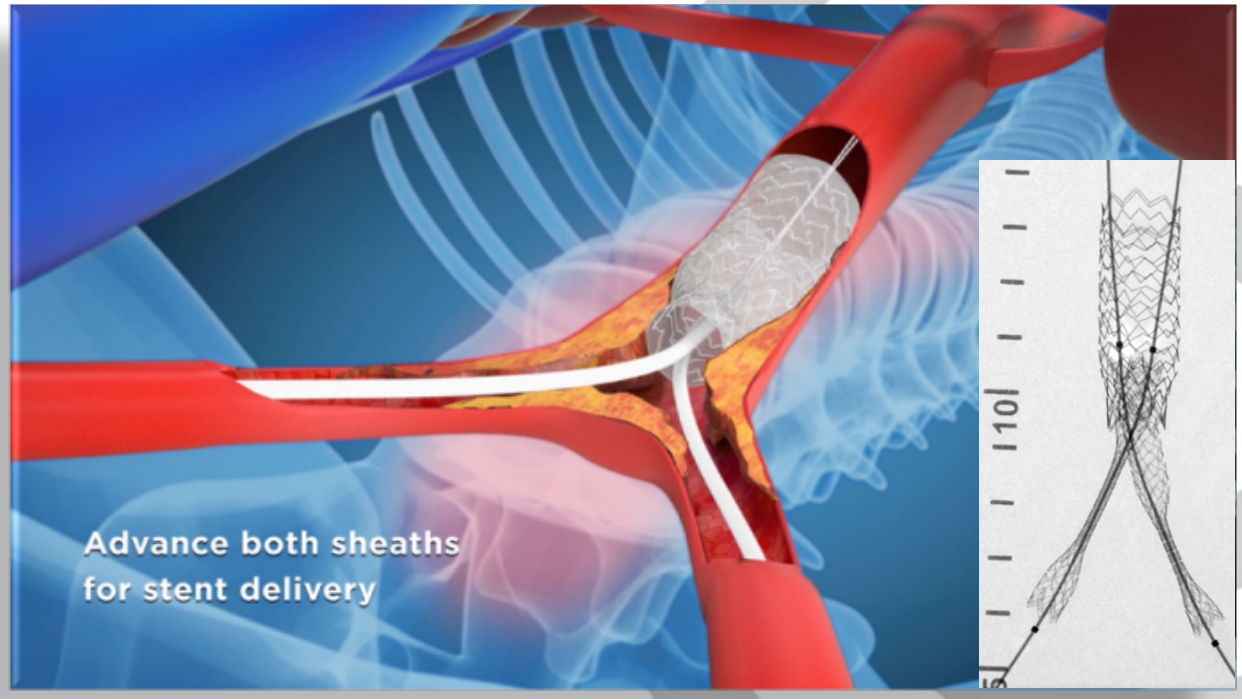
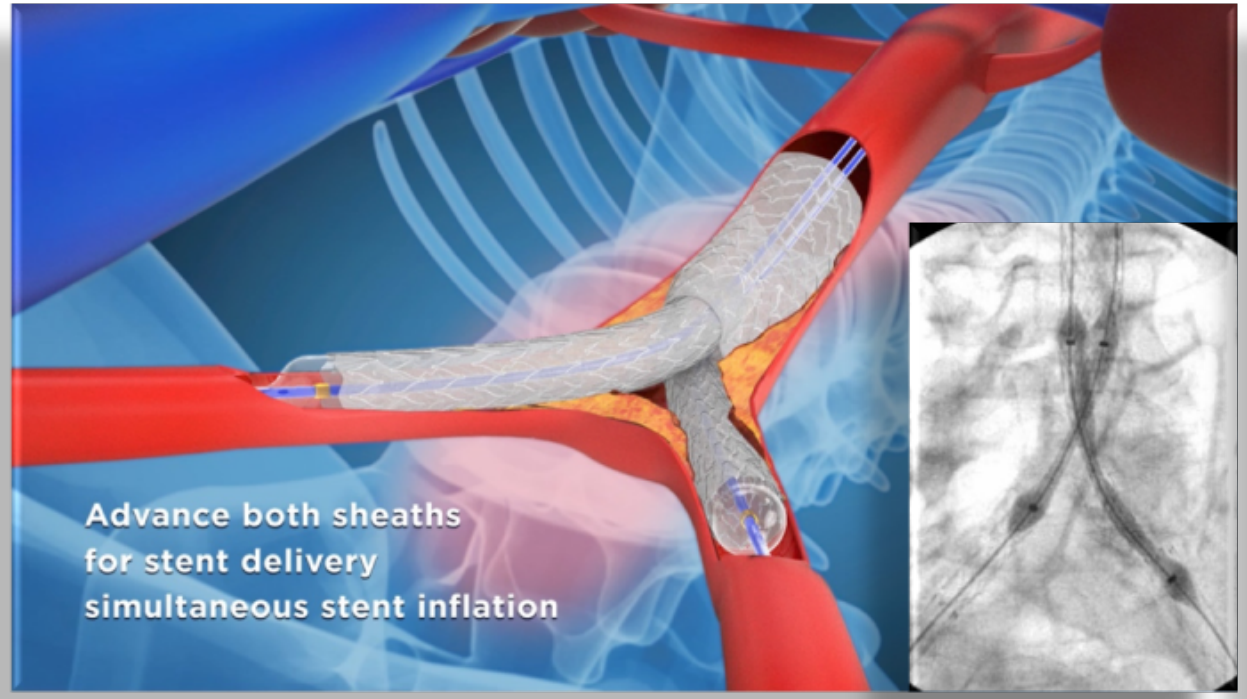
CERAB TECHNIQUE

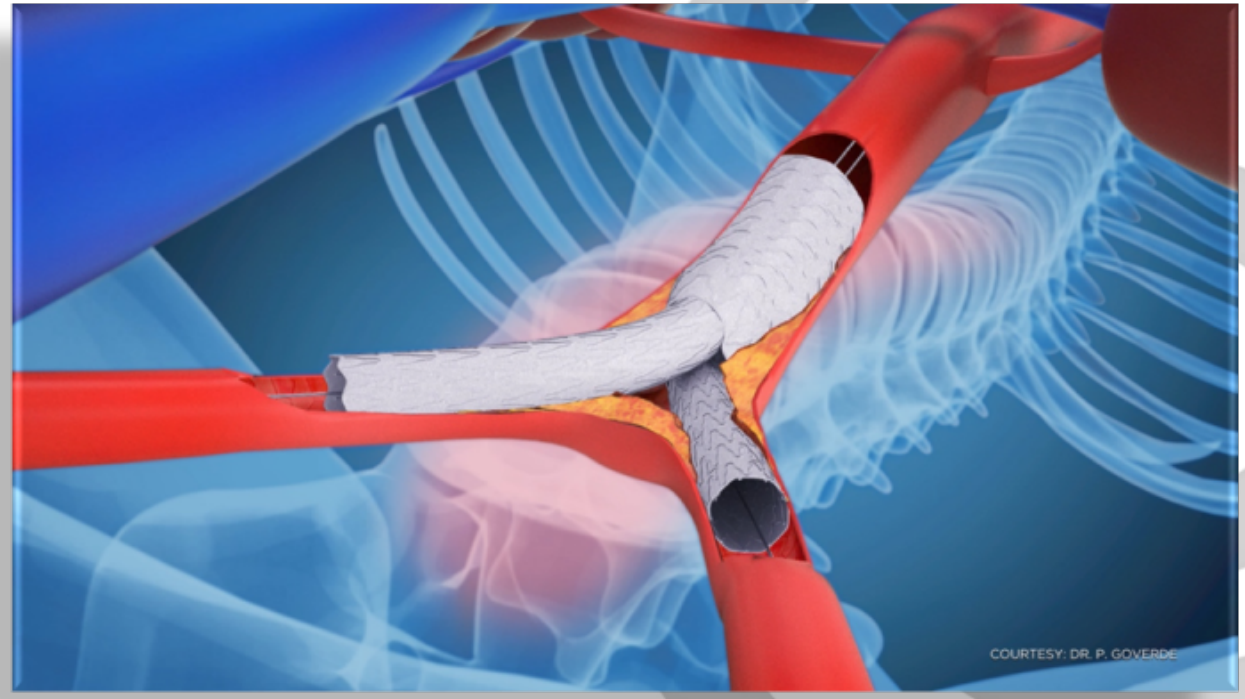




Courtesy Dr. P. Goverde
Source www.youtube.com

CERAB TECHNIQUE





Courtesy Dr. P. Goverde
Source www.youtube.com

STEP 1: left femoral access

- 0.035'' Radifocus® Guide Wire M
- 12 F Gore® DrySeal Flex introducer Sheath

STEP 2: right femoral access

- 0.035'' Radifocus® Guide Wire M
- 7 F Cook Flexor® Ansel Guiding Sheath

STEP 3: left femoral access

- BeGraft Aortic 16x29 mm, Bentley

STEP 4: left femoral access

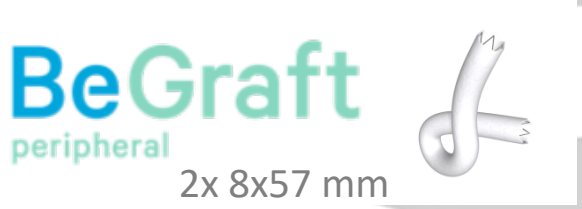
- post-dilation of the 2/3 proximal of the stentgraft with a 18 mm Atlas® Gold, Bard, PTA balloon-catheter

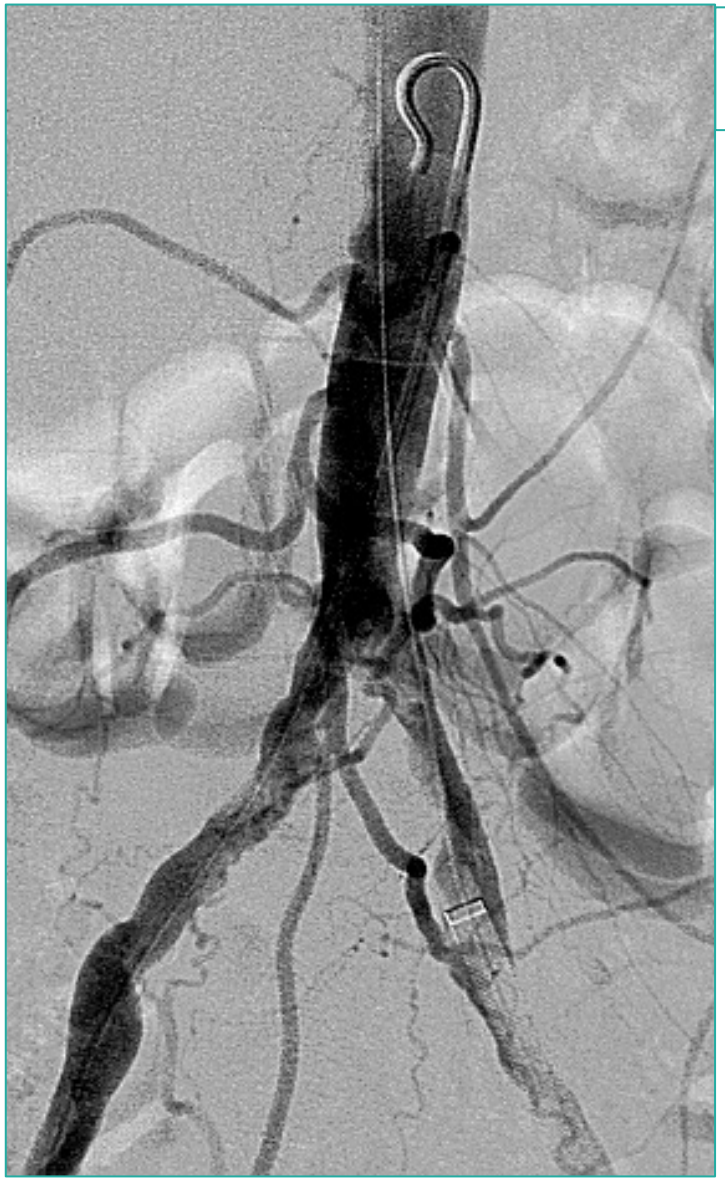
STEP 5: right femoral access

- removal of the 0.035'' guidewire and re-enter in the aortic stentgraft

STEP 6 and 7: bilateral femoral access

- Twice BeGraft Peripheral, 8x57 mm, Bentley



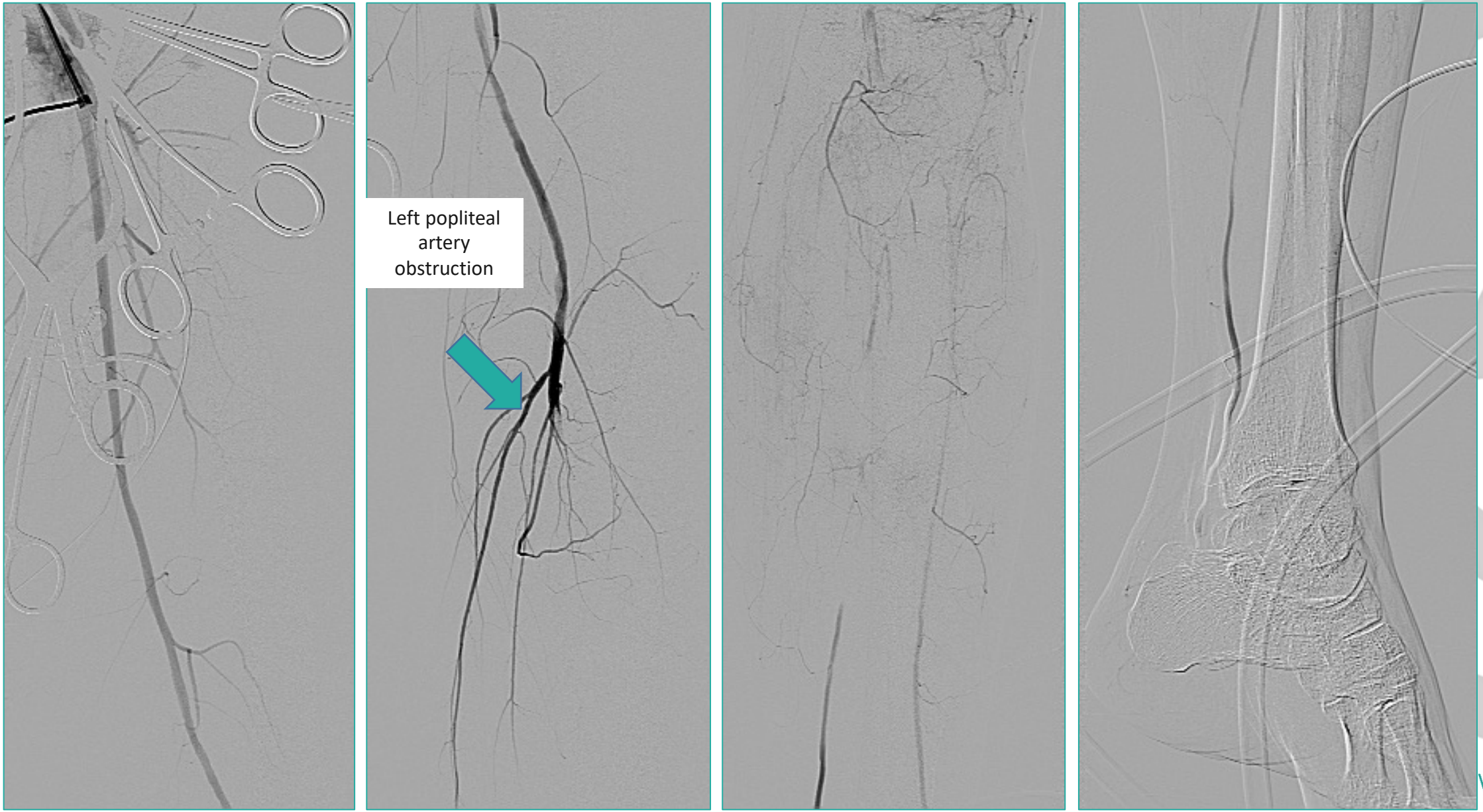


PRE

CERAB

POST

Left Lower limb angiography



WHICH TREATMENT OPTIONS?

- OPEN SURGERY:
  - *SURGICAL THROMBECTOMY?*
  - *BYPASS?*

- ENDOVASCULAR:
  - *PERCUTANEOUS THROMBECTOMY?*
  - *DIRECT STENTING WITH STENTGRAFT?*
  - *OTHER?*

OUR OPTION: Aspiration-based mechanical thrombectomy

CLINICAL STUDY

Utility of a Power Aspiration–Based Extraction Technique as an Initial and Secondary Approach in the Treatment of Peripheral Arterial Thromboembolism: Results of the Multicenter PRISM Trial

Richard R. Saxon, MD, James F. Benenati, MD, Corey Teigen, MD, George L. Adams, MD, MHS, and Luke E. Sewall, MD, for the PRISM Trialists

ABSTRACT

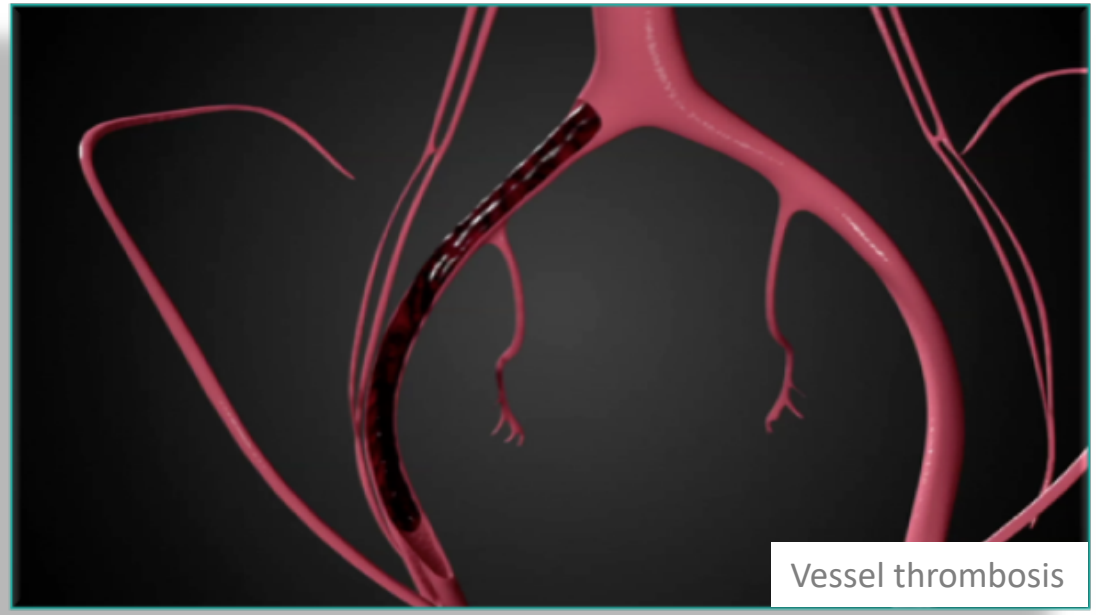
Purpose: To investigate the safety and initial efficacy of XTRACT, a power aspiration–based extraction technique for treatment of peripheral arterial thromboembolism with the use of the Penumbra/Indigo system.

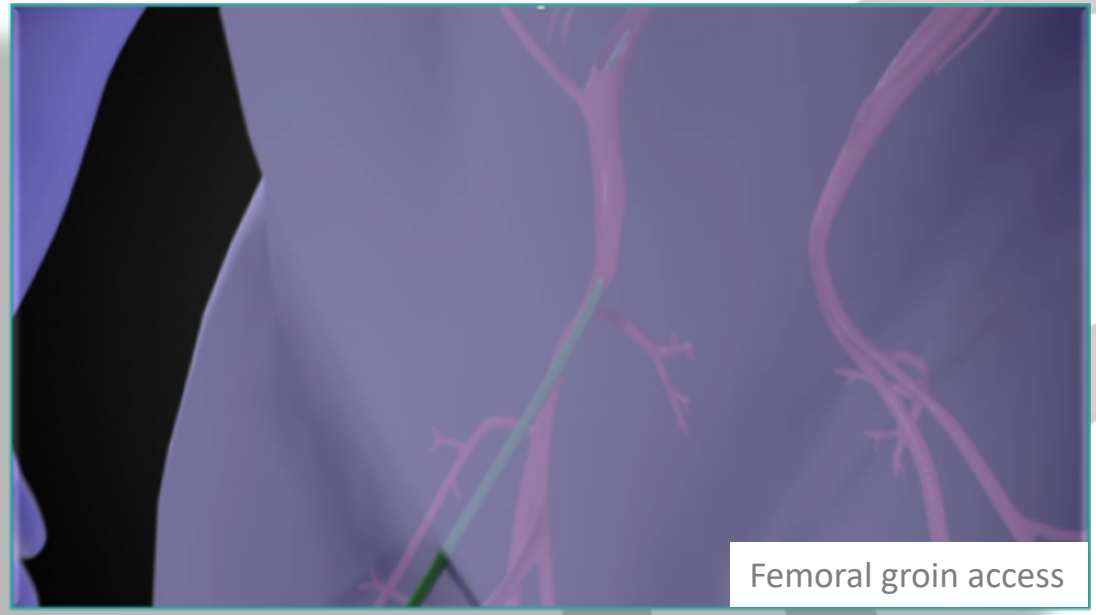
Materials and Methods: A total of 79 patients were enrolled: 39 (49.4%) underwent XTRACT as the initial therapy and 40 (50.6%) underwent XTRACT after failed catheter-directed thrombolysis or other mechanical intervention or for removal of distal emboli that occurred during an intervention. Occlusion locations were as follows: 36.7% (n = 29) in the profunda, common, or superficial femoral artery; 35.4% (n = 28) in the popliteal artery; 15.2% (n = 12) in the tibial artery; 7.6% (n = 6) in the peroneal artery; and the remainder in the common iliac (n = 1), external iliac (n = 1), sciatic (n = 1), and brachial (n = 1) arteries.

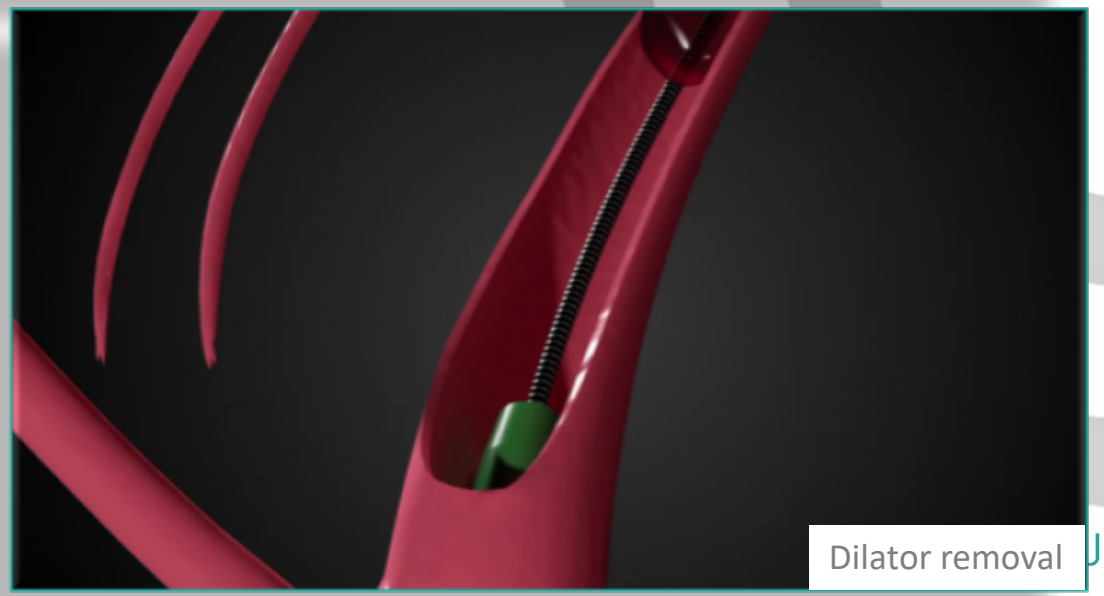
Results: Complete or near-complete revascularization (Thrombolysis In Myocardial Infarction [TIMI] grade 2/3 flow) was achieved in 87.2% of patients (68 of 78) immediately after the XTRACT procedure and before any other intervention. Successful revascularization was achieved in 79.5% of patients (31 of 39) as an initial treatment and in 92.5% (37 of 40) as salvage or secondary therapy. After additional adjunctive endovascular interventions, TIMI grade 2/3 flow was achieved in 96.2% of patients (76 of 79). Complete thrombus removal and restoration of normal flow (TIMI grade 3) was achieved in 77.2% of patients (61 of 79) after all endovascular treatment was completed. No patients required surgical revascularization. No device-related adverse events occurred.

Conclusions: XTRACT was safe and effective for revascularization of acute or subacute peripheral arterial occlusions as a primary therapy or as a secondary therapy after other endovascular techniques had failed.

Aspiration-Based Extraction Technique



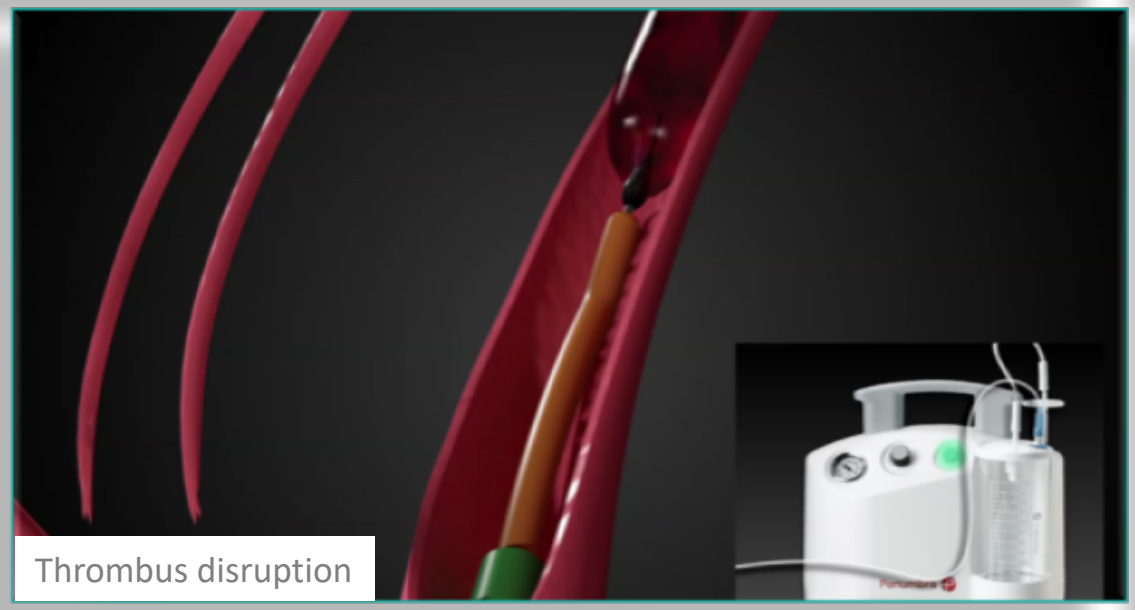




Aspiration-Based Extraction Technique

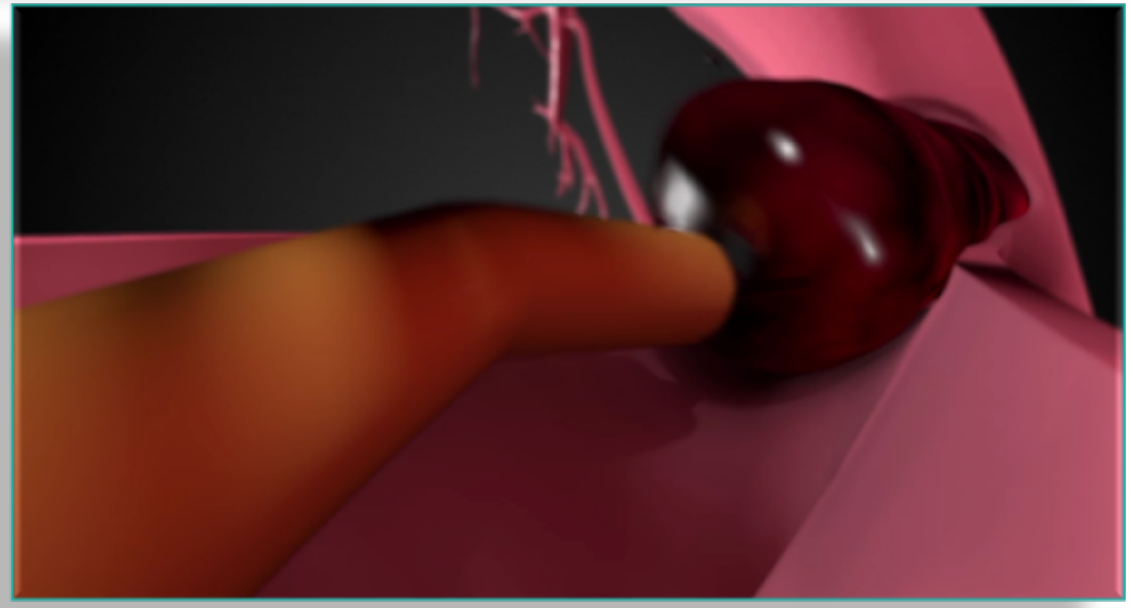

Aspiration cath advancement

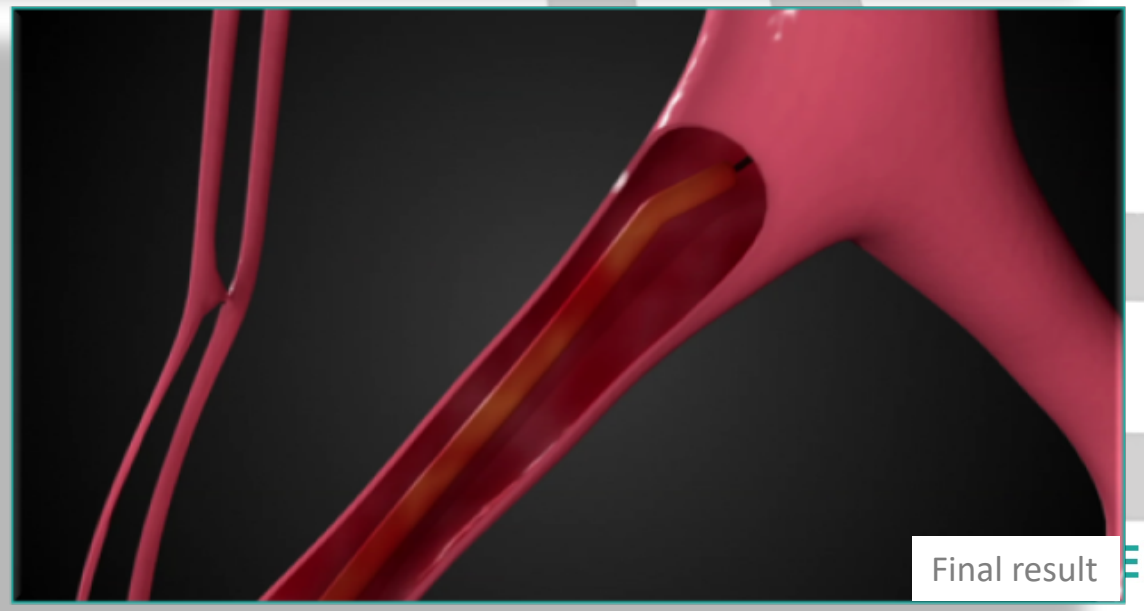

Separator introduction


Thrombus disruption


Catheter advancement

Aspiration-Based Extraction Technique





STEP 1: left femoral access

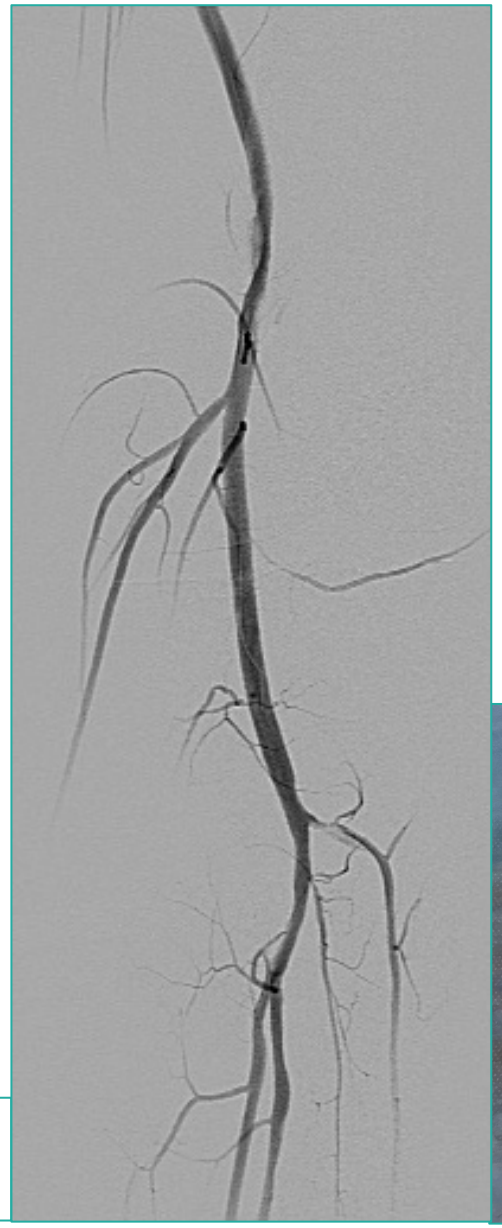
- direct antegrade access to the SFA with a blunt needle through the common femoral artery cut down
- V-14™ ControlWire™, Boston Scientific

STEP 2: left femoral access:

- CAT 8 Indigo® System Penumbra Inc.
- SEP 8 Separator Penumbra Inc.

PRE

Aspiration-based mechanical thrombectomy



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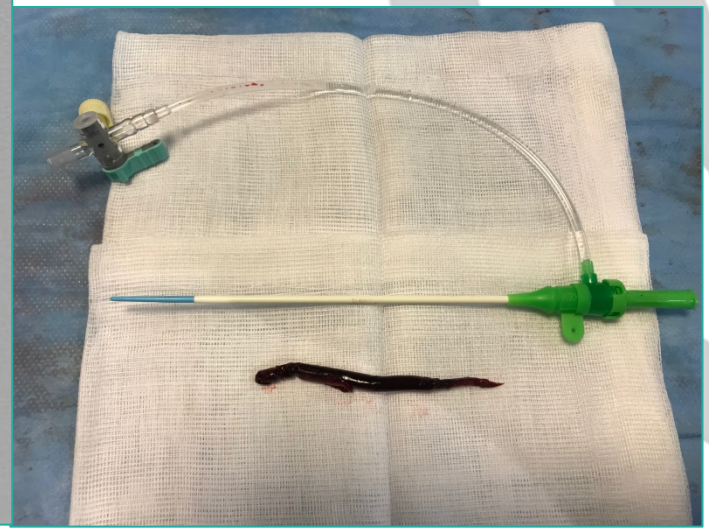
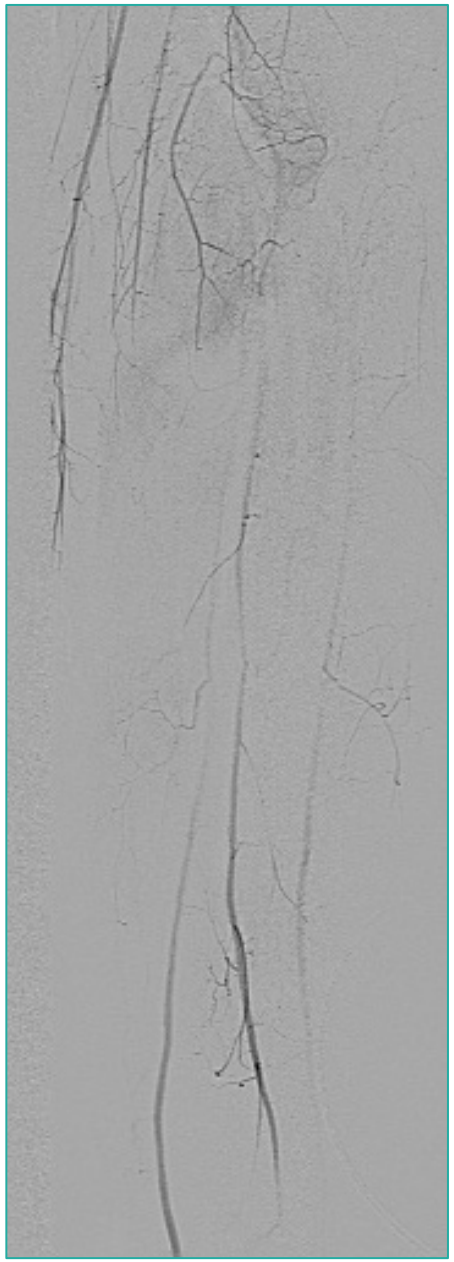
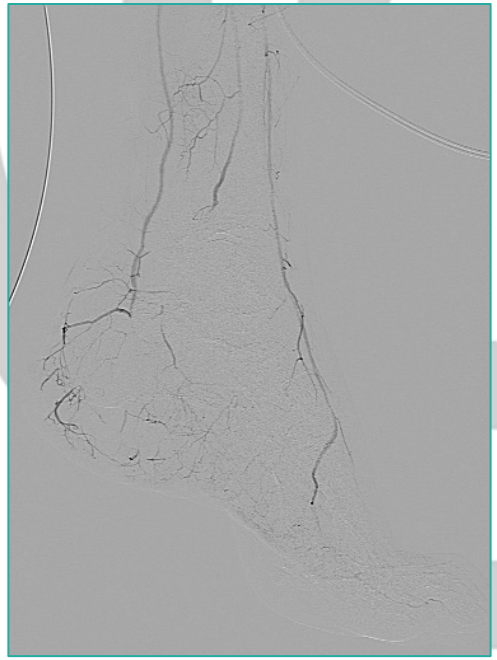


COMPLETION ANGIOGRAPHY







SUMMARY

- Iliac thrombectomy is the first line strategy for acute iliac thrombosis, but in some cases it can be inconclusive and lead to controlateral embolization
- Alternatively: CERAB configuration with BeGraft covered stents by percutaneous approach
- CERAB leads to good midterms outcomes

- Aspiration-based extraction technique with Indigo Penumbra is safe and effective for revascularization of acute peripheral arterial occlusion as a primary therapy
- It can represents a viable tool as a secondary therapy after other surgical or endovascular techniques
- The variety of aspiration catheter size allows for fast thromboaspiration in small and big vessels, arterial and venous bed, and fistulas