Case

- 70 y/o female presented with right lower extremity rest pain and non-healing first toe wound and left lower extremity claudication
- History significant for left anterior tibial angioplasty for gangrene, s/p left first toe amputation
- Diabetes Mellitus (DM), Hypertension (HTN), Hyper-cholesterolemia
- Nonpalpable femoral and distal pulses but Doppler signals
- Ankle Brachial Index (ABI) calcified, decreased waveforms

Pre-operative imaging

Procedure

- Right common femoral artery (CFA) exposure
- Antegrade approach to right superficial femoral (SFA) angioplasty and stenting (5mm x 6cm self-expanding stent) converted to retrograde approach for aorto/iliac lesions
- Percutaneous left CFA access
- Placement Endologix AFX device (23 mm main body diameter/13 mm limb diameter/30 mm length)
- 14mm x 4 cm aortic balloon angioplasty
- 8mm x 4 cm common iliac balloon angioplasty
- 8mm x 37 mm balloon expandable common iliac kissing stents
- Right CFA primary repair, Left CFA Myx closure device

Procedure Imaging

No disclosures
First I am going to start with a quick case of a 70 y/o female with right lower extremity rest pain and nonhealing first toe wound and left lower extremity claudication. She had nonpalpable femoral and distal pulses and her ABIs were calcified with dampened waveforms.

As you can see here her arteriogram showed extensive aorto iliac occlusive disease, CT scanned showed a small aorta measuring only 14 mm in outer diameter with circuferential calcium of her aorta and iliac arteries.

We treated her with a right CFA exposure, antegrade stenting of the right SFA, reversal of this sheath along with perc left CFA access, placement of an endologix AFX device with a 23 mm main body, followed by balloon angioplasty or the aorta, and balloon expandable kissing stents of the outflow.

Here we can see her pre-, intra-, and post-deployement imaging.
Post-operative follow-up

- Right first toe amputation healed
- No further rest pain
- Duplex imaging shows patent aortic and iliac stents without stenosis
- ABIs calcified, good pulse volume recordings

Results – AFX prosthesis (Endologix, Irvine, CA)

- 10 high-risk patients (TASC D) for ABF bypass
- 100% technical success
- 8 patients require additional stent placements
- 100% resolution of symptoms
- ABI improvement mean 0.50 bilaterally
- Follow-up 40 months +/- 24 months
- Primary patency 80%, Secondary patency 100%
- One acute iliac limb thrombosis

Results – Excluder prosthesis (W.L. Gore, Flagstaff, AZ)

- 14 high-risk patients (TASC C&D) for ABF bypass
- 100% technical success
- 9 patients require additional stent placements
- 100% resolution of symptoms
- ABI improvement mean 0.25 bilaterally
- Follow-up 62 months (11-94 months)
- Primary patency 85%, Secondary patency 100%
- Two acute iliac limb thrombosis

Indications

- Rest pain and tissue loss
- TASC C&D lesions
- High operative risk for ABF
- Significantly calcified aorta where clamping would be difficult

Technical Tips

- Access
  - Percutaneous femoral exposure
  - Cutdown with femoral endarterectomy
  - Brachial access may be used for alternate access

- Graft placement
  - Due to small and disease vessels, graft placement may require pre-dilation with endograft sheath dilator or high-pressure balloon
  - In calcified vessels, covered stents may be required, to avoid rupture

- Post-placement treatment options
  - Due to poor radial force, aortic occlusion balloons vs. high-pressure balloons
  - Re-inforce with self-expanding or balloon-expandable stents

Precautions

- Calcified and tortuous vessels
  - Difficult delivery of endograft
- Occlusions
  - Standard techniques for crossing however will require pre-dilation before endograft positioning
  - Sub-intimal cannulation puts vessel at risk for rupture with balloon dilation
- Small aortic diameters
  - May occlude limbs if using modular devices
- Optimize iliac outflow
  - Device has minimal radial force, often need to reinforce with stents to avoid limb occlusions
  - Ensure appropriate femoral outflow, profunda!
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RM9 She did well with resolution of her rest pain and healing of her toe amp. At ten months out she continues to be asymptomatic. I did an arteriogram of her last week for arterial steal of her left arm and here we can see continued patency of the graft.
Robyn Macsata, 11/16/2018

Slide 8

RM1 There are few published studies in the literature looking at use for endografts for occlusive disease.
Robyn Macsata, 11/16/2018

RM2 Van Haren et al. used the Endologix AFX device to treated 10 patients with TASC D aortoiliac occlusive disease, noted 100% technical success, 8 required additional stents at time of procedure, noted 100% resolution of symptoms, ABI improvement, and at 40 month f/u 80% primary patency and 100% secondary patency. Only one acute limb thrombosis was noted.
Robyn Macsata, 11/16/2018

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RM3 Zander et al.
Robyn Macsata, 11/16/2018

RM4 used the Gore excluder device to treat 14 patietns with TASC C and D aorto iliac lesions, similarly they had 100% success, 9 patients required additional stenting at the time of the procedure, there was 100% resolution of symptoms with and ABI improvement, primary patenc was 85% at 62 months and seocndary patency was 100% with two acute limb thrombosis
Robyn Macsata, 11/16/2018

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RM10 The main indication for endograft use is symptomatic patients with TASC C&D aortoiliac occlusive disease who are either high operative risk for ABF or have a significantly calcified aorta that would be difficult to clamp, this is the same group of patients you would be considering ax bifemoral bypass
Robyn Macsata, 11/16/2018

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RM11 Some technical tips for the procedure:
Robyn Macsata, 11/16/2018

RM12 Access may be done perc or through a cut down, if CFA or profunda disease is present, I recommend CFA cut down and endartectomy, realizing the profunda is the main outflow of the aortoiliac segment. Brachial access is an alternative option.
Robyn Macsata, 11/16/2018

RM13 Iliac vessels may need to be pre-dilated with either the endograft sheath dilator or high-pressure balloons to successfully pass the
graft. If vessels are extremely calcified, covered stents may have to be pre-deployed.

RM14 It must be remembered that endografts have poor radial force, therefore, after placement high-pressure balloon dilation will be necessary, and the outflow of the graft may have to reinforced with self- or balloon- expandable stents.

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RM15 Some precautions:

RM16 Calcified and tortous vessels will make delivery of the endograft difficult.

RM17 Occluded vessels can be crossed using standard techniques however will require pre-dilation before endograft positioning, sub intimal cannulation will put vessel at risk for rupture with balloon dilation

RM18 Small aortic diameters, particualry at the distal bifurcation, may occlude limbs if using modular devices  

RM19 The outflow should always be optomized, given these devices have minimal radial force, often stents are needed to reinforce the outflow, also assure approppraite femoral flow to the profunda
Value

• Despite good results, endograft use for occlusive disease is off label use and therefore not reimbursed

• In comparison to open stents, endograft use is expensive and may not be cost effective

• No current studies looking into cost/benefit ratio
RM20 And finally the value, despite studies showing good results, endografts for occlusive disease is off label use and therefore not reimbursed. In comparison to open stents, endograft use is expensive and may not be cost effective. No current studies looking into cost/benefit ratio. Thank you.

Robyn Macsata, 11/16/2018