Pieces and Parts:
Use of the Gore Excluder, Viabahn, and VBX balloon expandable stent grafts for the Treatment of Aorto-iliac Occlusive Disease

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Disclosure

Speaker name: Erin Moore

I have the following potential conflicts of interest to report:

- Consulting: WL Gore and Assoc.
- Employment in industry
- Stockholder of a healthcare company
- Owner of a healthcare company
- Other(s)
- I do not have any potential conflict of interest
When Faced with Aorto-Iliac Occlusive Disease, Consider:

• Aorta often too small to accommodate standard bifurcated endograft sizes
• The risk of distal embolization higher in anatomies with fragile, unstable plaque
• Coverage is encouraged, but complete exclusion from aortic pulsation not as critical (unlike aneurysm repair)
• Iliac diameters often prohibitively small for the standard aneurysm endograft limb sizes (∴ VBX)
CERAB

Covered Endovascular Reconstruction of the Aortic Bifurcation

• Introduced as a novel technique in June 2013
• Involves use of the Atrium V12 stent graft deployed in the aorta
• The superior aspect is flared
• Kissing Atrium stent grafts are positioned within the non-flared distal segment

Technical Issues

• Atrium V12 is not available in the US
• The original CERAB description calls for iliac grafts that are 1/2 the size of the distal aortic lumen
  • Gutter leaks → stagnation → thrombus → intimal hyperplasia potential (COBEST Trial)
  • Inadequate size match to the distal Aortic Stent graft → lack of seal → potential for leak and/or pseudoaneurysm formation
Conservation of Circumference

Circumference of Circle = $\pi d$

The circumference of this “D” then, should be $\frac{1}{2}$ of the original circle’s circumference, plus the length of the diameter:

$$C_D = \left(\frac{1}{2} \pi d\right) + d$$

or

$$C_D = \pi r + d$$
The Math:

For a 10mm main body distal diameter:
Circ. = \( \pi \times 10 \approx 31.42 \text{mm} \)
Circ. of the “D” = \( \pi r + d = \frac{1}{2} \times 31.42 + 10 = 25.7 \text{mm} \)
So the diameter of the "D" is \( 25.7/\pi \approx 8 \text{mm} \).
That’s roughly 80% of the main body circumference…
*Commit 80% to memory!!*
Early Experience

• Without Atrium V12, we began using iliac limbs and extension pieces from the Gore Excluder© device in the Aorta
• These limbs are tapered: 16mm proximally and 10-14mm distally
• Gore Viabahns were then sized for placement into the distal Aorta stent graft
Early Experience

- Size discrepancies still existed between native iliac size and the size required to fill the distal Aortic graft (Conservation of Circumference)
- Self expanding Viabahns also “compete” for space despite similar sizes, creating luminal mismatch
Viabahns with Unequal Expansion
Early Experience

• Balloon Expandable Viabahn (VBX) provides a solution to both problems of competition for space and size mismatch
  • Unique “uncoupled” cell design
  • Ability to expand one end and “taper” into distal anatomy
  • Better moldability to achieve full expansion to fill the distal aorta without mismatch
• Cell separation allows for easy flaring
• Also allows greater flexibility for tortuous anatomies
• Compliant balloon use allows for moulding to fill the distal aorta equally
• *Expansion will create foreshortening*
The VBX “Double D”
Conclusion

- CERAB is an excellent technique for AOID
- We “stumbled” into this technique 9 years ago taking a “pieces and parts” approach
- Use of Excluder Limbs and Extensions effectively replaces the V12 Atrium in USA
- VBX has been superior to standard Viabahn to avoid competitive lumen mismatch and better apposition to the Excluder component
- Conservation of circumference minimizes gutter leaks and intimal hyperplastic response
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