Adjuncts To Achieve Better Sealing And AAA Exclusion With Ch/EVAR: Value Of Viabahn BX (Balloon Expandable) Branch Grafts As Shown In An In Vitro Model

In vitro studies

Standardized basic setup:
- Silicon juxtarenal AAA model
- Gore Excluder Main Graft (MG)
- Chimney Graft (CG) into renal artery

Measured on CT:
- Gutter size & shape
- CG/MG compression

Varied:
- Length of seal zone
- Type of CG: BE/SE
- Diameter of MG/CG
- Angle of CG
- EndoAnchors, CH-EVAS

Lessons learned

1. Larger gutters with BE CG as opposed to SE CG
2. Main graft compression can occur with BE CG
3. CG compression in all configurations, typically at branch ostium

Disclosure

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- I have no potential conflicts of interest to report:
Lessons learned
1. Larger gutters with BE CG as opposed to SE CG
2. Main graft compression can occur with BE CG
3. CG compression in all configurations, typically at branch ostium
4. EndoAnchors can reduce gutter size and isolate gutter from sac
5. Gutters and CG compression with CH-EVAS (Nellix®)

Lessons learned
1. Larger gutters with BE CG as opposed to SE CG
2. Main graft compression can occur with BE CG
3. CG compression in all configurations, typically at branch ostium
4. EndoAnchors can reduce gutter size and isolate gutter from sac
6. Secondary filling in CH-EVAS can reduce paragraft gutters

Methods: setups
EXISTING DATA
• 2 silicon juxtarenal AAA models (Aortic Ø: 19, 24 mm)
  • Main Graft: Excluder (Ø: 23, 28.5mm)
  • Chimney Grafts: Viabahn SE (Ø: 6, 10, 13 mm)
  • Advanta V12 BE (Ø: 6, 12 mm)
NEW DATA
• Main Graft: Conformable Excluder (Ø: 23, 26, 28.5 mm)
• Chimney Grafts: Viabahn BX (Ø: 6, 10 mm)
• Additional ballooning Viabahn BX (Ø10 to 12mm) after CT
  – in 28.5 mm Main Graft only
  – re-CT

Resulting in 49 CG/MG setups

Next step
New Main and Chimney grafts
• MG: Gore Conformable Excluder
• CG: Gore Viabahn BX
  • Compare to:
    – Gore Excluder
    – Gore Viabahn SE
    – Atrium, Advanta V12 BE

Methods: setups
VBX
SE
cEx
cEx
Methods: CT protocol
- Gutter cross sectional areas
  - TP2
  - TP3
- Gutter volumes per cm sealing zone

Results: 3 failures
- Ch/EVAR was successfully deployed in 46/49 setups

Results: TP2 areas (prox)
- SE smallest gutters (P<0.05) except small MG (NS)

Results: TP3 areas (dist)
Conclusions:

- Conformable Excluder performs similar with Chimneys as Excluder
- Gutter Area at the level of the gutter entry (TP2):
  - Viabahn SE has smallest gutters
  - Viabahn BX performs like the Atrium V12 BE
- Gutter Area at the level of the gutter exit (TP3):
  - Atrium V12 BE has smallest gutters
  - Viabahn BX has larger gutters than the Atrium V12 BE
- Gutter Volumes
  - Viabahn BX has largest gutters (only for with 28.5 main graft)
- Gutter Area varies from gutter entry to gutter exit
  - dependent on type and make of chimney graft
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