In Vitro Analysis Of Parallel Grafts
How They Work And Why They Fail
New Lessons Learned

Jan D. Blankensteijn
VU University Medical Center, Amsterdam

Disclosures
Jan Blankensteijn serves as a consultant for:
• Gore and Associates
• Endologix

Chimneys: How they work
Exclude aneurysm
Maintain branch patency

Chimneys: Why they fail
Fail to exclude
Lose branch patency
Gutter connecting to sac:
(Type 1a) Endoleak
Chimney stenosis/kink
Occlusion

Chimneys gutters
Top of Sealing zone
Bottom of Sealing zone

Chimneys gutters
(type 1a endoleak)
Chimneys compression


Review Lindblad et al*:

- 831 EVAR/TEVAR with ≥ 1 CHIMPS
  - Early Endoleak type 1: 11-13%
  - Early Patency: 97-99%, little long term loss


In vitro studies

How they work / Why they fail


In vitro studies

Measured:
- Gutter area/volume, shape,
- Chimney compression

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

Lessons learned
Lesson 1: Larger gutters with BE CG as opposed to SE CG

Lesson 2: Main graft compression can occur with BE CG

Lesson 3: CG compression occurs to some extent, in all configurations, typically at branch ostium

Lesson 4: Length & angulation of sealing zone have no impact on main or CG graft compression

Lesson 5: EndoAnchors can reduce gutter size, but accurate placement is a challenge

Lesson 6: EndoAnchors can isolate gutter from sac, while placement is not difficult
Lesson 7:
Gutters and CG-compression also occur with EVAS-CG (Nellix®)

Universal lesson:
In theory, theory and practice are the same, in practice they are not!
– Albert Einstein

"I never said half the crap people say I did"