Adaptation of the peri-renal aorta after placement of an AAA stentgraft
Conflict of interest

• Unrestricted grant Vascutek
• Proctor Vascutek
CLINICAL PROBLEM:
DURABILITY OF STENT GRAFTS

% EVAR (vs open repair)

Nr EVAR

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CLINICAL PROBLEM: DURABILITY OF STENT GRAFTS

DURABILITY OF STENT GRAFTS

CLINICAL PROBLEM:
DURABILITY OF STENT GRAFTS

DSAA
DUTCH SURGICAL ANEURYSM AUDIT

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CLINICAL PROBLEM: DURABILITY OF STENT GRAFTS

Deerey et al Surgery 2017
CLINICAL PROBLEM: DURABILITY OF STENT GRAFTS

Dynamic environment

- ~40 million cycles per year
- Complex configurations
- Long-term durability
  - sealing & fixation
  - fracture & dislocation

How to design stent grafts?
How to predict failure?

Parameters to predict failure

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FACTORS INFLUENCING SEALING AND FIXATION

• Over time
  • Conformational changes ring-stents and aorta
  • Movement of ring-stents

• During the cardiac cycle
  • Pulsatility of ring-stents
  • Pulsatility of aortic vessel
  • Movement of ring-stents and aorta
  • Movement of branch vessels

SCOPE OF THE RESEARCH:
ECG-gated CT
- 2-year follow-up (pre + 5 post-op)
- Electively treated AAA patients
Koenrades MA et al. “The evolution of proximal ring deployment after endovascular aortic aneurysm repair using the Anaconda AAA stent graft.” Accepted for publication in J Endovasc Ther. 2018
IN SITU CHANGES OVER TIME

Koenrades MA et al. “Adaptation of the peri-renal aorta after placement of an Anaconda AAA stent graft. Poster presentation at LINC: Thursday, February 1, 2018; 12:20; Main Arena 1
CONCLUSION & OUTLOOK

• Consistent expansion of the saddle shape to nominal size

• Expansion occurs mostly in the first month

• Expansion rate related to deployment
CONCLUSION & OUTLOOK

- Oval shape conform symmetrical and become circular
- Neck angulation influences asymmetry
- Only local dilatation of the neck at the sealing zone
IN SITU MOTION ANALYSIS

IN SITU
MOTION ANALYSIS

Data collection completed 15 Anaconda patients

Collecting for 20 Fenestrated Anaconda patients

Dynamic model Aortic Neck from 4D CT data
Prior to EVAR
Adaptation of the peri-renal aorta after placement of an AAA stentgraft

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