“Long term results of AAA Endografts The Results are Better Than We Thought”

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Disclosures

• AAA stent graft patents, unrelated to this talk

Major Reports

• Ouriel Report
  - 1 Year Surg. 2005;30(5):991-4
  - Cleveland clinic report of 705 patients, found aneurysm related mortality < 2%
  - Also, he found individual devices had significant differences in frequency of limb occlusion and endoleaks.

• DREAM Trial
  - 30 day mortality was less for EVAR vs open (1.7% vs 4.7%)
  - Complication rates was less for EVAR vs open (4% vs 9%)
  - At 4 years, aneurysm related mortality for EVAR was less than open repair (4% vs 7%), but not over all mortality (26% vs 29%).

• DREAM Trial
  - 30 day mortality was significantly less for EVAR vs open (1.2% vs 4.7%)
  - Aneurysm related death less for EVAR (1.2% vs 5.7%).
  - Two years after randomization, cumulative survival was similar for open and for EVAR (89.6% vs 89.7%).

Level I Data

• EVAR I
  - Lancet 2005;365:2179-86
  - 30 day mortality was less for EVAR vs open (1.7% vs 4.7%).
  - Complication rates was less for EVAR vs open (4% vs 9%).
  - At 4 years, aneurysm related mortality for EVAR was less than open repair (4% vs 7%), but not over all mortality (26% vs 29%).

• OVER Trial
  - JAMA, October 14, 2009—Vol 302, No. 14 1535-42
  - No difference in all-cause mortality, or aneurysm related mortality when comparing EVAR to open surgery
  - The early reduction in perioperative mortality with EVAR was not sustained after 3 years.

Long Term Outcomes Beyond 5 Years

Cleveland Clinic

• Given these reports, our interest in this study came from curiosity in what happened to the patients who had endografts beyond 5 years.
• This is a retrospective review 1570 non trial EVARs performed between 1999 and 2011.
• Various outcome measures were analyzed with specific attention to stent type, and predictors of outcomes before and after 5 yrs.

Device Distribution

7 commercially used endografts were analyzed. Aneurex and Excluder had 2 generations of grafts.
**AAA Sac Overall Outcomes**

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**Multivariable Analysis of Sac Growth**

**< 5 Years**
- Iliac conduit, proximal aortic cuff extension cuff, and endoleak presence were all predictive of growth early on.

**< 5 Years**
- Patients with CHF had increased risk of growth.

**> 5 Years**
- Powerlink less likely to shrink, vs all other grafts equal.
- Younger patients, those with common iliac aneurysms more likely to shrink.

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**Overall Outcomes Beyond 5 Years**

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<table>
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<tr>
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**Multivariable Analysis of Sac Shrinkage**

**< 5 Years**
- Powerlink less likely to shrink, vs all other grafts equal.
- Younger patients, those with common iliac aneurysms more likely to shrink.

**> 5 Years**
- HTN and diabetics patients less likely to shrink.
- Patients with hypogastric embolization more likely to shrink.

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**Multivariable Analysis of 2nd Interventions**

**< 5 Years**
- Younger patients, women, dialysis dependence, common iliac aneurysms less likely.
- Proximal aortic cuff and giant Palmaz stents more likely.

**> 5 Years**
- None

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**Multivariable Analysis of Mortality**

**Overall**
- Device – none had a better mortality rate

**< 5 Years**
- Giant Palmaz stents, COPD, advanced age, and women had a greater chance of dying.

**> 5 Years**
- Giant Palmaz stents, COPD, advanced age, and CAD had a greater chance of dying.
Conclusions

- Long term results of EVAR beyond 5 years are extremely encouraging from this single institution report.
- AAA related mortality is quite low, even out to 10 years after EVAR.
- After 5 years, while there may still be sac growth, the events are small.
- There was no difference between devices with respect to mortality.
- Patients who received giant palmar stent placement did not do as well.
- Zenith performed better than other devices long term with respect to sac growth, shrinkage, and secondary interventions.

Acknowledgements

- A generation of Cleveland Clinic Vascular Surgeons, the program which was initially spear-headed by Ken Ouriel and Dan Clair in 1998.