Current Indications for Repairing Small AAAs (<5cm) by EVAR; by Open Repair: Has anything changed?

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Disclosure

- I do not have any potential conflict of interest.

Comparison of outcomes following endovascular repair of abdominal aortic aneurysms based on size threshold

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- EVAR for small AAAs (<5cm) shows improved long term outcomes than for age-matched patients with larger aneurysms
- Less Type I endoleaks, fewer secondary procedures, better 10 year survival

Small AAA Clinical trials

- Long-Term Outcomes of Immediate Repair Compared with Surveillance of Small Abdominal Aortic Aneurysms: UKSAT Trial
- Immediate Repair Compared with Surveillance of Small Abdominal Aortic Aneurysms: ADAM Trial
- Comparison of Surveillance Versus Aortic Endografting for Small Aneurysm Repair (CAESAR): Results from a Randomized Trial
  - Eur J Vasc Endovasc Surg (2011) 41, 13-25
- Positive Impact of Endovascular Options for Treating Aneurysms Early: PIVOTAL Trial
  - J Vasc Surg 2010;51:1081-7

Study UKSAT

- Small abdominal aortic aneurysms (< 5.5 cm in diameter)
- This study compared two management strategies: immediate open surgery and ultrasonographic surveillance followed by surgery if needed
- Risk of rupture increases 1% per year; Women have 4x greater risk
- Current smoking increased risk of expansion by 25%
- Because the two strategies, ultrasonographic surveillance until the aneurysm reaches a diameter of more than 5.5 cm is a reasonable strategy
- 12 year follow-up published in 2007, conclusions unchanged.
Study Overview ADAM
- This study compared the two approaches (immediate open surgery vs US/CT surveillance) in patients with aneurysms 4.0 to 5.4 cm in diameter.
- After a mean follow-up of nearly five years, there was no survival advantage associated with immediate surgical repair.
- Risk of aneurysm rupture was 0.6% / year.
- The findings support a conservative policy of reserving elective surgery for patients with abdominal aortic aneurysms of 5.5 cm in diameter or larger even when operative mortality is quite low.
- Patients with small, asymptomatic aneurysms that are rapidly enlarging should also be considered for surgery.

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Study Overview CAESAR
- Designed to compare results of EVAR (Cook Zenith) vs surveillance in AAA 4.1-5.4cm, a randomized multicenter study 1:1 ratio.
- At 54 months, ACM was 14.5% in the EVAR group and 10.1% in the surveillance group. No difference in ARM, rupture, and major mortality.
- Mortality and rupture rates are low in AAA < 5.5cm.
- No advantage between early or delayed EVAR.
- Within 36 months, 5% small AAA under surveillance may grow and require repair and 1/6 may lose feasibility for EVAR.

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Study Overview PIVOTAL
- Since EVAR is safer than open repair for large AAA; randomized trial of early EVAR for small AAA vs surveillance.
- 4-5cm AAA to EVAR vs ultrasound surveillance.
- At a mean follow-up of 20 months, ACM was 4.1% in both groups.
- Rupture or ARM was 0.6% in both groups. This was lower than expected in the surveillance group so enrollment was stopped.
- Early EVAR and rigorous surveillance with selective aneurysm treatment are both safe alternatives preventing ARM for at least 3 years.

Surgery for small asymptomatic abdominal aortic aneurysms.
Filardo G, Powell JT, Martinez MA, Ballard DL.
- These 4 trials, totaling 3,314 patients analyzed together.
- Early survival benefit to surveillance due to 30 day operative mortality with surgery.
- No significant difference in long term mortality.
- No advantage to early repair (open or EVAR) for small AAA 4.0 – 5.5 cm.
- Best care favors surveillance.
Framing the Issues

• Risk factors for rupture independent of size?
  • Saccular Vs Fusiform AAA?
  • Absolute aortic size Vs BSA
  • Rate of expansion
    • > 1.0 cm/year or > 0.7 cm in 6 months
  • Family history of rupture and/or dissection
  • Genetic syndromes: SMAD 3, Marfans syndrome, Loeys-Dietz
  • Does surveillance and expansion lead to loss of EVAR candidacy?
  • Impact of EVAR and TEVAR trials
  • Risk of procedure Vs risk of rupture.
  • Life expectancy and patient preference

• Diameter definitions in saccular aneurysms are ambiguous and without standard.
• Does aneurysm shape influence wall stress?
• Using finite element analysis, normalized PWS is not higher in saccular Vs fusiform aneurysms.
• Growth rates do not differ between saccular Vs fusiform aneurysms.