Trans-Atlantic Debate: Does Evidence Support Reducing the Threshold Diameter to 5 cm for Elective Interventions in Women With Abdominal Aortic Aneurysms?

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The evidence for reducing the diameter threshold for elective intervention in asymptomatic women with abdominal aortic aneurysms (AAAs) to 5.0 cm is that (i) women have significantly narrower aortas (compared with men), so that the diameter of an AAA requiring intervention should be smaller; (ii) comorbidities (risks) increase with age, meaning it is better to intervene at an earlier age (size) in order to reduce operative mortality; (iii) if rupture occurs, women face higher mortality rates than men; and (iv) data from randomised and nonrandomised studies suggest that women rupture their AAAs at slightly smaller diameters than men (5.0 cm). Advocates for reducing the diameter threshold to 5 cm concede that women incur higher perioperative mortality rates (compared with men), but that mortality rates after elective open repair (OR) or endovascular aneurysm repair (EVAR) are several magnitudes lower than the mortality associated with the treatment of ruptured AAA.

Advocates for leaving diameter thresholds unchanged argue that while some of the points (raised above) have evidential support, there are important confounding issues: (i) women were under-represented in the trials, which were never powered to perform subgroup analyses regarding sex; (ii) data suggesting that women may be rupturing at slightly smaller aortic diameters are statistically weak (small number of events in a small number of patients) and might represent a type II statistical error; (iii) even if women did rupture at slightly smaller aortic diameters, any potential benefit through early intervention would be negated by the twofold excess mortality rate following elective EVAR or OR.

So which side wins? One (undiscussed) issue remains the historical selection of 5.5 cm as the diameter threshold for intervening in the first place. The choice of 5.5 cm was not based upon science, but upon the equipoise of those surgeons who were prepared to randomise patients with AAAs of 5 cm, 5.5 cm, or 6.0 cm in diameter. At the time, the consensus was 5.5 cm, but this “one size fits all” measurement was never designed to deliver optimal diameter thresholds for men as opposed to women. Moreover, because some European and US guidelines now tacitly support “consideration” for elective interventions in women with 5.0–5.5-cm diameter AAAs, the vox populi interpretation is likely to be that this is reasonable.

However, there are important caveats for those surgeons/interventionists who advocate elective interventions in women with 5.0-cm AAAs. First, they need to be very clear about which diameter measurement method they are using. Those measuring inner-to-inner AAA diameter using ultrasound will document diameters 4–5 mm less than if the outer-to-outer measurement method is used. However, if computed tomography is used to measure an outer-to-outer diameter, this will then be 4–5 mm greater than the corresponding ultrasound measurement (and up to 1 cm greater than any inner-to-inner ultrasound-derived measurement).

Second (and at the very least), there should be no talk of “time bombs” during the consent process, and women with 5-cm AAAs under consideration for surgery need to be informed about the underlying controversy. Put simply, there should be no rush towards performing EVAR/OR in women with 5-cm AAAs. Like it or not, they do face a higher morbidity/mortality (than men) and it is incumbent on the
treating clinician to ensure that a very careful risk assessment has been performed, whether comorbidities can be optimised, and even whether he/she may be the best person to undertake any planned intervention. Finally, while we can all hope that industry comes up with better endovascular technologies to enable a greater proportion of women to undergo EVAR (which they will), there is a very real risk that “bending the rules” to offer elective EVAR to women with 5-cm AAAs outside the manufacturer’s ‘indications for use’ (IFU) can be deleterious to the patient (who faces a higher risk of endoleak and late conversion) and possibly the treating clinician. Surgeons/interventionists should be aware that in many countries, if they perform an EVAR outside the manufacturer’s IFU, they absolve the stent manufacturing company from any future medico-legal responsibility and assume this themselves.

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http://dx.doi.org/10.1016/j.ejvs.2014.07.009