Is there a role for OR of AAA in the endovascular era?

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Abstract

The number of endovascular aortic repairs (EVARs) has increased significantly during the first two decades of the new century due to less invasive treatment with a marked improvement in perioperative morbidity, mortality and recovery compared with open surgery. Thanks to this, in most developed countries, elective treatment of abdominal aortic aneurysm (AAA) is mostly performed EVAR. However, some recent studies have shown that the early survival benefit of EVAR decreases or is even lost over time, with EVAR carrying a higher risk of rupture and secondary intervention than open repair (OR) in the long term [1]. Due to this, an OR of AAA is still very important and should not be forgotten in the endovascular era. In the following article, the indications and contraindications for both open as well as endovascular repair of different AAAs will be considered. One of the most common forms of AAA is degenerative AAA. The main question regarding the treatment options in cases of degenerative AAA with suitable anatomy is probably, "Should young patients with good risk factors be treated with EVAR?". In my opinion, patient motivation and surgical experience should not be the main reasons for EVAR in those patients. At the moment, there is no evidence in the recent literature to support EVAR as the first-line therapy in patients younger than 60 or even 70 years old. As in the majority of previous studies and articles, the most recently published meta-analysis found significantly lower odds of 30-day (OR 0.36, 95% CI: 0.20-0.66) and in-hospital mortality with EVAR (OR -0.03; 95% CI: -0.04 to -0.02). However, my clinic's experience confirms that high hospital and surgical volumes, together with careful preoperative selection and preparation of patients, may guarantee very low perioperative mortality (approximately 1.0%) after OR of AAA.

The long-term results of the EVAR trial 1 are of particular significance regarding the treatment of degenerative AAA in younger, good risk patients . According to this trial, endovascular repair of AAA had a significantly higher total mortality after eight years of follow-up (p=0.048). The increased aneurysm-related mortality in the EVAR group was caused mainly by secondary aneurysm sac rupture (p=0.0064).

The incidence of life-threatening reinterventions was also significantly higher in the EVAR group after eight years (p=0.0002). The previously mentioned meta-analysis showed that in the long term (>8 years) the hazard of aneurysm-related mortality was significantly higher after EVAR (HR 5.12, 95% CI: 1.59-16.44). At the same time, the risk of secondary intervention (HR 2.13, 95% CI: 1.69-2.68), aneurysm rupture (OR 5.08, 95% CI: 1.11-23.31), and death due to rupture (OR 3.57, 95% CI: 1.87-6.80) were also significantly higher after EVAR.

After all, it is not unexpected that both the guidelines on the diagnosis and treatment of aortic diseases published by the European Society of Cardiology and the guidelines on the management of AAA published by the European Society for Vascular Surgery (ESVS) recommend that OR should be considered as the preferred treatment modality in patients with long life expectancy. On the other hand, patients with a shorter life expectancy are likely to benefit from EVAR rather than OR, particularly if their surgical risk is higher than average.

The aneurysmal anatomy is the first factor that can make standard EVAR more difficult or even impossible. According to an FDA study that examined the eligibility of infrarenal AAA for on-label EVAR, 35% of male and up to 60% of female patients were unsuitable for standard EVAR because of problems with aneurysmal neck or iliac access. Severe tortuosity and small diameter of iliac arteries (<6 mm) are the first anatomic limitations for EVAR. However, the characteristics of the aneurysmal neck play a much more important role.

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