INVITED COMMENTARY

New-generation Devices for Highly Angulated Aortic Necks: To Bury or to Praise Endovascular Aneurysm Repair (EVAR)?

P. De Rango*

Division of Vascular and Endovascular Surgery, Hospital S. M. Misericordia, Loc. S. Andrea delle Fratte, 06134 Perugia, Italy

Submitted 24 November 2010; accepted 24 November 2010
Available online 30 December 2010

The early results of the Arbiter 2 study, published in this issue of EJVES, showed as recent improvements gained with new-generation aortic stentgrafts allowed endovascular aneurysm repair (EVAR) to better deal with difficult anatomy. The Aorfix modular device (Lombard Medical Technologies) was shown to be successfully applied in aneurysms with excessive neck angulation, mainly >75° and even >90° (!). Unfortunately, only 30 cases were studied in this pilot study and assessment stopped early, providing only short-term results. Despite the extremely adverse anatomy, initial technical success was achieved in 93.3% because of two immediate migrations. No subsequent migrations were observed; however, procedure was associated with 3% perioperative mortality, 17% morbidity and approximately 7% type I endoleak and 10% mortality at 6 months.

At this point, will any aggressive refinement in stentgraft technology to treat abdominal aortic aneurysms (AAA) with unfit anatomy be worthwhile?

Some important messages could be provided by the Arbiter 2 study to this regard.

The first is that technology for EVAR stentgraft has substantially improved in the last few years, providing models with certainly superior results, not hoped before. Fortunately, EVAR, even in its maturity, is ‘a work in progress’ and a number of earlier complications have been progressively encompassed with improved technology and new-generation devices.

A second take-home message of Arbiter 2 is that improvement in technology cannot overcome operator experience. Therefore, any new change in equipment/device requires appropriate training to provide the best results.

The final, but the most important message from this study, is that unfavourable anatomy even today represents a major drawback restraining all endovascular procedures; for EVAR, aneurysm neck is still the most hostile anatomic barrier. Despite the progressive device advances allowing expansion of EVAR applicability, it should be questioned for how long and how much the stentgraft technology will move forward and whether EVAR indications will continue to be safely and effectively enlarged. Is there a bottom line for EVAR application? Probably, objective insurmountable limitations of technology should be accepted before raising illusive promises of EVAR repair in poor AAA anatomies.

Indeed, despite a number of devices (besides Aorfix) and techniques have been recently developed to compel with wide, short and angulated necks, EVAR results in these settings are still sub-optimal, limited in time and supported by sporadic numbers. The effect and the magnitude of displacement neck forces acting on aortic stentgraft and compromising its durability remain not well understood. What will happen in the long term with the generalisation of these ‘extreme EVAR’ indications? More substantial data...
and stronger, evidence-based, results are needed to support this aggressive tendency: "action, nor utterance, neither wit, nor words, nor worth..." (Julius Caesar, Shakespeare, Act 3, Scene 2). Although any change to refine last-generation stentgrafts might be 'honourable', the purpose to force endovascular treatment in excessive angulated necks and hostile anatomy might 'bury more than praise' EVAR.

Since aortic necks are usually more favourable to EVAR (straighter, longer, smaller) in aneurysms of smaller size and it has been recently suggested that aortic suprarenal and infrarenal neck angles might significantly decrease during and after EVAR, the choice to repair small abdominal aneurysms with EVAR might be reasonable. However, long-term consistent proofs of EVAR efficacy in decreasing aneurysm enlargement and neck angulation in small AAA are still lacking.

Without any compelling drive, recognising how we might better select patients best suited for open repair or for EVAR should be the key of success for both procedures, none of which is the loser or the winner. There are some patients with AAA who can benefit more from open repair and some who are best served with EVAR. Appropriate patient selection and operator training will allow improvement in technology to praise and not bury EVAR in the longterm.

References