Commentary: Does $4 = 4$?

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Köksoy and colleagues analyzed 721 open extent IV thoracoabdominal aortic aneurysm (TAAA) repairs during the 35-year experience of Dr Coselli. The report was comprehensive, detailing descriptive variables of the cohort, technical points, and risk factors for early and late complications and mortality. The outcomes were commendable, with an early operative mortality of 6.8%, persistent dialysis of 6%, and persistent paralysis risk of 1%. The authors identified the independent risk factors for operative mortality as extent II TAAA prior repair, prior chronic kidney disease, prior myocardial infarction, urgent or emergency status, and longer crossclamp times. Sobering was the fact that postrepair late survival was only 28% at 10 years and 11% at 15 years. This was clearly related to the fact that this was an older cohort, with a median age of 69 years. As expected, durability was excellent with a reported reintervention rate of the operated segment of 3.3% at 10 years, accounting for competing risks.

From this report, clear observations can be made about patients who present with isolated extent IV TAAA. This cohort tends to be older, with more atherosclerotic burden and less aortic dissection from heritable aortopathies. Striking was the fact that nearly 50% of the cohort had chronic kidney disease. We have previously demonstrated the influence of reduced glomerular filtration rate as the more sensitive indicator for predicting early outcomes after TAAA repair, suggesting patients with extent IV TAAA have a greater risk for poor outcomes during open repair. Further examination of the patient comorbidities (eg, peripheral vascular disease, chronic obstructive pulmonary disease, and coronary artery disease) highlight how morbid this group is, and how impressive the overall early results were in this series.

From a technical standpoint, the report highlighted the very limited use of adjuncts, such as distal aortic perfusion or cerebrospinal fluid drainage, with primary use of the clamp and sew approach with adjunctive isolated renal perfusion (85% of repairs). In addition, varying approaches to reattaching the visceral and renal vessels were applied from beveling, island reattachment, bypasses, and varying combinations of the previous, with no apparent difference in late outcomes related to reintervention noted.

This series from Dr Coselli’s group sets the bar for the open repair of extent IV TAAA. It demonstrates how well open repair can be performed in this cohort. This patient cohort differs, however, leading to a shorter long-term survival. Considering this, the now-relevant question is whether or not complex endovascular repair with fenestrated-branched endovascular aneurysm repair (FB-EVAR) be performed preferentially.

Complex FB-EVAR should neither be taken lightly nor automatically assumed as the new standard with extent IV TAAA. FB-EVAR, as with any endovascular approach, requires an adequate landing zone and, in many cases, this landing zone is often extended above and beyond the actual extent of the aneurysmal dilatation. This is in contrast to open repair, where the preoperative aneurysm designation correlates with what was actually replaced. In essence, a preoperative extent IV TAAA will be reclassified as an...
extent III or even extent II TAAA when FB-EVAR is performed. For open repair, an extent IV is an extent IV. However, in endovascular repair, it may not be the same.

What difference does this make? In the end, maybe little. However, for the sake of accuracy, it is important to correctly classify preoperative aneurysmal extent for the purpose of risk stratification and patient counseling. If an extent IV aneurysm is now treated with FB-EVAR and the endovascular exclusion extends proximally to cover the descending thoracic aorta, converting this repair to an equivalent extent III—or even extent II aneurysm—the risk profile will be much different than that of an extent IV repair. A higher risk for paraplegia and other comorbidities will likely exist.

Excellent results can be achieved with FB-EVAR with devices dedicated for this purpose. The concern exists when sites with less experience and limited access to these dedicated devices now apply endovascular techniques to extent IV TAAA, leading to extending of the repair more proximally. There will likely be a price to be paid here.

In the end, this report by Koksoy and colleagues sets the standard for open repair of extent IV TAAA. As complex FB-EVAR expands, it will likely become the primary approach for addressing extent IV TAAA. It is imperative that we maintain an accurate preoperative as well as postoperative classification of the aneurysm and recognize that the upstaging may carry an added cost. With open repair, $4 = 4$. With endovascular, this remains uncertain.

References
