Open thoracoabdominal aneurysm repair in octogenarians: Is the enemy of good, perfect?

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Open thoracoabdominal aortic aneurysm (TAAA) repair remains a formidable surgical undertaking. Despite major advances in operative technique, anesthesia, and perioperative care, the risk of respiratory failure, renal failure, stroke, and paraplegia remain challenges that have yet to be overcome. Even in experienced centers with a team dedicated to caring for the patient with an aneurysm, the incidence of end-organ failure is increased when we extend the indications for surgery into very-high-risk cohorts. In a previous era, octogenarians with extensive TAAAs would have been considered inappropriate candidates for extensive repairs. However, as our experience with the elderly has grown in other areas of cardiovascular surgery,¹ it is a natural progression to explore the limits of our intraoperative and postoperative skills in a much more complicated procedure such as TAAA repair. In this issue of the *Journal of Thoracic and Cardiovascular Surgery*, Aftab and colleagues² build on a previous publication³ of the senior author's experience with TAAA repair in octogenarians. The results in this more contemporary compendium are worthy of discussion as the risk in certain extremely high-risk subgroups may dissuade even the most experienced centers and surgeons away from the operating theatre in favor of a much less aggressive approach.

Although one would certainly expect an increase in risk for octogenarians undergoing TAAA repair, the staggering incidence of significant postoperative complications is sobering. In-hospital mortality was nearly quadruple that seen in younger populations (26% vs 6.9%). Major adverse events were significantly more common (36% vs 15.3%) with permanent spinal cord deficits occurring more than twice as often as that seen in a previous report.⁴ Renal failure was a particularly vexing problem with an incidence of 23% despite the use of renoprotective strategies such as left heart bypass and cold renal perfusion. The addition of renal

artery stenting or endarterectomy in more than 50% of the patients did disappointingly little to reduce the 4-fold increase in the need for dialysis after surgery. Not unexpectedly, the more extensive the aneurysm, the worse the patients did. Patients in need of repair of an extent II aneurysm, total aortic replacement from the left subclavian artery to the aortic bifurcation, had an in-hospital mortality rate of 62% (odds ratio, 11.6). Their incidence of postoperative renal failure was nearly 70% and major pulmonary complications were seen in 77% of those having this most extensive aneurysm repair. Although survival was only calculated out to 1 year, there was a nearly 20% reduction in actuarial survival when comparing the octogenarians with a younger group undergoing TAAA repair. The authors concluded that although this therapy should not be withheld from octogenarians, one should proceed with caution when considering such an extensive procedure in the elderly.

These results should give one great pause before proceeding with open TAAA repair in patients more than 80 years of age. Despite the most extensive experience in TAAA repair in the world,⁴ these experienced surgeons were unable to overcome the significant increase in risk even in those undergoing elective repair. Thirty-two percent of the 88 octogenarians examined in this study required urgent or emergency intervention for rupture, acute dissection, or other acute aortic syndromes. In these instances, death is imminent and it seems reasonable to offer intervention to a select group with few alternatives. However, when comparing the outcomes in those with extent I and II aneurysms undergoing elective repair, one is left wondering if a nonoperative approach might be preferable. The natural history of aneurysm rupture, dissection, or aneurysm-related death is approximately 15.6% per year in aneurysms of 6 cm or more in diameter.⁵ Might one be better counseled to take this 1 in 7 risk of death stratified over a year rather than the 32% to 62% in-hospital mortality seen in the best of hands for the most extensive types of TAAAs?

One last logical question generated by these data is what is the role of thoracic endovascular aneurysm repair (TEVAR)? TEVAR was shown to be effective in octogenarians with isolated descending aneurysms with an in-hospital mortality of 10%.⁶ However, none of these patients had aneurysms extending below the diaphragm. Endovascular reconstruction of the renal and visceral vessels was not performed. Intermediate-term results using fenestrated stent grafts are equivalent at best and there is a dearth of data with this intricate procedure in more extensive extent I

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and II aneurysms.⁷ Time will tell if this is a viable alternative in those of advanced age.

Open repair remains the gold standard therapy for patients with TAAA. A continued reduction in mortality and permanent life-altering complications allows us to offer this complicated procedure to an increasingly high-risk cohort of patients. The data from this study are vital in helping to identify appropriate elderly patients who will avoid fatal aneurysm rupture and experience improved survival with a quality of life after surgery that is similar to an age-matched population. However, for those with more complicated and extensive aneurysms, or significant comorbid conditions, extreme caution should be exercised. Even in the most experienced hands, the outcomes for these patients are marginal and arguably worse than tempting fate with medical therapy alone. TEVAR may further expand the pool of octogenarians eligible for repair of their TAAA. However, we have yet to see the full spectrum of problems associated with endovascular therapy and, in

the end, may all agree that the best therapy for some TAAAs is leaving well enough alone rather than pursuing perfection.

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