Commentary: Transcatheter Aortic Valve Explantation: Surgical Strategies for Superior Outcomes

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Central Message

Suboptimal outcomes after transcatheter aortic valve explantation reflect early experiences in a challenging population. Refinement of techniques and expertise will help improve clinical outcomes.

Central Picture Legend

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Explantation of transcatheter aortic valves has become one of the most rapidly growing operations in the Society of Thoracic Surgeons (STS) database having increased by 145% annually between 2012 and 2023.\(^1\) This exponential rise is expected to continue as transcatheter aortic valve replacements (TAVR) are increasingly performed on younger patients worldwide.\(^2\) Kaneko and colleagues describe various surgical techniques and challenges in their manuscript to guide surgeons through these complex reconstructions.\(^3\) This is timely as nearly half of patients with severe aortic stenosis under 65 undergo TAVR in the current era and are likely to outlive the durability of bioprosthetic valves.\(^2\)

It is important to consider the context in which patients undergo TAVR first. Patients who may have concomitant non-critical coronary disease, moderate multivalve disease, or atrial fibrillation are likely to only receive an isolated TAVR. As these bioprostheses inevitably degenerate over time, concomitant disease processes are also likely to worsen. This presents a patient population that requires not only a re-operative surgical aortic valve replacement (SAVR) with a TAVR explant but also treatment of concomitant pathology, further complicating the operation and perioperative management.

The technical nuances of TAVR explant have been refined over the years by us and several of the authors. For instance, explanting self-expanding valves requires meticulous ‘endarterectomy’ of the endothelialized stent frame, whereas balloon-expanding valves might necessitate careful detachment from the anterior leaflet of the mitral valve when implanted low. The former may require replacement of the ascending aorta or the aortic root, while the latter could involve reimplantation or patch extension of the anterior leaflet of the mitral valve. A healthier patient profile may help decrease morbidity and mortality but the complexity of explanting a transcatheter valve and the subsequent reconstruction cannot be overstated.

Proficiency in explanting these prostheses depends on two factors. First, most cardiac surgeons are not intimately familiar with the design of transcatheter heart valves unless they routinely serve as primary operators for TAVR. Second, the mean annual volume of aortic root replacements performed at cardiac surgery programs in the United States is five cases.\(^4\) Together, this suggests that surgeons explanting transcatheter heart valves likely lack significant experience in both areas.
Additionally, as the numbers of isolated SAVRs being performed continue to decrease, how do we reliably teach our trainees safe TAVR explantation when their experience with SAVR continues to decline? The immediate solution may be to consider referring these patients to high-volume surgeons and centers of excellence to maintain and improve outcomes as has been routinely done for thoracic aortic disease and mitral valve repair. The concerning aspect of this strategy is that while the interventional cardiology community in partnership with industry has focused the last several decades on ‘democratizing’ techniques that enable most interventionalists to perform procedures; surgeons have continued to propagate the mantra of referral to ‘experts’ for patients to achieve superior outcomes. By helping disseminate operative tips and tricks for TAVR explantation, the authors have taken an important initiative in the right direction.
REFERENCES


