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Commentary: Sutureless valves or futureless valves?

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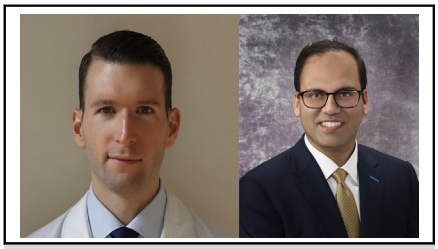

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CENTRAL MESSAGE

While rapid deployment valves may offer bailout in complex, re-operative scenarios, unclear long-term durability and inexperience in subsequent ViV TAVR should limit its use to older populations.

Over the past decade, the profound growth of transcatheter aortic valve replacement (TAVR) has ushered in a new management paradigm for patients at low, intermediate, and high risk for surgical aortic valve replacement (SAVR). As the Society of Thoracic Surgeons nomogram does not include technical factors, one of TAVR's most valuable applications is in the reoperative setting, despite, perhaps, those patients, otherwise, being low or intermediate risk. Valve-in-valve (ViV) TAVR can be incredibly nuanced, however, and its feasibility relies on several considerations, such as sinus segment diameter, coronary heights, valve-to-coronary distance, and the internal diameter of the implanted surgical valve. Accordingly, there are select scenarios that preclude a transcatheter approach. Dhanekula and colleagues[1] propose the use of rapidly deployed valves as an alternative to conventional redo SAVR, due to their optimal effective orifice area and ease of positioning, especially in small annuli. While the authors should be commended on their results in this challenging cohort of patients, we share their reservation in advocating for this technique broadly in patients with aortic stenosis and favorable anatomy.

Many of the large registries examining outcomes following implantation of sutureless or rapidly deployed valves were composed of octogenarians with EuroScores placing them at "high-risk" for traditional SAVR.[2] In contrast, this single institutional series had a mean age of 64 years and a Society of Thoracic Surgeons Predicted Risk of Mortality of <3%. While the perioperative mortality was relatively low (4.5%), there are common themes among other published series evaluating the performance of these valves that could limit their routine use in a relatively younger, otherwise low-risk demographic. First, the short-term hemodynamic profiles routinely demonstrate mean valve gradients between 12 and 17 mm Hg. This, compounded with a lack of robust follow-up, raises concerns regarding valve durability and long-term performance. Furthermore, the incidence of permanent pacemaker was approximately 10% in this series, which is consistent with previous institutional series and database publications on rapid deployment valves. This is not trivial, as new findings suggest a deleterious relationship between pacemaker placement and all-cause mortality and heart-failure hospitalizations.[3] Lastly, given that the experience of ViV TAVR following sutureless or rapidly deployed valves is in its infancy, implantation of these prostheses in younger patients, regardless of their redo status, could make subsequent catheter-based interventions challenging. Patients who undergo a surgical aortic bioprosthesis in today's era do not want or expect a reoperative sternotomy for structural valve degeneration. So, if patients with a life expectancy of older than 10 to 15 years do not receive a mechanical prosthesis, every attempt should be made to implant bioprostheses that will facilitate subsequent ViV TAVR.

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As previously stated, the authors were successful, in the short term, at safely addressing failed aortic prostheses in patients with anatomic constraints. While we would not support this strategy in most instances, we acknowledge its utility in especially hostile situations. The concept does, however, reinforce the critical importance of employing various alternatives to standard AVR at the index operation, such as root replacement or enlargement, to afford a scaffold for an acceptably sized TAVR in the future.

References

1. Dhanekula A, Nishath T, Aldea G, Burke C. Use of a sutureless aortic valve in reoperative aortic valve replacement. *J Thorac Cardiovasc Surg Tech*. 2022;13:31-9.
2. Di Eusanio M, Phan K, Berretta P, Carrel TP, Andreas M, Santarpino G, et al. Sutureless and Rapid-Deployment Aortic Valve Replacement International Registry (SURD-IR): early results from 3343 patients. *Eur J Cardiothorac Surg*. 2017;54:768-73. https://doi.org/10.1093/ejcts/ezy132
3. Glaser N, Persson M, Dalén M, Sartipy U. Long-term outcomes associated with permanent pacemaker implantation after surgical aortic valve replacement. *JAMA Netw Open*. 2021;4:e2116564. https://doi.org/10.1001/JAMANETWORKOPEN.2021.16564