2. Capodanno D, Petronio AS, Prendergast B, Eltchaninoff H, Vahanian A, Modine T, et al. Standardized definitions of structural deterioration and valve failure in assessing long-term durability of transcatheter and surgical aortic bioprosthetic valves: a consensus statement from the European Association of Percutaneous Cardiovascular Interventions (EAPCI) endorsed by the European Society of Cardiology (ESC) and the European Association for Cardio-Thoracic Surgery (EACTS). *Eur Heart J*. 2017;38:3382-90.
3. Sénage T, Le Tourneau T, Foucher Y, Pattier S, Cueff C, Michel M, et al. Early structural valve deterioration of Mitroflow aortic bioprosthesis: mode, incidence, and impact on outcome in a large cohort of patients. *Circulation*. 2014; 130:2012-20.
4. Fukuhara S, Shiomi S, Yang B, Kim K, Bolling SF, Haft J, et al. Early structural valve degeneration of trifecta bioprosthesis. *Ann Thorac Surg*. August 6, 2019 [Epub ahead of print].

See Article page 1742.

Commentary: The valve lasts, until it doesn't; then what?

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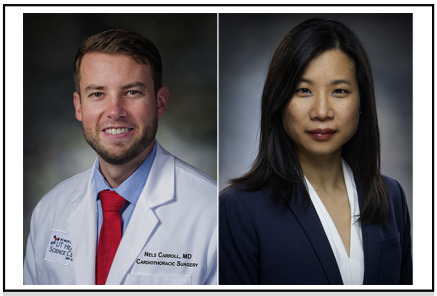

Nels D. Carroll, MD (*left*), and Dawn S. Hui, MD (*right*)

CENTRAL MESSAGE

Transcatheter interventions increase the range of therapeutic possibilities for structural valve degeneration. Contemporary bioprosthetic durability studies should be interpreted with this in mind.

In this edition of the *Journal*, Dr Lehmann and colleagues[1] present their institutional long-term experience with the Trifecta bioprosthetic valve (Abbott Structural Heart, St Paul, Minn) from 2007 to 2018. Including 1241 patients and spanning 10 years, this represents a substantial cohort for analysis. Although the authors report a relatively high rate of morbidity, including 44.7% of patients with arrhythmias, 22.9% with respiratory failure, and 12.9% renal failure requiring dialysis, they attribute this to a high-risk patient population, with a median EuroSCORE of 7.8. The durability of the valve is supported by an actuarial treatment rate of 1.3% at 5 years and 6.7% at 8 years for structural valve deterioration (SVD). The median time to SVD requiring treatment for the Trifecta valve in this study was 5.5 years. This compares well with the reported actuarial explant rate of 1.9% at 10 years for the Perimount valve (Edwards Lifesciences, Irvine, Calif) and the 0.9% rate of SVD at 5 years for the newer-generation Magna Ease valve (Edwards Lifesciences).[2,3]

Of interest is the spectrum of treatments performed for SVD. Comparable studies, such as that cited for the Perimount valve, have not included the option of valve-in-valve (ViV) transcatheter intervention (TAVI) for the treatment for SVD. In the current study, 13 of the 30 patients who underwent reintervention for SVD had conventional surgical explant and replacement, whereas 17 underwent ViV TAVI with no cases of coronary obstruction. ViV became more common over the course of this study and reflects the real-world application of a burgeoning technology.[4]

Valve success can be defined in several ways, including SVD by echocardiographic criteria and by the clinical need for reintervention. The former is a truer reflection of durability, but accurate long-term data may be difficult to obtain in real-world practice. The latter is only a proxy for durability and is less accurate, given that some patients may be considered a poor risk for surgery or may elect to not pursue repeat surgery. Before ViV TAVI, the only available reintervention was reoperative aortic valve surgery. ViV

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TAVI expands the pool of patients who are eligible and/or willing to pursue reintervention for SVD. Thus, in the current era and applicable to this study, reintervention rates may rise, not necessarily reflecting higher rates of SVD, but possibly reflecting the available interventions for SVD.

Contemporary bioprosthetic valves are designed to last, and these long-term results for the Trifecta valve further support its safety and durability. However, these valves will not last forever; the question is when they do fail, what should be done next? Application of this less invasive approach has been previously reported for the Trifecta, although the long-term outcomes have not yet been reported.[5] In reoperative AVR, the durability of the replacement prosthesis is generally known. ViV TAVI is a different story; data on even mid-term outcomes are sparse, and whether there are clinically relevant differences in the interactions of the various bioprosthetic and TAVI valves remains to be seen. The numbers presented here are relatively small but nonetheless further bolster the perceived feasibility of the ViV approach. We will continue to watch with interest as longer-term data become available.

References

1. Lehmann S, Jawad K, Dieterlin MT, Hoyer A, Garbade J, Davierwala P, et al. Durability and clinical experience using a bovine pericardial prosthetic aortic valve. *J Thorac Cardiovasc Surg*. 2021;161:1742-9.
2. Johnston DR, Soltesz EG, Vakil N, Rajeswaran J, Roselli EE, Sabik JF III, et al. Long-term durability of bioprosthetic aortic valves: implications from 12,569 implants. *Ann Thorac Surg*. 2015;99:1239-47.
3. Anselmi A, Ruggieri VG, Belhaj Soulami R, Flécher E, Langanay T, Corbineau H, et al. Hemodynamic results and mid-term follow-up of 850 19- to 23-mm Perimount Magna Ease valves. *Thorac Cardiovasc Surg*. 2019;67:274-81.
4. Dvir D, Webb J, Brecker S, Bleiziffer S, Hildick-Smith D, Colombo A, et al. Transcatheter aortic valve replacement for degenerative bioprosthetic surgical valves: results from the Global Valve-in-Valve Registry. *Circulation*. 2012;126:2335-44.
5. Haussig S, Schuler G, Linke A. Treatment of a failing St Jude Medical Trifecta by Medtronic Corevalve Evolut valve-in-valve implantation. *JACC Cardiovasc Interv*. 2014;7:e81-2.