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Commentary: Posting up for the stentless

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In the United States, stentless roots comprise 31% of aortic root replacements (ARRs).¹ From a standalone report on use of the Freestyle porcine root prosthetic for ARR, Dagnegård and colleagues² provide insight into several aspects of this biologic root substitute. This study has implications for patients of all ages. In both elderly³ and younger populations,⁴ there has been a trend toward biologic valve replacements relative to mechanical valves.⁴ A study of aortic root operations linking the Society of Thoracic Surgeons database with Centers for Medicare & Medicaid Services data found that longer-term survival was superior with stentless bioprosthetic Bentall compared with mechanical Bentall (adjusted hazard ratio, 0.70). Long-term stroke risk with the stentless root was lower than mechanical or stented Bentall, and reintervention rates were lower than with valve-sparing root replacement.⁵ At the other end of the age spectrum, biologic valves may continue to trend toward younger patients due to transcatheter options to treat structural valve degeneration. For patients with small aortic roots, ARR rather than valve replacement alone may be a strategy to avoid patient–prosthesis mismatch and improve hemodynamic performance, potentially maximizing the time interval to the future valvular intervention and optimizing the patient for future valve sizing. Thus, a consideration of the full spectrum of biologic options necessitates evidence on long-term outcomes.

In this series, use of the Freestyle was itself a marker of patient complexity. A relatively high proportion of cases were nonelective (46.3%), including 26.7% endocarditis and 11.4% Stanford type A aortic dissection. Contrast



Duncan posts up (by Dave Hogg, <https://www.flickr.com/photos/davehogg/77257678>; CC by 2.0).

CENTRAL MESSAGE

A large series on stentless porcine root prosthetic for aortic root replacement shows encouraging long-term results but lacks comparison with other aortic root options.

this to a systematic review⁶ of 3289 patients from 29 series (12 of which included the Freestyle) undergoing ARR with biologic valved conduits; only 10.8% were nonelective, and the predominant indication was aneurysmal disease (75%).⁶ Given the varying clinical scenarios for which a Freestyle may be selected, an examination of outcomes by indication may aid surgeons as to patient selection. For patients both young and old, a stentless valve may particularly address concerns of long-term valve performance in a small aortic root. In the series by Dagnegård and colleagues, use of the Freestyle for the indication of a small aortic root was associated with a notable 25.6% concomitant coronary artery bypass grafting (CABG). The study did not distinguish between patients with planned CABG and those in whom an intraoperative problem with a coronary button prompted CABG. Combined with the need for early postoperative coronary revascularizations in 1.8%, this should prompt further investigations into the optimal coronary reimplantation technique in this cohort.

This study does leave some gaps in knowledge. While late reintervention rates were reported, there was lack of reporting on structural valve degeneration rates. Further, the standalone nature of this report limits our understanding of the safety and durability of the Freestyle relative to other

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biologic root prostheses. In a series of composite grafts in patients with small annuli, Urbanski and colleagues⁷ demonstrated good and durable results at late follow-up.

As a final word, the authors characterize the participating centers as “small- to medium-sized.” The reader should be cautioned not to equate this with small- or medium-volume programs. Over a 19-year period with 1030 implantations at 6 centers, the average number of Freestyle implantations per center annually was 9 and ranged among the centers from 2.2 to 24.4 per year. The positive outcomes of this study may encourage centers everywhere to increase consideration of this option when carefully considering the patient characteristics.

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