Valve choice: Do data from the past misinform us as technology advances?

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The article by Schnittman and colleagues¹ in this issue of the *Journal*, “Survival and Long-Term Outcomes After Mitral Valve Replacement in Patients Aged 18 to 50 Years,” describes a propensity-matched study from patients followed up in the California and New York state databases from 1997 through 2014. Schnittman and colleagues¹ found that the use of bioprosthesis valves increased, from 10% to 34%, between 1997 and 2014 ($P < .001$), despite the historical preference for mechanical valves for mitral valve replacement in patients younger than 50 years. The results of the study support the use of mechanical valves, because these valves afforded patients a long-term survival advantage (74.3%; 95% confidence interval, 69.0%-78.7% after bioprosthetic valve replacement vs 80.8%; 95% confidence interval, 75.1%-85.3% after mechanical valve replacement). In addition, there was no increase in bleeding events or strokes after mechanical valve replacement relative to bioprosthetic mitral valves. The patients who received bioprosthetic valves did show increased need for reoperations (19.9%; 95% confidence interval, 15.4%-24.8% vs 5.7%; 95% confidence interval, 3.5%-8.7%; hazard ratio, 20.3; 95% confidence interval, 4.0-102.8), which is not surprising.

These findings should have us question the trend to increased bioprosthetic valve use. If the survival benefit favors mechanical valves without increased bleeding or strokes, then these data need to be presented to patients when discussing valve choice. Postoperative anticoagulation treatment for mechanical valves has improved safety with the use of in-home international normalized ratio testing. The modification of lifestyle for these patients receiving obligate anticoagulation remains an issue that each patient must consider when deciding on a valve; however, the long-term survival benefit is perhaps the most important outcome to consider.

Shared decision making with informed consent is an important process that each surgeon must individualize with each preoperative patient encounter. Are the data from this study relevant, however? In the current era, the

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Central Message

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need for valve reoperation with sternotomy is reduced; the valve-in-valve strategy, approved and currently in clinical practice, with balloon expandable bioprosthetic valves, will reduce cardiopulmonary bypass and cardioplegic arrest. This strategy will clearly change the risk (procedural mortality and morbidity) of the repeat procedure. The extended period of bioprosthesis durability is not known, but the early data appear to be favorable.

The article of Schnittman and colleagues¹ is an important contribution to our literature. The information is derived from the real-world practice of mitral valve replacement captured from the California and New York state databases. The information must be shared with patients during informed consent.

Technology and new procedures have recently been introduced into practice and are changing our strategy by offering a radically new option. Clinical practice will not wait for the long-term data to support the valve-in-valve repeat procedure option. The pursuit of the data will ultimately inform us whether the bioprosthesis trend will improve the results from those in the current article of Schnittman and colleagues.¹ The long-term survival, stroke, and bleeding rates may ultimately strongly favor the bioprosthetic option.

Reference

1. Schnittman SR, Itagaki S, Toyoda N, Adams DH, Egorova NN, Chikwe J. Survival and long-term outcomes after mitral valve replacement in patients aged 18 to 50 years. *J Thorac Cardiovasc Surg*. 2018;155:96-102.e10.