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Commentary: Aortic valve replacement in young adults: An open question

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CENTRAL MESSAGE

Young adults with BAVs may have better long-term survival after AVR, and this has important implications when choosing the most appropriate valve substitute.

The best option for aortic valve replacement (AVR) in adults younger than 65 to 70 years of age is challenging, and any individual choice should include patient preferences and baseline clinical characteristics.[1] Klieverik and colleagues[2] showed that patient profile may be more important than prosthetic valve type in determining long-term outcomes after AVR.

In this issue of the *JTCVS Open*, a propensity-matched study presented by Brown[3] raises an important finding in that aortic valve morphology had a significant impact on late mortality, which is in agreement with 2 other recent publications.[4,5] Patients with degenerative tricuspid aortic valves had worse survival at 10 to 15 years when compared with those with congenital bicuspid aortic valves (BAVs), despite a higher incidence of reoperations due to structural valve deterioration (SVD) in the latter cohort. Although reasons for this difference are not obvious, the authors speculate that, contrary to BAV disease, the underlying mechanisms leading to native tricuspid aortic valve degeneration involves a progressive systemic disease that is not halted by valve replacement alone. Unfortunately, the authors could not determine the causes of late death, which constitutes a major limitation on their analysis and conclusions.

Although previous studies have shown better outcomes with mechanical AVR in middle-aged patients,[1] more recent data have challenged this concept and use of biological valves have increased substantially in this subset of patients in the last 10 to 20 years.[6] A potentially improved durability of newer bioprosthetic valve models and the possibility to treat dysfunctional bioprosthetic valves with transcatheter therapies further contributed to this shift in clinical practice.

Definitions of SVD, based on valve reintervention, markedly underestimate the actual incidence of SVD; therefore, recent statements redefined SVD based on identification of structural and hemodynamic valve deterioration at echocardiographic follow-up.[7] Brown and colleagues[3] have shown a statistically significant, but not clinically impressive, higher incidence of reoperations in patients with BAV, but because the completeness of follow-up for reoperation was incomplete and no data were provided regarding the actual hemodynamic performance of the valves at different time periods, their findings in this regard are subject to criticisms. As an additional confounder, even in the hands of experienced surgeons, insertion of stentless valves in BAV roots is more prone to anatomic distortions that may ultimately lead to increased stresses on bioprosthetic valve leaflets, and subsequent earlier SVD and need for reoperation. A similar study comparing outcomes of AVR with conventional stented valves did not reveal any influence of native valve morphology on reoperation rates.[5] The Michigan group has now favored the use of stented valves, and it will be interesting to see in the future whether the authors will confirm the higher need for reoperations in patients with BAV with this new approach.

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Because of the longer life expectancy in young patients with BAV, we agree with Brown[3] to recommend caution when considering surgical or transcatheter biological valves in these patients. Besides the old controversy on mechanical versus biological valves, results with aortic valve repair[8] and the recent data on the long-term outcomes with the Ross operation in selected middle-aged patients[9] have established benchmarks with which other options must be compared.

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