

be optimized to save the most valves with the expected long-term durability. The authors clearly have developed a laudable technique that effectively results in durable valves. This is due in part to a respect for healthy-appearing native cusp morphology and humility to avoid excessive manipulation. In the context of proper valve selection and otherwise normal leaflets, cusp repair may

indeed reinforce the historical surgical tenant that perfect is the enemy of good.

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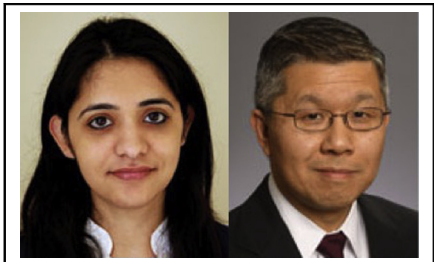
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Commentary: To repair or not repair—that is the question

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Aortic valve competency is dependent on multiple anatomic components involving the aortic root and valve cusps. Aortic insufficiency (AI) in bicuspid aortic valve (BAV) anatomy and aortic root pathology occurs as a result of abnormal cusp configuration as well as abnormal aortic root geometry.¹ Performing valve-sparing root replacement (VSRR) in patients with BAV AI allows correction of these components while establishing stable root geometry. Any moderate to severe AI after valve resuspension warrants correction, however, the question arises, whether mild AI should be aggressively repaired.

Lau and colleagues,² in this issue of *The Journal of Thoracic and Cardiovascular Surgery*, report their experience in 66 BAV patients who underwent VSRR, with or without aortic valve repair. The Cornell group has adopted a conservative approach to cusp repair and examined the outcomes of 51 BAV patients who did not receive cusp repair during VSRR compared with 15 patients who received cusp repair. In this series, most of the patients in the nonrepair group had 0 to mild AI (43/51), whereas most of the repair group had moderate or greater AI (11/15). Outcomes are outstanding and there was no

CENTRAL MESSAGE

Cusp repair is successfully done in insufficient bicuspid aortic valves during valve-sparing root replacement. Whether a conservative approach of noncusp repair is superior warrants further study.

operative mortality or major neurologic, renal, or cardiopulmonary complications.

At 3.5-year follow-up, echocardiography did not show any statistically significant differences in AI or aortic stenosis (AS) between the groups. Of the 51 patients who did not undergo cusp repair, 44 patients had trivial to mild AI at follow-up, indicating there was minimal progression of AI when left uncorrected. In 15 patients who received cusp repair, 13 patients had mild or less AI at the latest follow-up, indicating a significant improvement in valve function. Altogether, the authors conclude that cusp repair can be performed with adequate durability and safety in the setting of AI, and their outcomes might be equivalent in such patients compared with those who did not receive any valve repair.

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At our institution, we have adopted a more aggressive approach to repair all valves with AI with freedom from AI at 5 years being 93% and freedom for aortic valve replacement being 94%.³ Bavaria and colleagues also reported a similar aggressive approach, and reported very minimal AI recurrence at midterm follow-up.⁴ Our experience along with several others⁵ confirm the long-term safety of cusp repair, with acceptable rates of failure and reoperation.

The current study also confirms similar outcomes after cusp repair, albeit in a small group of patients at midterm follow-up. Despite these excellent outcomes with cusp repair, surprisingly the Kaplan-Meier curves indicate that 35% of patients in the cusp repair group had some AI immediately after surgery, and freedom from AI in the cusp repair group worsened with time. These results are potentially misleading because of the small number of cusp repair patients. Thus, the question of whether aggressive cusp repair versus a more conservative approach is superior in the long term may need further investigation. Experimental studies on the effect of cusp repair on mechanics of the valve and its degenerative potential may be contributory.

In summary, the Cornell aortic team should be commended for taking a highly unique and individualized approach to VSRR for correction of AI in BAV anatomy. This group has shown that VSRR for BAV AI can be done using a conservative approach with commendable midterm results.

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Commentary: Valve-sparing root replacement in bicuspid valves—more than technique

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A number of giants in the field of cardiothoracic surgery have, in our lifetime, advanced and elevated the discipline of aortic root surgery, with the ultimate goal of preserving native valve tissue and durable long-term function.¹ The knowledge gained and the techniques developed by these pioneers more recently have been applied to valve-sparing



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CENTRAL MESSAGE

The optimal approach to cusp repair in valve-sparing aortic root operations for bicuspid aortic valve patients remains an area of investigation.

root (VSR) operations in patients with bicuspid aortic valves (BAV) and root aortopathy. In deciding which patients with BAV are candidates for VSR, one axiom on

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