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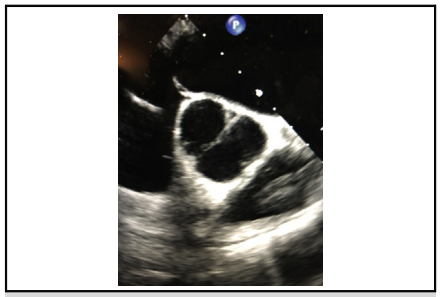
Commentary: Beauty, and durability, is in the eye of the needle holder

Andrew L. Mesher, MD, Muhammad Aftab, MD, and T. Brett Reece, MD



Choosing a viable valve for salvage requires experience and judgment.

CENTRAL MESSAGE

Bicuspid valve repair remains a complex procedure. Although less manipulation of normal valves may be preferable in many cases, the ability to identify which valves to save may be the most important factor in long-term durability for these cases.

ADULT

The Cornell group once again demonstrates an ability to acquiring truly outstanding results from a complex group of patients: those with bicuspid aortopathy undergoing valve-sparing root replacement.[1] Their approach evaluates, like many others, then stabilizes the root before evaluating the cusps. In 51 of 66 bicuspid valve–sparing roots, they did nothing to address the cusps. These patients without cusp intervention did better in the mid-term with minimal progression of aortic insufficiency (AI). The authors conclude that the procedure can be reliably performed in patients with bicuspid aortopathy. Overall, they present excellent results that all root surgeons should strive for in these cases.

Several aspects of this cohort need to be highlighted, however. To begin, the theme of the manuscript suggests that cusp treatment is often unnecessary; moreover, addressing the cusps may complicate outcomes. In most reported series, leaflet plication is the norm for bicuspid valve repair and root replacement to prevent cusp prolapse, but this is also related to the commissural angle of reimplantation. Therefore, the Cornell approach to this angle could prevent the need for plication. In addition, in their cohort, some 20% of valve-sparing roots were bicuspid, which is lower than the proportion in most large series. This may imply that their excellent outcomes from a minimalist cusp approach are more a result of which valves were chosen to preserve rather than their cusp management approach. The leaflets for these cases must be fairly pristine, with minimal need for adjustment. Indeed, the preoperative incidence of moderate or severe AI in the no cusp repair group was <15%.

The more degenerated, or even uneven cusps, are likely resected and replaced, which the authors acknowledge. The valve evaluation, as well as the approach to commissural reimplantation angles, have served the group well. However, the avoidance of cusp manipulation might not apply to all bicuspid valves. In this series, freedom from greater than mild AI in the mid-term following valve-sparing root replacement was excellent in both the no cusp repair and cusp repair groups, suggesting that simple cusp manipulation in conjunction with their reimplantation technique, when necessary, yields satisfactory results. Further elucidation of the Cornell approach may help all of us learn which valves to salvage and when to disregard them. Clearly, a "save all insufficient valves" approach with significant and complicated cusp manipulation does not serve all patients equally in terms of durability.

It is true that the long-term results of cusp manipulation are not known. It is also true that normal cusps may lead to more consistent durability. Only with time can the balance between leaflet abnormality and cusp intervention

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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.

Reference

1. Lau C, Wingo M, Rahouma M, Ivascu N, Iannacone E, Kamel M, et al. Valve-sparing root replacement in patients with bicuspid aortopathy: an analysis of cusp repair strategy and valve durability. *J Thorac Cardiovasc Surg*. 2021;161:469-78.

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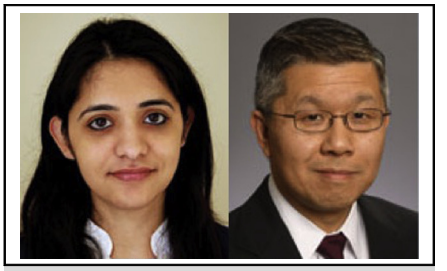
ADULT

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

Kanika Kalra, MD, and Edward P. Chen, MD



Kanika Kalra, MD, and Edward P. Chen, MD

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.

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 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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