The authors reported no conflicts of interest.

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preexistent cusp prolapse can continue to be seen due to reduction in inter-commissural distance and frequently requires repair.²

We have had an aggressive approach to cusp repair because 80% of patients with a bicuspid aortic valve in our experience ultimately require some type of cusp manipulation as part of their intervention. Any manipulation of the cusps, including decalcification, leaflet plication, primary repair of perforations, raphe closure, or free-edge shortening, in our opinion, would qualify as a cusp repair. In general, our approach is to avoid techniques such as triangular resections and pericardial patch repair due to concern that these more complex cusp repairs predispose to recurrent aortic insufficiency and future valvular degeneration.³

Urbanski, in his letter,⁴ thus brings up a valid concern that root replacement alone may not be enough to correct significant aortic insufficiency in this population. It is possible in the recent report by Lau and colleagues⁵ that greater than moderate-to-severe aortic insufficiency was reduced to mild aortic insufficiency after root replacement and then left alone without further cusp manipulation. It will be critical to determine whether maneuvers such as calcium debridement, raphe closure, and central plication—which were all performed to achieve cusp coaptation before root pressurization and valve reassessment⁵—were considered repair techniques by the authors. This warrants further clarification.

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<https://doi.org/10.1016/j.jtcvs.2021.03.124>

REPLY FROM AUTHOR: IN AORTIC ROOT ANEURYSMS WITH BICUSPID AORTIC VALVES, CAN REIMPLANTATION OBVIATE THE NEED FOR CUSP REPAIR?

Reply to the Editor:

Aortic valve and aortic aneurysm repair have remained fascinating topics for aortic surgeons worldwide due to the myriad methods of producing acceptable outcomes using varied and differing techniques. These differences in technique and philosophy apply as much to the aortic valve as they do to the aortic arch and distal aorta. Urbanski's comments¹ regarding our techniques with bicuspid aortic valves are greatly appreciated and we agree that many questions with respect to aortic valve repair remain unanswered due to a lack of evidence. Although some groups aggressively repair 100% of cusps, others are more selective. We remain in the selective camp and repair cusps only when necessary.

In our series,² the 7 patients with bicuspid aortic valves and moderate or more aortic insufficiency who underwent valve-sparing root replacement were a select group among the many root procedures performed at our institution. All of these patients had central aortic insufficiency with type I aortic insufficiency³ due either to dilation of the ventriculo-aortic junction, sinuses of Valsalva, or sinotubular junction. In all cases, repair of the root resolved the insufficiency and there were no actual cusp abnormalities or leaflet prolapses. In our experience, it can sometimes be difficult to predict how the angled free edge of the fused leaflet will coapt with the straighter free edge of the flat leaflet. Thus, we do not perform cusp repair until after the valve is reimplanted into its final position.

I believe the reason we have repaired more roots without cusp repair is due to the order in which we perform the valve and aortic repairs. Similar to other groups, we begin by resecting the sinuses and aortic root tissue. We then lift the commissures vertically into their predicted postoperative positions and make an initial assessment of how the leaflets may coapt. As opposed to most groups, our next step is to perform the aortic repair rather than the valve repair. Only after the root reimplantation procedure do we assess for cusp prolapse and perform central plication as necessary.

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In these 7 patients, we found that the annuloplasty, reduction of sinus diameter, and reduction of sinotubular junction diameter produced a competent valve without significant aortic insufficiency or leaflet prolapse. Perhaps if we analyzed the cusps before reimplantation, we would find a greater rate of cusp repair. However, this has not been our practice. We find that the positioning of the commissures can alter the degree of prolapse of the cusps so we prefer to reimplant and position the commissures first (vertically and at their native angles with respect to each other). Once commissural orientation is established, any prolapse

is corrected with plication. The video accompanying our article² is a recent case not in the series. It was meant to show our technique for valve-sparing root replacement rather than cusp repair and is not representative of our preferred cusp repair technique of central plication.

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