mean follow-up of 39 months, with only 11 patients at risk at 5 years of follow-up, there was a trend toward higher gradient and higher incidence of postoperative aortic regurgitation in the asymmetric valve group. Considering that the asymmetric valve group also had a higher incidence of severe preoperative aortic insufficiency, we might assume that asymmetry per se could be a predictor of valve failure before and after surgical treatment.

In the end, we are still left with the original question. Can we alter the prognostic implication of asymmetric bicuspid valve phenotypes by modifying their commissural orientation? More time and more data will eventually tell.

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Commentary: Bicuspid aortic valve geometry—A tale of two valves

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In this issue of the *Journal*, Siki and colleagues¹ present an interesting single-institution retrospective study assessing midterm outcomes after valve-sparing root reimplantation (VSRR) with bicuspid aortic valve (BAV). Siki and colleagues¹ are true experts in aortic valve repair and have been pushing the envelope with regard to salvageable cusp morphology. The bicuspid aortic valve presents the surgeon with a difficult decision in the setting of an aneurysmal aortic root. Traditionally, a Bentall root replacement has been the criterion standard surgery, offering a straightforward, durable repair. VSRR with tricuspid aortic valves has excellent outcomes, however, and its use for bicuspid

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CENTRAL MESSAGE

Valve-sparing root reimplantation is feasible in bicuspid aortic valve, and respecting the geometry may provide the optimal outcomes in the higher-risk Si-evers type 1 valves.

valve is starting to gain traction as well.^{2,3} The bicuspid valve offers 2 additional challenges, typically some degree of pathology that needs repair as well as variable morphology and geometry that need to be aligned during reimplantation. Despite these added challenges, this group has previously shown that with careful selection, BAV VSRR can be equally effective as a Bentall operation, with fewer neurologic events.⁴ In this article, Siki and

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colleagues¹ address the second of the 2 bicuspid challenges, comparing Sievers type 0 BAV, in which cusps are evenly distributed (180°/180°) with type 1 BAV, in which cusps are offset at 150°/210°. Their approach is to maintain the original orientation during resuspension.

Through the methodic approach of this group to this pathology during the past 15 years, Siki and colleagues¹ have been able to collect a respectable, although small, cohort of 68 patients for their comparison. They are to be commended for a 100% follow-up rate for this cohort with hemodynamic data to assess valve function. Siki and colleagues¹ found that both geometric orientations had similar perioperative outcomes and equivalent rates of 2+ aortic insufficiency (AI) recurrence. Despite the relatively small sample size, Siki and colleagues¹ are able to provide risk adjustment in a fairly homogeneous sample. To do this, they used a multivariable ordinal mixed effects regression for repeated measures to assess the relationship between preoperative valve geometry and function with durability of repair. Given the sample size, however, this study remains at high risk of type II error, where a true difference exists between groups but is not measured.

There are 2 main takeaways from these results. First, Siki and colleagues¹ advocate for maintaining the cusp geometry when performing VSRR. Previous studies support this approach, with higher transvalvular pressure gradient on long-term follow-up when trying to reconfigure a type 1 BAV into a 180°/180° orientation.⁵ Siki and colleagues¹ found a higher gradient in the 150°/210°, but this likely would have been even higher had they not preserved the

orientation. Although longer term follow-up is needed, there is no evidence that this translates into a clinically meaningful risk of aortic stenosis. In addition, the 150°/210° cohort had greater AI both preoperative and postoperatively. Although this does not translate into long-term significant regurgitation after risk adjustment, it does show the additional complexity of the Sievers type 1 BAV. By respecting the geometry, this group has simplified the valve repair, whereas we know that complex methods such as patching increase risk of recurrent AI.⁶ As their cohort increases and follow-up lengthens, it will be interesting to see what else this group is able to identify as modifiable risk factors for recurrent AI to help improve repair durability.

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