Commentary: A symmetrical bicuspid aortic valve is not just 180°

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Type 0 bicuspid aortic valves (BAVs) according to Sievers classification¹ present 2 symmetrical cusps of same size with a perfectly fused cusp, no raphe, and symmetrical anterior and posterior annulus. These valves have shown improved results after repair compared with type 1,² where there is an incomplete fusion of the conjoined cusps with a raphe and a certain degree of asymmetry between the fused and nonfused cusps. In recent years, we have observed an increased interest in achieving the symmetry during type 1 BAV repair to approach the type 0 configuration and improved results. With this scope in mind, Urbanski³ presents a technique that restore the 180° commissural orientation with, on the one hand, a vertical plication of the sinus corresponding to the fused cusp, which is the larger the more pronounced the asymmetry, and on the other hand, a patch enlargement of the sinus corresponding to the nonfused cusp. In this way, by pulling the commissures toward the line of fusion and by enlarging the opposite sinus, the author achieves a symmetrical commissure orientation. Replacement of the ascending aorta, as in the case presented, further allows stabilization of the sinotubular junction (STJ). However, the ventricular-aortic junction (VAJ) is not addressed with the proposed technique. We agree that the 180° configuration should be within the aims of BAV repair; however, we believe that the symmetry should be at all 3 levels of the valve: the VAJ, Valsalva sinuses, and the STJ. The reorientation of just the commissures to 180° does not mean a real symmetrical valve and may not be enough to ensure valve durability over time. The sinus plication may improve the mobility of the fused cusp, but the sinus enlargement on the opposite side by increasing the intercommissural space may indeed reduce the mobility of the nonfused cusp. The valve-sparing root replacement with the reimplantation technique addresses the issue of BAV symmetry at all levels. The proximal suture line with 10 to 12 pledged stitches allows first a complete circumferential stabilization of the VAJ and, particularly in type 1 BAV, a selective annular

Valve-sparing reimplantation restores symmetry and improves cusp mobility.

Central Message

The importance of symmetry at all levels in bicuspid aortic valve repair.

See Article page e33.

reduction at the level of the fused cusp. Commissure reimplantation at 180° into the vascular graft is then straightforward. Several studies have shown that circumferential annuloplasty of the VAJ is associated with improved repair durability.⁴⁻⁶ For years we have employed the reimplantation technique in BAV repair for severe aortic insufficiency even in not-dilated roots precisely to restore the symmetry and stabilize the aortic valve function.⁷ Type 1 BAV can present in reality with a large spectrum of configurations depending on commissural orientation, length of fusion, height of the nonfunctional commissure. We have tried to systematize the most common configurations in a repair-oriented classification.⁸ The case presented by Urbanski,³ who is to be congratulated for the surgical results, is nonetheless not among the most difficult cases for repair. It seems that the main indication in this patient was ascending aorta dilatation associated with normal root and moderate aortic regurgitation. We agree that a technique simpler than the reimplantation—particularly in elderly patients—may do the job. But in younger patients, and in cases of severe aortic insufficiency and VAJ dilatation, we believe that a comprehensive approach to BAV disease is necessary. An important drawback of the proposed technique is the need for a pericardial patch to repair the fused cusp even after commissure reorientation. The reimplantation technique, with the selective anterior annular reduction, allows instead correction of cusp restriction (Figure 1) without the use of pericardial patch that is associated with late failures in all series.^{9,10}

FIGURE 1. Valve-sparing reimplantation restores symmetry and improves cusp mobility.

The technique proposed by Urbanski is a simple and elegant approach to BAV repair that may work well in some selected cases but in most cases of severe BAV regurgitation the conventional valve-sparing root replacement techniques should be considered.

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