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Commentary: Looking at the bicuspid aortic valve through the right angle

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Repair of a cardiac valve provides superior results compared with replacement. This, however, is only valid for the aortic valve if the repair is perfect, without leakage or creation of stenosis. Although preoperative assessment of the morphology of the aortic valve is very helpful in decision-making for surgery, the functional aspects of the valve are the main determinant as to the long-term durability of the repair. Two-dimensional static imaging may be important in planning the repair, but the breakthrough will likely come when 3-dimensional “real tissue” modeling becomes available.

Nijs and colleagues¹ in this issue of the *Journal* conducted an interesting, and potentially (although it is far too early to know) important, study of bicuspid aortic valve (BAV) geometry. This was based on high-resolution computed tomography (CT) angiographic imaging of the chest, used in transcatheter aortic valve implantation protocol. The authors examined BAV morphology, deriving raphe and leaflet angles and commissure positions. Only 50% of the patients were operated on after CT evaluation, whereas 51% had no surgery, 24% had a replacement, and 24% had a repair. Therefore, only 12 patients would be related to the CT findings, since 50% of the patients were not operated on.

CT scan images are static, and they only assess structure, rather than function, at a single time point in the cardiac

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CENTRAL MESSAGE

The search continues for methods to optimize planning for the repair of the bicuspid aortic valve. This study further enhances our knowledge of the anatomy of the bicuspid valve.

cycle. The evaluation of bicuspid aortic valve should include function and structure of the valve at the same time.

Looking ahead in the treatment of patients with BAVs, and perhaps other types of aortic root problems, planning for the procedure will be made simpler, and more precise, with knowledge acquired via anatomical description, as obtained by CT scan. The main question raised by the authors' report is whether data obtained by CT scan would be helpful in the surgical decision-making for BAV repair. Unfortunately, with the limited data provided, this question remains unanswered. Acquisition of preoperative details of the BAV may be helpful in the decision-making, but that doesn't change the clinical criteria for surgery. Furthermore, it would require more patients in the group of valve repair to better correlate with these findings.

Reference

1. Nijs J, Vangelder B, Tanaka K, Gelsomino S, Van Loo I, La Meir M, et al. Geometric characteristics of bicuspid aortic valves. *J Thorac Cardiovasc Surg Tech*. 2021;10:200-15.

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