To the Editor:

Urbanski and colleagues present the long-term efficacy of a unique valve-sparing root replacement strategy based on selective sinus replacement. Differing sizes of sinuses during aortic root dilatation have been proven, with the non-coronary most frequently enlarged, whereas the left sinus typically maintains a normal size. The principle of their method is that sizing of the replaced sinus relies on unique geometric correlations between root components and the expected sinus circumference. Therefore, the sizing of replaced sinuses can be based on the left sinus (normal size) circumference (Figure 1).

However, other correlations can be considered, particularly when annuloplasty is an element of repair. Interesting studies have been published recently elaborating on this topic. It has been proven that ideal hemodynamics can be achieved when these correlations are restored. The 1.5-1.8 ratio between the free edge and annulus diameter has been found to be an optimal value to simultaneously achieve the lowest gradient and highest leaflet coaptation heights. The assumption that half of the aortic annulus ring circumference is identical to the leaflet free edge ratio has been validated by others. It reflects equivalent metrics of the leaflet and the homologic aortic root sinus. As proven by Rankin and colleagues, this method has been successfully applied to internal annuloplasty ring implantation during bicuspid aortic valve repair with aortopathy when the majority of patients underwent selective sinus replacement as part of an aortic procedure. Among other metrics, the same correlation has been recently claimed of the height of the aortic sinus and annular radius. It may have an influence on separate sinus replacement strategy during aortic annulus enlargement, including in pediatric populations when enlarging the aortic root and the sinotubular junction at the same time is imperative. In contrast to current annulus enlargement techniques, separate sinus replacement provides precise matching of neo-annulus and neo-aortic root.

There are several advantages of separate sinus replacement compared with full root replacement. The risk of downsizing aortic neo-root can be diminished. In bicuspid repair, normal and unrestricted function of nonfused leaflets is critical to repair durability, and selective modified remodeling can restore natural shape and sizes (Figure 2). Moreover, reestablishing the symmetrical configuration of the replaced sinus in both longitudinal and radial directions improves durability.

Finally, it is less invasive, which reduces the risk and complexity when coronary reimplantation is required. In particular, when the root size is below recommended, as proposed by the algorithm.

Separate sinus replacement can be a universal solution to achieve a symmetrical and stable root and valve during

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**FIGURE 1.** Computed tomography scan showing separate enlargement of noncoronary and right coronary sinuses with normal left coronary sinus. Left: preoperative.; right- non-coronary and right coronary separate sinus replacement - postoperative.
valve repair or valve-sparing root replacement. Additionally, variable aortic root enlargement allows prediction of expected sinus size according to the annulus size of the replaced valve.

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