

Commentary: Aortic replacement for bicuspid aortic valve disease—How much is too much (or too little)?



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Central Message

Recommendations for ascending aortic replacement for bicuspid aortic valve do not include extent of resection. With stratification of valvular phenotypes, tailored therapy may dictate treatment.

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Bicuspid aortic valve disease is one of the most common congenital cardiac malformations encountered. Although it is classified as a single pathology, recent findings suggest that bicuspid aortic valve disease may represent a heterogeneous range of phenotypes yielding a similar fusion of aortic valve leaflets.¹ Nevertheless, bicuspid valvular disease is frequently associated with ascending aortopathy,^{2,3} and current European and American guidelines advocate for selective ascending aortic replacement, depending on the extent of aneurysmal degeneration at the time of valve repair.⁴⁻⁶ Despite consensus on the necessity for ascending aortic replacement, controversy exists regarding the extent of distal reconstruction. Distal anastomosis technique dictates many factors that are likely to affect postoperative outcomes, and although conclusions from current literature draw from an abundance of short-term outcomes, no consensus has been drawn regarding operative technique. More importantly, generalizability of techniques and recommendations of intervention are often predicated on the individual surgeon's comfort with a clamped versus open hemiarch reconstruction.

In this issue of the *Journal*, Greason and colleagues⁷ compare hemiarch versus clamped ascending aortic replacement in patients with bicuspid aortic valve disease in the absence of aortic arch dilation. In a single-institution retrospective analysis, outcomes related to in-hospital complications, reoperation for aortic arch disease, and survival were compared between patients undergoing hemiarch or clamped ascending aortic reconstruction in largely similar patient cohorts. Both groups demonstrated largely similar outcomes for survival and reoperation for arch disease, correlating to previous findings by Sultan and associates.⁸ Importantly, and again similar to previously published data,⁸⁻¹⁰ whereas hemiarch was associated with longer cardiopulmonary bypass times and

greater postoperative transfusion requirements, patients with clamped ascending repairs had higher rates of return to the operating room for bleeding.

Many important facets reflecting current understanding of bicuspid aortic valve disease and associated aortopathy are demonstrated both in the strengths of Greason and colleagues' observations⁷ and in their study limitations. Overall, it appears the technical and circulatory considerations of hemiarch anastomosis relative to clamped ascending aortic reconstruction must be carefully balanced with longer cardiopulmonary bypass times and the need for circulatory arrest. Although hemiarch repair is associated with decreased rates of return to the operating room for bleeding,^{7,8} the known risks of increased time on bypass and theoretic concerns regarding the use of hypothermic circulatory arrest complicate the picture,¹¹ albeit without considerable adverse outcome in recent published series from experienced centers. A paucity of recurrent arch disease throughout the literature suggests efficacy of both repairs, although the limited follow-up within published series leaves this question largely open.

Greason and colleagues⁷ do help shed further light on this important question regarding bicuspid aortic valve disease, and their outcomes reflect their group's commitment to improving patient care. Ultimately, their data aid in selection of the appropriate repair for patients with bicuspid

aortic valve disease in the absence of arch dilation, while paving the way for future research to help customize care in a heterogeneous patient population.

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