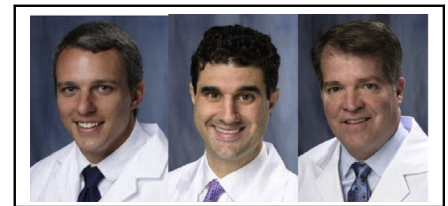


See Article page 39.



Commentary: In the absence of convincing evidence, more is not better

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In this issue of the *Journal*, Anzai and colleagues¹ provide an excellent review of the evidence concerning whether patients undergoing bicuspid aortic valve replacement require aortic hemiarch replacement in the absence of aneurysmal dilation. The authors describe the hemodynamic theory of aortic aneurysm formation in patients with a bicuspid aortic valve, as well as the genetically-linked differences in matrix metalloproteinase production and elastin distribution noted in this patient group.

At high-volume aortic centers, the safety of concomitant hemiarch replacement in patients undergoing aortic root replacement is well known. Previous studies have demonstrated a more aggressive surgical approach with respect to the aortic arch is not linked to significantly worse outcomes.²⁻⁴ Although the safety of a more aggressive surgical approach to the ascending aorta in patients with a bicuspid aortic valve has been reported, the question of its necessity remains unresolved. The authors cite studies that followed bicuspid aortic valve patients at a mean 4- to 5-year follow up after aortic valve and ascending aortic replacement.^{2,5-8} None of these studies demonstrated instances of reoperation for aneurysmal degeneration when abiding by a more conservative surgical approach.

These studies represent hundreds of patients across multiple centers. However, a 5-year follow up may be insufficient to capture long-term aneurysmal degeneration in this population. Indeed, an Italian study that followed 50 bicuspid aortic valve patients for a mean of 234 months after isolated

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Current evidence, limited by follow-up duration, does not support replacement of a nonaneurysmal aortic arch in bicuspid aortic valve patients.

aortic valve replacement found that 3 patients required late intervention for aneurysm of the ascending aorta, one each at 36, 120, and 264 months. In a population with mean age of 55 to 60 in most studies, a 5-year follow-up may be insufficient to capture reintervention events. However, these cumulative studies provide the only available insight into aneurysmal degeneration in bicuspid aortic valve patients. We agree with the authors' conclusion that aggressive hemiarch replacement is not indicated in the absence of significant aneurysmal enlargement of the ascending aorta.

The authors present the hemodynamic theory of aneurysmal degeneration in bicuspid aortic valve patients, as well as work by Chim and colleagues⁹ demonstrating histopathologic differences between idiopathic aneurysmal dilation and aneurysmal dilation associated with bicuspid aortic valve. Recent genetic discoveries, such as the association between bicuspid aortic valve and a mutation in the *NOTCH1* gene,¹⁰ have opened the door for additional predictors of aneurysmal degeneration in this population. Current evidence steers us away from hemiarch repair in bicuspid aortic valve patients without dilation of the arch; however, perhaps in the future such factors as detailed aortic anatomy, point-of-care tissue testing, and genetic analysis will guide a personalized approach to dictate the extent of aortic replacement performed in these patients.

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