Bicuspid Aortic Valve and Coronary Anomalies
To the Editor:

We congratulate Dr Fedak et al on their excellent review of bicuspid aortic valve. As the authors mention, a clear relation, possibly genetic, seems to exist between a bicuspid aortic valve and coronary artery anomalies.1 Anomalous origins of the right2 and left3 coronary arteries have been noted in patients with bicuspid aortic valves. Because many of these patients will require aortic valve replacement, we believe that coronary angiography (or another imaging technique, such as magnetic resonance angiography or electron beam computed tomography) is essential in these patients before surgery, independent of their age and clinical suspicion of associated coronary atherosclerotic disease. The identification of a coronary anomaly would avoid possible injury to the anomalous artery during surgical repair.

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Response
Coronary anomalies are rare congenital cardiac malformations that occur in less than 1% of the population. When present, these malformations are usually an ectopic origin of the right or left coronary artery from the aorta. In rare circumstances, coronary anomalies can result in myocardial malperfusion with devastating clinical consequences. However, the vast majority of coronary anomalies are benign, and accordingly, they are often identified only as incidental findings during diagnostic testing for other reasons. When coronary anomalies are suspected, they can be identified by a number of different imaging modalities, as indicated by Barriales-Villa and colleagues. Although coronary angiography remains the gold standard, a noninvasive approach with coronary magnetic resonance angiography may replace conventional methods in the future.1

Patients with bicuspid aortic valve disease may have a coexisting coronary anomaly. When undergoing valve repair or replacement, there is a potential risk of coronary injury during surgery. The preoperative determination of the presence and location of an anomalous coronary artery, in theory, may reduce the risk of injury at the time of surgery. However, in contrast to Barriales-Villa and colleagues, we do not believe that the routine use of coronary angiography is indicated in all patients with bicuspid aortic valve disease before surgery. Echocardiography is a readily available, practical, and noninvasive imaging modality that is performed in all patients with valve disease before surgery. Echocardiography is capable of detecting coronary anomalies if suspected at the time of study, and in fact, is sometimes capable of detecting anomalies missed by conventional angiography.2,3

Preoperative tests, even if indicated, can give incorrect results. There is no substitute for a careful and comprehensive inspection of the aorta at the time of surgery to avoid injury to an anomalous coronary artery. Echocardiography is routinely performed in these patients before surgery, and additional tests to search for coronary anomalies may not be necessary. Despite a few infrequent reports in the literature of injury to an anomalous coronary artery during valve replacement, in our surgical series of bicuspid valve patients,4 we did not make any extra efforts to identify coronary anomalies before surgery, and we have successfully avoided this complication. In patients with bicuspid aortic valve disease, we believe that preoperative testing should be considered on a case-by-case basis in coordination with the surgeon performing the procedure.

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