Aortic valve repair: Easy and reproducible?

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Aortic valve repair has made marked progress in the past 20 years. Initially started as a technique for valve-preserving aortic replacement primarily for patients with aortic dilatation and an absence of relevant cusp pathology, it has evolved to encompass both isolated cusp repair and combined root and cusp repair. Early morbidity and mortality evolved to encompass both isolated cusp repair and concomitant root replacement: equivalent mid-term outcome for different valve types with or without connective tissue disorder. J Thorac Cardiovasc Surg. 2013;145:117-27.

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Editorial Commentary

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that this surgical approach is reproducible. In addition, Jasinski and colleagues found that repair failure was associated with bicuspid anatomy and complex cusp repair, whereas concomitant root replacement was associated with improved valve stability. Although the latter finding is in concord with other published data, Jasinski and colleagues also saw an increased late mortality associated with root replacement, which offsets its potential stability advantage.

In the analysis of their experience, Jasinski and colleagues also found 2 specific aspects that confirm previous publications and experience: (1) subannular plication sutures do not result in adequate repair stability, at least in the case of bicuspid aortic valves, and (2) repair of cusp prolapse by plication of redundant cusp tissue seems to yield more reproducible and stable results than does the application of a running polytetrafluoroethylene suture to the cusp margin. The observation on subannular sutures has been made previously by others; in fact, in my group’s experience these sutures have been a potential predictor of valve failure.

The stability of cusp plication in prolapse repair is in concord with my own group’s total experience in more than 1600 patients.

Is aortic valve repair therefore easy with most of the techniques described, and should all risk factors for failure be avoided? The results of Jasinski and colleagues are difficult to interpret because of the inhomogeneity of the patient population studied and the variety of techniques used. The data thus may be difficult to reproduce by others if they attempt to base their clinical practice on the information of the publication. First, Jasinski and colleagues used a classification that relates echocardiographic information to the mechanism of aortic regurgitation and suggests a principal type of surgery on this basis. This classification does not...
provide morphologic cutoffs, however, and thus should be taken only as a rough guide for intraoperative decisions. This classification may be misleading in instances when root dilatation masks cusp prolapse, and only after normalization of root dimensions through root replacement is the preexistent cusp prolapse unmasked. In restrictive cusp motion, this classification does not differentiate between root and cusp causes, a difference that leads to very different surgical strategies. As in mitral repair, the choice of the individual surgical technique depends even more heavily on morphology than it does on functional classification.

Second, the results of any valve repair surgery are related to the precision with which normal or nearly normal valve configuration can be achieved at the end of the procedure. Some surgeons—such as Jasinski and colleagues11—seem to rely on visual inspection only for this purpose. There has been increasing evidence, however, that the application of objective measurement of cusp configuration15,16 will lead to a higher reproducibility of aortic valve repair.8

Although Jasinski and colleagues11 state that they measured effective height, it is unclear exactly what value they considered to be normal and what their cutoffs for prolapse correction were. Finally, a rational approach to aortic valve repair should also include quantification of cusp tissue—for example by measuring geometric height—to rule out retraction, which so far provides a poor substrate for cusp repair.17,18 In my group, we have found it helpful to rely on morphologic criteria primarily, always analyzing and correcting root and cusp pathology separately. We have found that morphologic criteria are helpful to surgeons who are starting their practice.

Thus Jasinski and colleagues11 should be congratulated for their good clinical results, but the reader should be careful in trying to reproduce them solely on the basis of the presented information. Aortic valve repair requires the disciplined application of principal strategies and their meticulous execution. With those prerequisites, it is a reproducible technique in a high proportion of patients with aortic regurgitation; however, it is not as easy as it may seem from a distance. The less experienced surgeon should rather be encouraged to look more closely at the growing evidence in this field and beyond the reference list of the article before initiating his or her own aortic valve repair program.

References