Transaortic mitral valve surgery: Going down the rabbit hole again

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In their article in this issue of the Journal, Choudhary and colleagues report outcomes of transaortic edge-to-edge repair of modest functional mitral regurgitation as an adjunctive procedure during aortic valve replacement for severe insufficiency. The results demonstrate reduction of the functional mitral insufficiency, limited morbidity, and eventual reduction of the left ventricular dimensions, presumably from the elimination of aortic insufficiency. Their report provides us the opportunity to review the surgical history of this approach to the mitral valve.

Transaortic access to the mitral valve for replacement was reported in 1983 by Carmichael and colleagues and subsequently by others. Recently, a transaortic approach for edge-to-edge repair has been reported by Mihos and associates in a cohort of 40 patients. The indication for repair was similarly functional mitral insufficiency in patients undergoing primarily aortic valve surgery. The reported late results have been gratifying. The authors emphasize the ease and convenience of access through the aortic root, both in visualization and shortening of the operating time, useful in these often complex cases. In addition, transaortic access to the mitral valve was also described by McIntosh and coworkers in 1992 as a frequent ancillary procedure for more complete resolution of outflow tract gradients in the surgical management of obstructive hypertrophic cardiomyopathy. A line of vertical plication sutures was designed to limit billowing of the anterior mitral leaflet into the outflow tract. A significant number of patients with obstructed hypertrophic cardiomyopathy may have relatively thin basal septal tissue, which limits the amount of muscular thickness that can be safely resected. Instead, these patients have redundant and elongated anterior and sometimes posterior mitral leaflets that are more contributory to the dynamic obstruction. With careful leaflet retraction of a well-functioning aortic valve, a variety of repair strategies on the mitral valve and supporting structures have been described. These techniques include horizontal plication, (improved leaflet shortening with preservation of the coaptation zone), residual leaflet resection for the anterior leaflet (sometimes the posterior leaflet as well), and a variety of accessory chordal and papillary muscle manipulations for structural anomalies contributing to outflow tract obstruction. In fact, as the complexity of the pathophysiology of obstruction has become better defined, the need for these ancillary procedures, although not universal, has increased. Many of these repair techniques can only be performed through the aortic root. Left atrial access would require anterior leaflet discontinuity and reconstruction, a procedure that may lead to complications with time in this often younger patient population.

With relatively little practice and the proper retraction in the intact aortic valve, transaortic access to the mitral valve and subvalvular apparatus can become extremely convenient. In general, there is little trouble in retracting the anterior mitral leaflet to examine the posterior leaflet, even when the aortic root is relatively narrow. Transaortic repair of the mitral valve is a convenient, viable alternative to left atrial access and shortens operating time. No matter the indication, it is a tool we should have in our mitral armamentarium.

References


