Commentary: Watch how the mitral valve is repaired at septal myectomy (and root replacement)

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Left to right: Hiroo Takayama, MD, PhD, Stephanie Nguyen, MD, and Shepard D. Weiner, MD

Central Message

The reported case provides a unique and important learning opportunity on the contemporary understanding and management of the structural abnormalities in obstructive hypertrophic cardiomyopathy.

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In this issue of the *Journal*, Salmasi and colleagues¹ describe a case in which a septal myectomy was performed in conjunction with an aortic root replacement. They are to be congratulated on the successful conduction of this complex operation. We encourage the readers to watch the surgical video clip that accompanies their article, which is an excellent showcase of mitral interventions that are becoming key (and debated) components of contemporary surgical management of systolic anterior motion–related mitral regurgitation.

Concomitant structural abnormality of the mitral valve in hypertrophic cardiomyopathy has long been recognized and recently highlighted.² In the presented case, Salmasi and colleagues¹ surgically addressed the redundant anterior mitral leaflet (A2), abnormal secondary mitral chords, and abnormal attachment of the anterolateral papillary muscle to the septum. Interestingly, there is an ongoing debate regarding the need for mitral valve repair at the time of septal myectomy.³ This debate may be summarized (albeit in an oversimplified manner) as follows: some surgeons, including those at Mayo Clinic, who have taught us a lot on this topic, suggest that a sufficient myectomy inherently takes care of systolic anterior motion and related mitral regurgitation without touching the mitral valve,⁴ whereas others advocate for and continue to develop new surgical approaches to “correct” the abnormal mitral anatomy.⁵

All in all, myectomy experts will agree that a sufficient septal resection is imperative. Experts will also agree that the anterior mitral leaflet and papillary muscles should be released from abnormal attachments to the papillary muscle heads and septum. Some, including ourselves,⁶ might label these mitral subvalvular procedures as a separate mitral valve repair, whereas others, including at the Mayo Clinic, may consider them as a part of an isolated myectomy.⁷ Thus some of the debate may only reflect a difference in nomenclature. Regardless, left ventricular outflow tract

obstruction should be alleviated by a comprehensive “extended” septal myectomy—with aforementioned mitral intervention when needed—in the vast majority of the cases.

Further advanced mitral intervention (with anterior mitral leaflet plication⁸ or augmentation,⁹ papillary muscle reorientation,¹⁰ or other reported procedures) might be useful in relieving left ventricular outflow tract obstruction in the setting of a limited myectomy (because of anatomic limitations, such as thin septum, or because of inadequate resection) or even in the presence of distal extension of (or midventricular type) septal hypertrophy. For the midventricular type, however, aggressive distal myectomy through a separate left ventricular apical incision might be more appropriate.¹¹ Although the reasoning and intentions differ for advanced mitral procedures and transapical myectomy, the underlying question in the debate is perhaps “For which cases and for which surgeons are the advanced mitral procedures or aggressive transapical myectomy recommended?” In our opinion, the answer is “It depends.” When the septum is thick, a good myectomy will do the trick, whereas when it is thin, a trick on the mitral valve may be needed. To address many unanswered questions in hypertrophic cardiomyopathy, more surgical experts are needed.¹² Further surgical training, mentorship, and promotion are essential.

By the way, the aortic root was also replaced in this already complex surgery. Beautifully done!

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