Sub or snub: Is subvalvular repair worthwhile in severe ischemic mitral regurgitation?

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Ischemic mitral regurgitation continues to frustrate and challenge surgeons and cardiologists alike. In this issue of the *Journal*, Nappi and colleagues¹ present a subanalysis of a recently published randomized trial² of surgical treatment of severe ischemic mitral regurgitation with undersized ring annuloplasty versus annuloplasty supplemented with subvalvular papillary muscle approximation. Nappi and colleagues¹ analyzed preoperative echocardiographic characteristics to define better the added benefit of a subvalvular procedure in improving left ventricular remodeling and reducing recurrent insufficiency at 5-year follow-up. The study found that left ventricular remodeling was enhanced and rate of recurrent mitral regurgitation reduced when papillary muscle approximation was added to undersized ring annuloplasty, particularly in the setting of asymmetric leaflet tethering or inferior wall dyskinesia.

Nappi and colleagues¹ are to be congratulated for carrying out a pioneering randomized trial that, although it does not solve the intricate puzzle of ischemic mitral regurgitation, identifies more targeted therapy for patients with defined clinical features. Failure of undersized annuloplasty to correct ischemic mitral regurgitation reliably has been linked to continued left ventricular remodeling and has generated interest in subvalvular interventions to yield a more durable and complete valve repair. Experimental and clinical interventions have been developed to address the subannular pathophysiology of ischemic mitral regurgitation, including device-driven inferior wall displacement,³ direct internal⁴ or external⁵ papillary tip fixation, secondary chordal cutting,⁶ and papillary muscle imbrication⁷ and sling approximation.⁸ The study of Nappi and colleagues¹ continues this important line of investigation. The presented results, however, will need validation in a more extensive clinical experience, because the number of patients available for evaluation at 5 years, especially in subgroup analysis, was quite low, making concrete conclusion difficult. Ischemic mitral regurgitation encompasses a heterogeneous patient population, and caution should be exercised in

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Central Message

Undersized ring annuloplasty for surgical correction of ischemic mitral regurgitation leads to suboptimal results, which may be improved with the addition of a subvalvular repair.

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generalizing these results to avoid surgical errors of the past. Because asymmetric tethering is usually related to dyskinesia of the inferior left ventricular wall, which subtends the posterior papillary muscle, these variables are essentially surrogates and study conclusions may be overstated. The rate of recurrent moderate-to-severe mitral regurgitation at 5 years was still 27% in the subvalvular repair group, and this procedure would therefore not be expected to be superior to mitral valve replacement, which is technically less challenging, more reliable, and more reproducible. Lack of mortality benefit further tempers surgical enthusiasm.

The surgical approach utilized by Nappi and colleagues¹ represents another evolutionary step toward directly treating the “ventricular” disease that is ischemic mitral regurgitation. Nappi and colleagues¹ have demonstrated that supplementing standard undersized ring annuloplasty with a subvalvular repair may be beneficial; however, learning when and if to “sub” will require further work.

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