See Article page 92.

Commentary: Subannular repair in secondary mitral regurgitation: Will this be our hero?

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It is well recognized that isolated mitral annuloplasty is insufficient to provide predictable, durable relief of severe secondary mitral regurgitation (SMR) due high rates of recurrent MR. This recognition has prompted greater consideration of chordal sparing mitral valve replacement for SMR.¹ But, consideration of mitral valve repair remains of interest because patients with durable repairs experience more optimal reverse cardiac remodeling than those with mitral valve replacement. Pausch and colleagues² summarize the available information on surgical repair techniques in the treatment of ventricular SMR (Carpentier IIb).

The authors review data concerning the outcomes of repair strategies added to annuloplasty and argue that strategies incorporating subannular maneuvers such as papillary muscle repositioning are most promising. This makes intuitive sense because papillary displacement has been recognized for decades as the dominating biomechanical factor leading to mitral valve dysfunction in ventricular SMR, generating the tented leaflet geometries part and parcel to this pathology.³⁻⁵ The authors go on to describe their straightforward, reproducible technique of papillary relocation to abolish leaflet tenting and thereby mitral regurgitation, a method that simply amounts to suspending the papillary muscles to the annuloplasty with pledgeted polytetrafluoroethylene sutures.² Not only is the method simple, but it also can be performed in a minimally invasive setting, and could be easily adopted by any cardiac surgeon.

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CENTRAL MESSAGE

The role of repair in ventricular secondary mitral regurgitation is evolving and unclear, but repair techniques that incorporate subannular components appear to hold the most promise.

The question, of course, is when this technique is best applied. Unfortunately for now that question remains unanswered. Current guidelines suggest consideration of mitral surgery in ventricular SMR after optimal medical heart failure therapy in the case that a patient is undergoing coronary artery bypass grafting or, if not undergoing coronary artery bypass grafting, anatomically unfavorable for percutaneous repair and severely symptomatic.⁶ Due to the weight of current evidence, guidelines weakly support mitral valve replacement in these circumstances; there are simply not enough data available to definitively recommend mitral valve repair with papillary repositioning (overall or even in defined subsets of patients) in preference to chordal sparing mitral valve replacement. Given the information presented by Pausch and colleagues,² it seems reasonable to suggest that surgeons considering SMR repair would be well advised to make papillary relocation and annuloplasty the repair option of choice rather than isolated annuloplasty.

Much more data and carefully designed trials are needed to determine the most appropriate type and role of mitral valve repair in ventricular SMR. Thanks in large part to the Cardiovascular Outcomes Assessment of the MitraClip Percutaneous Therapy for Heart Failure Patients with Functional Mitral Regurgitation (COAPT) trial, which showed that percutaneous clip mitral valve repair was associated with very significant reductions in heart failure hospitalization and mortality over optimal medical heart failure therapy at 2⁷ and 3⁸ years, the body of literature related to SMR

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and which patients benefits from mitral intervention is growing quickly.⁷⁻¹⁰ Perhaps the Multicenter, Randomized, Controlled Study to Assess Mitral Valve Reconstruction for Advanced Insufficiency of Function or Ischemic Origin trial comparing MitraClip (Abbott Cardiovascular, Abbott Park, Ill) and surgery will shed additional light. Only time and additional research will reveal the hero (if a hero exists) in the story of SMR. As in many cliffhangers, we will have to wait for the next episodes to find out. Stay tuned!

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