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Commentary: All gets better in time

Stephanie L. Mick, MD, and Mario Gaudino, MD

In this issue of the *Journal*, the Michigan Mitral Research group reports their experience with surgical treatment of rheumatic mitral disease.¹ The authors considered 180 middle-aged patients (mean age 59 years) undergoing primary isolated mitral repair or replacement, the large preponderance of whom had stenotic valves, from 1997 to 2018. Midway through this period, a modification in approach took place in the direction of more-stringent selection criteria for repair in rheumatic mitral disease based on anterior leaflet assessment.

For roughly the first decade of this experience, the policy was aggressively in favor of repair with 70% repair rate using, eg, subvalvular debridement, over-commissurotomy extending to the annulus, papillary splitting, secondary chord division, and annuloplasty. Around 2009, the threshold for replacement was lowered, with repair favored only in the setting of anterior leaflet mobility with some translucency. In the following decade or so, the repair rate was 33%. Mitral replacement was with bioprosthetic valves in 89% of patients and chordal continuity maintained through native chord sparing or Gore-Tex neochord implantation.

So what happened when this center flipped from a 70/30 repair/replacement rate to a ~30/70 rate? The patients in the replacement-predominant era “did better,” as captured by a composite end point, experiencing a greater freedom from death, reintervention/reoperation, or severe valve dysfunction.

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CENTRAL MESSAGE

A lower threshold for replacement appears reasonable in middle-aged patients with rheumatic mitral disease.

The authors' conclusion from the inquiry is that “careful assessment of the anterior leaflet mobility/calcification to determine mitral valve repair or replacement was associated with improved outcomes.” From a statistical perspective, however, it is very important to note that the Cox modeling did not show the choice of repair or replacement to have significant relationship to the composite outcome improvement. Moreover, the 5-year cumulative incidence of mitral reoperation did not differ by era and was greater after repair versus replacement (17% vs 3.7%, $P = .014$). Both repair and replacement patients in the second era demonstrated improved survival. Although limited by the shorter duration of follow-up in the second era, there was no suggestion of a survival advantage for mitral valve repair over replacement in this group of rheumatic patients.

With all of this in mind, although there is certainly a clear difference in the composite outcome between the 2 eras, it is not clear that the valve assessment was the main driver of the difference. It is very likely that other factors played important roles, such as an overall improvement of cardiac surgical care in this time period.

That being said, the study does show that middle-aged patients undergoing mitral valve surgery for rheumatic disease did better overall than in the past regardless if replacement or repair was undertaken. Moreover, in the modern era, the patients who received replacements not only enjoyed similar survival but also lower rates of valve reintervention than those undergoing repair. Given these results, along with the fact that current percutaneous reintervention technology yields superior outcomes post

replacement²⁻⁴ (when anatomically feasible,⁵ an important caveat) than postrepair, a lower threshold for replacement appears reasonable in middle-aged patients with rheumatic mitral valve disease.

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Commentary: Rheumatic mitral repair: Just don't do it?

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Fortunately, rheumatic disease has greatly decreased in the United States and as noted by Brescia and colleagues¹ is different here than much of Asia with a preponderance of mitral stenosis (MS) or mixed disease. Of note, it generally occurs later in life as well, and the mean age in this report was 59 ± 14 years. The authors focus on the mobility of the anterior leaflet to decide if the mitral valve can be safely repaired, and they became more conservative during the second decade (repair decreased from 70% to 33%). The article compares outcomes in the 2 decades, but a question not addressed is if the success of repair with pure mitral regurgitation (MR) was different than for that with MS or mixed disease. Perhaps the results with pure MR are better and approximate the results outside of the United States that they discuss. If the valve leaflets have begun to calcify, then

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CENTRAL MESSAGE

Early failure after rheumatic repair is not uncommon. The Michigan Medicine group became more cautious over time, and perhaps a subset of young patients with pure MR should be considered for repair.

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repair failure due to progressive calcification may be likely. Table 5 reports, for those with a known cause, 7 of 8 failed due to MS or mixed disease. Also, early failure was common. Reoperation was frequently within the first year or less than 5 years in all but 1 patient (who underwent reoperation at 6.5 years). Patient age is an important consideration that is not addressed as clearly as it should be. Bioprosthetic valve freedom from structural valve deterioration at 10 and 15 years is heterogeneous but approximately 84% to 93% and 61% to 81% depending on the valve type.² What lessons does this hold for the third decade? Mitral reoperation for bioprosthetic structural