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Commentary: Reoperations for mitral stenosis after mitral valve repair: We are still learning

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Need for reoperation is the main complication after mitral valve repair but occurs less frequently in nonrheumatic pathology. Reported freedom from reoperation after mitral valve repair is usually in excess of 90% at 15 years.¹ In most cases, the valve dysfunction is caused by residual (early) or recurrent (late) regurgitation. By contrast, pure or predominant stenosis is more frequent after repair of rheumatic valves and, ordinarily, results from the evolution of the chronic scarring process characteristic of this pathology.

In this issue of the *Journal*, El-Eshmawi and colleagues² from the Mount Sinai analyze retrospectively data on a case series of 35 consecutive patients who underwent reoperation for symptomatic moderate-to-severe mitral stenosis after mitral valve repair for pure or predominant regurgitation. Primary degenerative or secondary (functional) disease was the cause for valve dysfunction in 60% of the cases and rheumatic in only 17%. A complete ring annuloplasty had been performed during the original procedure in 83% of the patients, leaflet resection in 34%, and commissuroplasty or edge-to-edge repair in 18%. The authors found that the primary mechanisms of mitral stenosis were pannus ingrowth over the annuloplasty ring (57%) and commissural fusion. Leaflet retraction and annular/leaflet calcification were observed in some cases.

Despite this complex pathology, valve re-repair was possible in just more than one-third of the patients using different techniques, which underlines the determination of the surgeons at the Mount Sinai to repair valves. Annuloplasty revision was performed in all patients, converted from complete ring to band or pericardial annuloplasty in

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CENTRAL MESSAGE

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57% of the cases, and no annuloplasty in 2 patients. Notably, mean crossclamp time was 107 minutes, which is an indicator of the technical demand of the second procedure, especially when re-repair is performed, even having in mind the need for associated procedures, but there was no in-hospital or 1-year mortality and 5-year survival was 93.9%.

As indicated previously, 60% of the patients in the current series had degenerative or “functional” disease at the time of the original procedure, which is an unusual ground for late stenosis that mostly occurs in rheumatic patients. Here is where the main interest of this paper lies because, as the authors put it, “post-repair mitral stenosis remains underreported in literature with uncertainty regarding its hemodynamic and clinical consequences as well as its prognostic implications.” Clearly, this is an entity that requires further study.

Small rings were prevalent and one of the main causes for stenosis; the median size was 28 mm, and there were quite a few that were size 26 mm. I always teach young surgeons to avoid using such small rings, even in ischemic mitral regurgitation. In addition, the use of a small ring was associated with leaflet resection in about one-third of the cases, which has certainly contributed to the valve stenosis. The authors also encountered 3 patients with what they call a “tunnel-effect,” that is, functional mitral stenosis due to marked discrepancy between the residual leaflet tissue and the annuloplasty ring size, with long leaflets below the annuloplasty device creating a subvalvular tunnel. As they stated, “it is intuitive that some degree of narrowing of

the native valve orifice is inevitable in many repairs,” but this should not lead to such a degree of stenosis requiring reoperation so soon.

The median time interval from primary repair to reoperation was only 4.5 years. All of this could raise discussion about eventual wrongs in the initial procedure. The title of the paper by El-Eshmawi and colleagues refers to lessons (to be learned)! Accordingly, the authors concluded that “refinement in surgical techniques, including the avoidance of undersized complete ring annuloplasty, mismatch of tissue height to annuloplasty circumference, and aggressive commissuroplasty, might help avoid post-repair mitral stenosis.” Quite obvious, but the etiology and role of pannus ingrowth remain unexplained. Curiously (or not), it occurred both in rings and bands.

Again, coming from these authors and this well-known “national mitral valve repair reference center,” as the authors self-designate it, this experience is far from representing the real world.³ Not only are they referred the most difficult patients, but they managed to achieve a high percentage of re-repairs. Perhaps their enthusiasm was somewhat excessive, judging by the fact that 2 two patients (15%) required a third procedure (valve replacement) within 2two years of the second, due to recurrent

restenosis. The authors confess that they “learned these patients would be better served with mitral replacement in the future.” The fact is that there were a significant number of patients who benefited from preservation of their own valve.

A final comment: The “enthusiasm” of this surgical group is also illustrated by the high rate of concomitant tricuspid repair (63%), which “reflects our aggressive approach toward concomitant tricuspid repair in patients with risk factors for disease progression” and has been under intense debate recently.⁴ In any case, this experience stresses, in my opinion, the importance of referral of these patients with very complex pathology to experienced surgeons and centers.

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