Authors have nothing to disclose with regard to commercial support.

valve gradients. In a pilot study, Chan and colleagues³ found that patients with mean intraoperative mitral trans-valvular gradients greater than 3 mm Hg were predominantly treated with a resection strategy, whereas patients with mean gradients of 3 mm Hg or less were predominantly treated with a leaflet preservation strategy. They then showed that patients who predominantly underwent leaflet resection had higher peak and mean mitral valve gradients at peak exercise than did patients who predominantly had a leaflet preservation strategy.⁴ Consistent with these findings, our meta-analysis showed that patients undergoing leaflet resection may have a smaller annuloplasty ring and lower ejection fraction than patients undergoing chordal replacement. Again, these data are not conclusive but suggest a possible association.

Because early mitral valve repair is now recommended for selected symptom-free patients with severe mitral regurgitation,⁵ the findings of functional mitral stenosis by Chan and colleagues^{3,4} are of increasing importance. Patients with severe asymptomatic mitral regurgitation are typically young adults who may want to pursue an active lifestyle after their operation.

One of the major findings of our systematic review is the lack of high-quality data in the surgical literature regarding mitral repair strategies. This is true of many aspects of valvular surgery, in which guidelines are primarily based on a lower level of evidence.⁵ Of the 43 recommendations pertaining to mitral valve disease in the 2014 American Heart Association and American College of Cardiology guideline for the management of patients with valvular heart disease, only 3 (7%) were deemed to have a level of evidence of A. In an effort to overcome this lack of high-quality data to inform cardiac surgical practice, the Cardiothoracic Surgical Trials Network (www.ctsurgery.net) was developed and has already made several seminal contributions with high-quality evidence for surgical decision making.^{6,7} Another such initiative is CardioLink, a platform for cardiac surgical clinical trials that is based at the Applied Health Research Center at St Michael's Hospital (<http://stmichaelshospitalresearch.ca/research-programs/cardiovascular-disease-diabetes-research-program/our-research/cardiolink/>). One of the CardioLink arms, the Canadian Mitral Research Alliance (CAMRA) randomized controlled trial (ClinicalTrials.gov number: [NCT02552771](https://clinicaltrials.gov/ct2/show/study?term=NCT02552771)), is directly addressing the question at hand: whether mitral valve leaflet preservation with chordal replacement leads to lower rates of functional mitral stenosis than does leaflet resection.⁸ This trial is

currently enrolling patients, and it is our hope that it will serve to add some science to the art of mitral valve repair.

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REVISITING POSTERIOR MITRAL LEAFLET PROLAPSE: RESECT, RESPECT, OR RESECT WITH RESPECT?

Reply to the Editor:

In this issue of the *Journal*, Tomšič and colleagues¹ from Leiden have published a letter under the title of “Respect Versus Resect—Two Different Repair Techniques or Two Different Tools in the Toolbox?” in response to the article, by Mazine and colleagues,² also published in the *Journal*, “Systematic Review and Meta-Analysis of Chordal Replacement Versus Leaflet Resection for Posterior Mitral Leaflet Prolapse.” In their letter, Tomšič and colleagues¹ state that both techniques in cause,

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resection, or preservation of the prolapsing segment of the posterior mitral leaflet have been shown to be effective and should remain as useful tools in the surgeons' surgical armamentarium, because each may have special applicability to different types of valve pathology. Namely, when there is "excessive" leaflet tissue, appropriate resection may be indicated. Their position is very well illustrated by the flowchart that constitutes their central picture.

The letter of Tomšič and colleagues¹ reinforces the idea that I had expressed in the Editorial Commentary that accompanied the original article of Mazine and colleagues,² "Isolated Posterior Mitral Leaflet Prolapse: Resect, Respect, or Resect With Respect?"³ There are questions remaining: How excessive is excessive? And how extensive should the resection be? The whole or part of the prolapsed segment?

This is precisely what I meant by "resect with respect." Actually, Mazine and colleagues² were already pointing in the same direction when they stated that "it is critical that mitral surgeons can utilize several different techniques individualized to the quality and quantity of mitral tissue, as well as each patient's specific dysfunction and lesions."

In fact, though, the main message of the article by Mazine and colleagues² was that preservation of the leaflet might achieve better functional results, not only in terms of preserving an adequate valve orifice, thus potentially avoiding mitral stenosis, a "complication" previously described in the literature, but also in terms of preservation of left ventricular function, by avoiding distortion of the mitral valve apparatus. In the meta-analysis performed by Mazine and colleagues,² reoperation was more frequent in the resection group, although no difference in recurrence of mitral regurgitation was detected. As Tomšič and colleagues¹ underlined, however, "most reoperations were performed shortly after the initial operation, indicating technical failure. Indeed, ring dehiscence was the most common cause of reoperation." Tomšič and colleagues¹ also considered that "the type (and size) of annuloplasty device can potentially cause unwanted, clinically significant functional mitral valve stenosis."

These two problems will probably remain a matter of discussion in the foreseeable future. Personally, I have never come across a single case of significant postrepair mitral stenosis, and it is unlikely that it will occur except after excessive reduction of leaflet tissue or use of extremely small rings. On the other hand, I cannot understand how can one of these techniques achieves better preservation of left ventricular function, because neither alters the

ventricular geometry significantly. Perhaps the ongoing Canadian Randomized Trial will shed some light on this puzzle.

Finally, I wish to comment on an aspect that I failed to highlight in my Editorial Commentary. In their article, Mazine and colleagues² stated that theirs was "the first systematic review and meta-analysis to compare leaflet resection versus chordal replacement techniques for the repair of isolated posterior mitral leaflet prolapse." It is always dangerous to make such statements. Simultaneously, Mihos and colleagues⁴ published, in another journal, "A Systematic Review and Meta-analysis of Chordal Replacement Versus Leaflet Resection for Isolated Posterior Mitral Valve Prolapse" (please note the extreme similarity of the title!).

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EULER'S ELASTICA-BASED BIOMECHANICAL ASSESSMENT FOR NEOCHORDAL INSERTION IN THE TREATMENT OF DEGENERATIVE MITRAL VALVE REPAIR

To the Editor:

We read with interest the commentary of Padala¹ in response to the article from Yoshida and colleagues² in the *Journal*. Despite fully supporting Padala's detailed and thorough analysis,¹ we believe that a comprehensive understanding of degenerative mitral repair requires the evaluation not only of the morphologic aspects but also of the baseline biomechanical characteristics of the mitral valve tissues involved (leaflets, chordae tendineae, papillary muscles) and the physical stresses acting on these structures.

Yoshida and colleagues² elegantly presented the use of 320-slice computed 2- and 3-dimensional tomography for