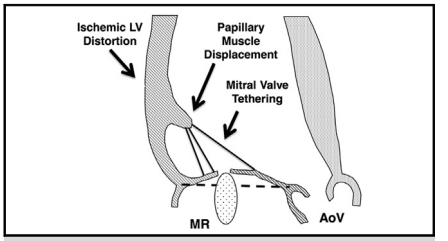
2016 update to The American Association for Thoracic Surgery consensus guidelines: Ischemic mitral valve regurgitation

The American Association For Thoracic Surgery Ischemic Mitral Regurgitation Consensus Guidelines Writing Committee:

Irving L. Kron, MD,[a] Damien J. LaPar, MD, MSc,[a] Michael A. Acker, MD,[b] David H. Adams, MD,[c] Gorav Ailawadi, MD,[a] Steven F. Bolling, MD,[d] Judy W. Hung, MD,[e] D. Scott Lim, MD,[f] Michael J. Mack, MD,[g] Patrick T. O'Gara, MD,[h] Michael K. Parides, PhD,[i] and John D. Puskas, MD[c]



Mechanism of ischemic mitral regurgitation.

Central Message

This is an update to the 2015 AATS IMR Guidelines incorporating the 2-year follow-up data of the Cardiothoracic Surgical Trials Network severe and moderate ischemic mitral regurgitation trials.

See Editorial Commentary page 1080.

We are very pleased to update The American Association for Thoracic Surgery (AATS) Consensus Guidelines on ischemic mitral valve regurgitation (IMR) (Figure 1). These Guidelines were developed based on the results of published randomized clinical trials, large observational studies, and the expert opinion of the authors. Subsequent to the publication of the 2015 AATS IMR Guidelines,[1] the 2-year follow-up results of the Cardiothoracic Surgical Trials Network (CTSN) severe and moderate ischemic mitral regurgitation (MR) trials were published.[2,3] The 2-year data from the Severe MR (SMR) trial demonstrated that nearly half of alive mitral repair patients developed recurrent MR with a low percentage developing severe MR. However, there were significantly more episodes of heart failure and cardiovascular-related hospitalizations in the repair group, so there certainly appears to be a concordance between these echocardiographic and clinical results. Consistent with these findings, we have modified the language and levels of evidence (LOE) for the Writing Committee's guidelines for severe IMR (Table 1).

The specific changes to the Writing Committee's guidelines for severe IMR concern the fundamental change in the level of evidence guiding the recommendation for LOE A to LOE B and a change in the language of the recommendation to make it more consistent with that of an LOE B guideline. The rationale for changing the LOE for these recommendations were primarily driven by our belief that, after reviewing the best-available evidence, several of the randomized trials and prospective series for the surgical treatment of IMR currently available are simply not large enough to support LOE A classification. In addition, we have added to each Guideline that surgical correction of IMR "is reasonable" and "may be considered" in patients "who remain symptomatic despite Guideline-directed medical and cardiac device therapy." The recommendations for performance of mitral valve replacement in the setting of basal aneurysm/dyskinesia are based on results from the CTSN SMR trial, which demonstrated that the presence of basal aneurysms is associated with recurrent MR following mitral repair.[4]

The original Guidelines for SMR are as follows:

- In the presence of basal aneurysm/dyskinesis, significant echocardiographic evidence of leaflet tethering, or moderate to severe left ventricle remodeling

Scanning this QR code will take you to the full updated version of the guideline.

From the [a]Division of Thoracic and Cardiovascular Surgery, Department of Surgery, and [f]Division of Pediatric Cardiology, Departments of Pediatrics and Medicine, University of Virginia, Charlottesville, Va; [b]Division of Cardiovascular Surgery, Department of Surgery, University of Pennsylvania School of Medicine, Philadelphia, Pa; [c]Department of Cardiac Surgery, Mount Sinai Medical Center; [d]Department of Cardiac Surgery, University of Michigan, Ann Arbor, Mich; [e]Division of Cardiology, Department of Medicine, Massachusetts General Hospital; [g]Department of Cardiovascular Surgery, Heart Hospital Baylor Plano, Baylor Health Care System, Plano, Tex; [h]Cardiovascular Division, Department of Medicine, Brigham and Women's Hospital, Boston, Mass; and [i]The International Center for Health Outcomes and Innovation Research, Department of Population Health Science and Policy, Icahn School of Medicine at Mount Sinai, New York, NY.

Received for publication May 31, 2016; revisions received Nov 15, 2016; accepted for publication Nov 16, 2016; available ahead of print Feb 9, 2017.

Address for reprints: Irving L. Kron, MD, Division of Thoracic and Cardiovascular Surgery, Department of Surgery, University of Virginia School of Medicine, PO Box 800679, Charlottesville, VA 22908 (E-mail: ilk@virginia.edu).

J Thorac Cardiovasc Surg 2017;153:1076-9
0022-5223/$36.00

http://dx.doi.org/10.1016/j.jtcvs.2016.11.068

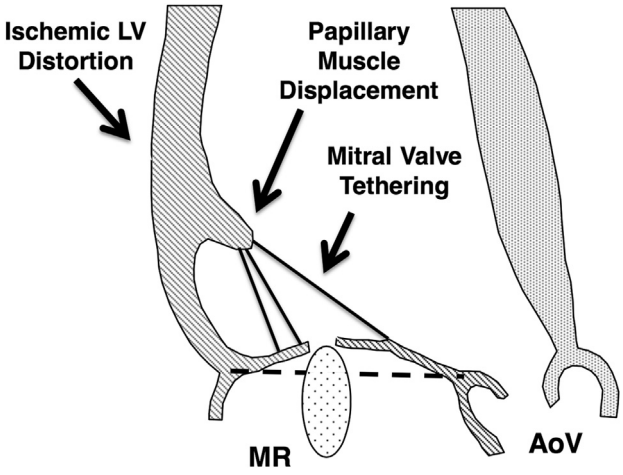


FIGURE 1. Diagram of pathophysiologic mechanism of ischemic mitral regurgitation. *LV*, Left ventricle; *MR*, mitral regurgitation; *AoV*, aortic valve.

(left ventricular end diastolic diameter [LVEDD] > 65 mm), patients should consider mitral valve replacement (class of recommendation [COR] IIa, LOE A).

- In the absence of basal aneurysm/dyskinesis, echocardiographic evidence of significant leaflet tethering, or moderate to severe left ventricle remodeling (LVEDD), patients should consider mitral valve repair with an undersized, complete rigid ring (COR IIb, LOE B).

The updated Guidelines for SMR are as follows:

- Mitral valve replacement is reasonable in patients with severe IMR who remain symptomatic despite Guideline-directed medial and cardiac device therapy, and who have a basal aneurysm/dyskinesis, significant leaflet tethering, and/or severe left ventricle dilation (LVEDD > 6.5 cm) (COR IIa, LOE B).
- Mitral valve repair with an undersized complete rigid annuloplasty ring may be considered in patients with severe IMR who remain symptomatic despite Guideline-directed medical and cardiac device therapy and who do not have a basal aneurysm/dyskinesis, significant leaflet tethering, or severe left ventricle enlargement (COR IIb, LOE B).

The 2-year results from the CTSN Moderate MR trial have principally changed the opinion of the Writing Committee and subsequent Guidelines. We were concerned initially that the presence of moderate MR in patients who undergo mitral valve repair would lead to further significant MR and clinical sequelae. However, at 2-year follow-up this did not occur. Overall, patients seemed to do just as well with coronary artery bypass grafting (CABG) alone compared with combined CABG with mitral valve repair with the exception of improvement in exercise capacity in the repair group. The mitral valve repair group perioperatively had a higher neurologic event rate and increased arrhythmias. Therefore, there was a cost to adding mitral valve repair to these patients.

We have changed the Guidelines specifically related to performance of mitral valve repair for patients with moderate MR. The updated Guidelines (Table 1) now recommend that in patients with moderate IMR undergoing CABG, mitral valve repair with an undersized complete angioplasty ring "may be considered." This differs from the initial Guideline, which stated that patients with moderate MR "should undergo" concomitant mitral valve repair and identified certain clinical situations where concomitant mitral valve repair may be appropriate. As a result, the Writing Committee emphasizes the importance of individual surgeon experience and clinical expertise to determine when concomitant mitral repair is indicated for the surgical treatment of moderate MR. It seems that in the majority of situations, CABG alone has equivalent results. Furthermore, we updated the LOE supporting these Guidelines from LOE A to a more appropriate LOE B to be consistent with the best-available supporting evidence for these recommendations.

The original Guideline for moderate MR was as follows:

- Patients with moderate IMR undergoing CABG should undergo concomitant mitral valve repair with an undersized, complete rigid annuloplasty ring to mitigate recurrence of MR in patients who have heart failure symptoms; those with significant mitral annular dilation; and those in whom bypassable, hibernating, viable myocardium supporting the papillary muscle(s) is thought to be minimal (COR IIb, LOE A).

The updated Guideline for moderate MR is as follows:

- In patients with moderate IMR undergoing CABG, mitral valve repair with an undersized complete rigid annuloplasty ring may be considered (COR IIb, LOE B).

The Guidelines related to the performance of either mitral valve replacement versus repair for IMR did not change in this update. The LOE supporting these Guidelines also did not change in this update. As reviewed in our original Guidelines, in an important clinical trial comparing patients treated with mitral valve repair for IMR, Spoor and colleagues[5] demonstrated a significant benefit of use of small, complete rigid annuloplasty rings compared with flexible rings (5-fold greater incidence of recurrent MR with flexible rings). These findings were supported in a subsequent multivariate analysis performed by Silberman and colleagues,[6] which identified that the type of annuloplasty ring (rigid vs flexible) was an important predictor of residual and recurrent MR after mitral repair for IMR. For the performance of mitral valve replacement, results from a seminal clinical trial reported by Yun and colleagues[7] demonstrated the superiority of a complete chordal-sparing mitral valve replacement (compared with partial chordal-sparing replacement) with improved preservation of left ventricle volume and function. Thus, the Writing Committee continues to support the performance of a