Ischemic MR Guidelines

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Seattle, WA
Irving Kron, M.D.
Professor and Chairman Department of Surgery
University of Virginia Hospital
Charlottesville, Virginia
AATS Ischemic MR Guideline Writing Group Roster

Irving L. Kron,  
Chair  
University of Virginia  
Chair, Dept. of  
Surgery  
Charlottesville, VA  
Ph: 434-924-2458  
Email: ilk@virginia.edu

Michael Acker  
University of Pennsylvania  
Chief, Division of Cardiovascular  
Surgery  
Philadelphia, PA  
Ph: 215-349-8305  
Email: michael.acker@uphs.upenn.edu

Gorav Ailawadi  
University of Virginia  
Associate Professor of  
Surgery  
Charlottesville, VA  
Ph: 434-924-5052  
Email: gorav@virginia.edu

David Adams  
Mount Sinai Medical Center  
Chair, Cardiothoracic Surgery  
New York, NY  
Ph: 212-659-6820  
Email: david.adams@mountsinai.org

Steven Bolling  
University of Michigan  
Director, Multidisciplinary Mitral Valve  
Clinic  
Ann Arbor, MI  
Ph: 734-936-4981  
Email: J.K.Field@liv.ac.uk

Judy Hung  
Massachusetts General Hospital  
Associate Director, Echocardiograph  
Boston, MA  
Ph: 617-726-0995  
Email: jhung@partners.org
Scott Lim
University of Virginia
Associate Professor of Pediatrics
Charlottesville, VA
Ph: 434-996-0217
Email: SL9PC@virginia.edu

Damien LaPar
University of Virginia
CT Surgery Fellow
Charlottesville, VA
Ph: 434-982-0332
Email: dlapar@virginia.edu

Michael Mack
Baylor Health System
Medical Director, Cardiovascular Surgery
Plano, TX
Ph: 469-814-4105
Email: michael.mack@baylorhealth.edu

Patrick O'Gara
Brigham and Women's Hospital
Director, Clinical Cardiology
Boston, MA
Ph: 617-7332-8380
Email: pogara@partners.or

John D. Puskas
Icahn School of Medicine at Mount Sinai
Site Chair, Cardiothoracic Surgery
New York, NY
Ph: 1 (212)-420-5601
Email: john.puskas@mountsinai.org

AATS Staff Liaison
Matt Eaton, Director of Administration, 978-927-8330, meaton@aats.org
Definition:

- Ischemic MR refers to a form of secondary MR which occurs in the setting of LV distortion from ischemic LV remodeling.
Ventriculo-mitral complex

tug-of-war

PM widening

Ao

LA

LV dilation
(lengthen)

annular dilation
Imaging
Proximal Isovelocity Surface Area (PISA) Method

- Quantitative doppler method which measures the effective regurgitant orifice area (ERO) of the MR flow.
  a) $< 0.20\ cm^2$ - mild MR
  b) $> 0.40\ cm^2$ - severe MR
Grading Of MR- Doppler Methods

1. Distal jet method – maximal MR jet as it enters left atrium.
2. Vena contraca width- narrowest portion of the mitral regurgitation jet
   a) < .3- mild MR
   b) .3 To .69- moderate MR
   c) >. 7- severe MR
Limitations of Echo Techniques

1. Loading conditions
2. Missing eccentric jets
3. Anesthetized patient (in operating room)

Ideally use an integrative approach utilizing multiple doppler parameters in awake patients for decision making.
Severe MR assessed by integrative method. All three color Doppler techniques including vena contracta width, jet area ratio and EROA and supportive criteria such as systolic flow reversal in the pulmonary veins were used in grading MR. In this case, 2 out of the three color Doppler methods met severe criteria and presence of pulmonary vein flow reversal was also c/w severe MR.
Medical therapy of secondary mitral regurgitation (guideline directed)

1. Aspirin
2. High intensity statin therapy
3. Beta blockers
4. Ace Inhibitor
5. Spironolactone
6. Cardiac resynchronization (if wide QRS and heart failure)
Indications for Surgery

1. Revascularization if evidence of ischemia
2. Mitral surgery if other cardiac surgery is going to be performed.
3. Mitral surgery can be considered as isolated procedure for persistent heart failure despite best medical therapy.
Surgical Guidelines for the treatment of ischemic MR
- Severe MR
Treatment Choice is Controversial

• Lower periop morbidity and mortality with repair

• Better long-term correction with replacement
  – Gillinov et al, J Thorac Cardiovasc Surg 2001;122:1125-41

• Based on retrospective observational studies

• Need randomized evidence
Median change in LVESVI

Median with 95% CI for change in LVESVI from baseline to 1 yr

Z=1.33, p=0.18
(All pts)
Mortality

Hazard Ratio, 0.79 (95% CI, 0.42, 1.47)
P = 0.4542

30 Day Mortality:
1.6% (repair) vs. 4.0% (replacement), p = 0.26

12 Month Mortality:
14.2% (repair) vs. 17.6% (replacement), p = 0.47
Recurrent MR at 1 year

Moderate or Severe Recurrent MR

- Repair: 32.6%
- Replacement: 2.3%

p < 0.001
Basal Aneurysm
Conclusions:

1. Mitral repair and replacement have equivalent results.
2. In presence of basal aneurysm patients should have chordal sparing MVR.
3. In absence of above patients can have mitral repair with undersized, complete, rigid ring. Mitral valve replacement is also indicated.
Surgical Guidelines for the treatment of ischemic MR

- Moderate MR
Mortality

Hazard Ratio, 0.90 (95% CI, 0.38-2.12)
P = 0.81

30 Day Mortality:
2.7% (CABG) vs. 1.3% (CABG/MVr), p = 0.68

12 Month Mortality:
7.3% (CABG) vs. 6.7% (CABG/MVr), p = 0.83

<table>
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<tr>
<th>Months</th>
<th>CABG Alone</th>
<th>CABG + MV Repair</th>
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<tr>
<td>0</td>
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<td>150</td>
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<tr>
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<tr>
<td>12</td>
<td>134</td>
<td>137</td>
</tr>
</tbody>
</table>
Mitral Regurgitation

- CABG Baseline
- CABG 12 Months
- CABG MVr Baseline
- CABG MVr 12 Months

- Severe
- Moderate
- Mild
- Trace
- None
Summary

- No difference at 1 year:
  - in the degree of reverse remodeling
  - in mortality
  - in MACCE, hospital readmission, or QOL

- CABG + MV repair associated with more:
  - neurologic events
  - increased cross clamp and cardiopulmonary bypass time
  - longer ICU and hospital LOS

- At 1 year, higher degree of moderate and severe MR in the CABG alone group
1. Decision can be based on which symptoms are predominant – angina alone versus dyspnea.
2. Is there incremental risk to addition of mitral repair to CABG in that particular patient.
3. Will overall ventricular function improve with the bypass.
4. Is the mitral annulus very dilated-above 40mm.
Technical Aspects of Mitral Repair

1. Reduction annuloplasty- usually 26-28 ring
2. Complete rigid or semi- rigid ring
3. No MR on TEE after bypass with deep coaptation zones.
Technical Aspects of Mitral Replacement

1. No oversizing
2. Chordal sparing
3. Choice of prosthesis patient dependent
Roles of Mitraclip

1. Advantages – low risk
2. Disadvantages - leaving 2+ MR considered a good result.

Presently approved for high risk degenerative mitral patients.
Awaiting Results of Coapt Trial

(Mitral vs. best medical therapy for functional MR)

- Mitraclip may have role in high risk Ischemic MR patients.
Caveats

1. Ischemic MR is very dynamic and load dependent - Repeat imaging may be helpful.
2. Most trials have been small.
3. Present repair techniques are limited to one plane - subvalvular apparatus is the next frontier.
4. Long term results of randomized trials not yet available.
5. When in doubt review all options - Heart team approach.