REPAIR OR REPLACE FOR SEVERE ISCHEMIC MITRAL REGURGITATION: PROSPECTIVE RANDOMIZED MULTICENTER DATA/2015 /

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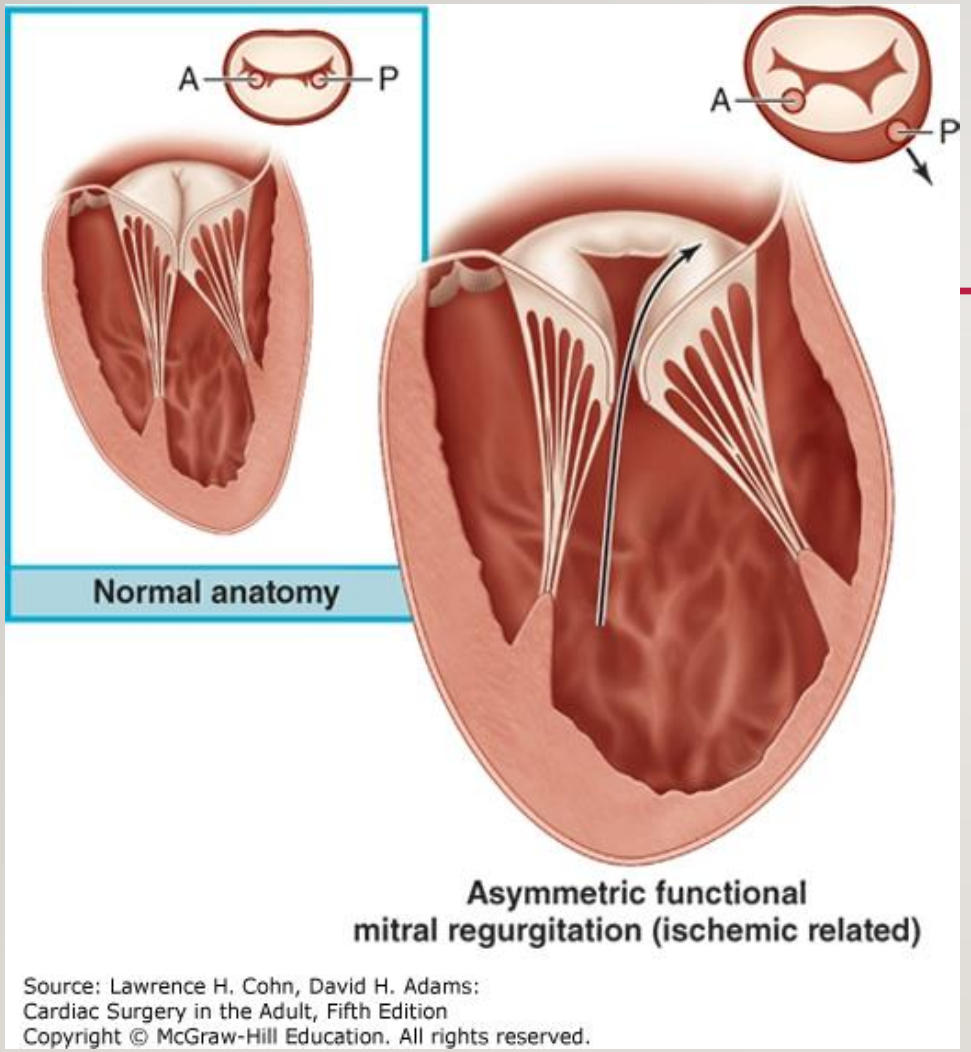
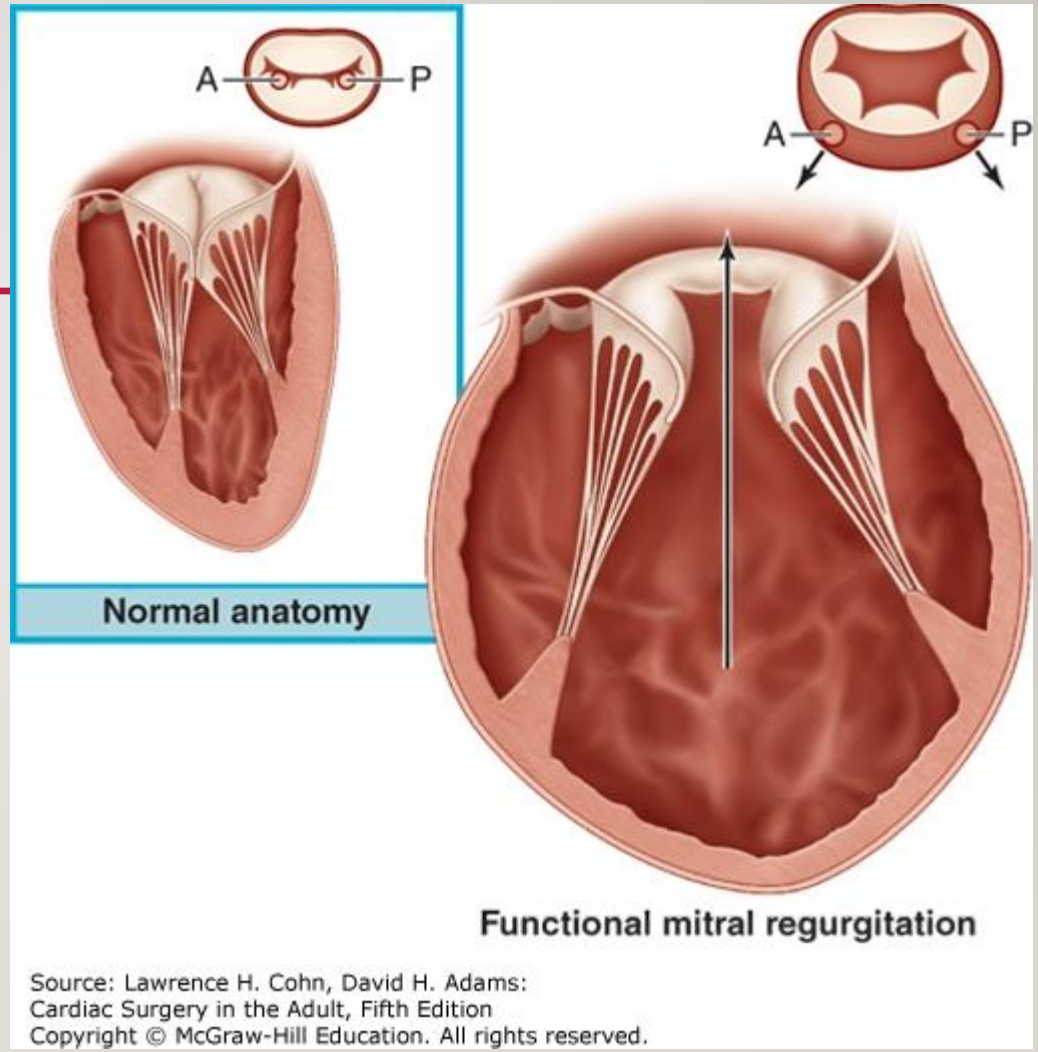
INTRODUCTION

- The mechanisms underlying IMR are primarily related to the effects of left ventricular (LV) remodeling after myocardial infarction. The two most significant processes of LV remodeling underlying the development of MR affect (I) the papillary muscles and (II) the mitral annulus. Following myocardial ischemia, remodeling changes occurring in the inferior and posterior aspects of the LV may result in displacement of the papillary muscles away from the mitral annulus, resulting in restricted mitral valve leaflet motion due to tethering. Concomitantly, global LV dilation resulting from altered cardiac myocyte dysfunction after infarction may cause annular enlargement of the mitral valve.



Asymmetric functional mitral regurgitation (ischemic related)

Source: Lawrence H. Cohn, David H. Adams:
Cardiac Surgery in the Adult, Fifth Edition



Functional mitral regurgitation

Source: Lawrence H. Cohn, David H. Adams:
Cardiac Surgery in the Adult, Fifth Edition

INTRODUCTION

- The treatment of IMR has been an issue of continued debate for several decades. Myocardial revascularization alone has proven insufficient for cases of moderate to severe mitral regurgitation (SMR), with evidence of an equivalent degree of MR persisting in up to 77% of cases .The surgical treatment of the mitral valve for moderate to SMR has evolved with repair favored over replacement due to lower perioperative mortality .

INTRODUCTION

- Studies supporting performance of mitral repair cite superior operative morbidity and mortality rates, while proponents of mitral replacement cite improved long-term durability and correction of MR.

CTSN SMR TRIAL: STUDY DESIGN

THE CARDIOTHORACIC SURGICAL TRIALS NETWORK

- The CTSN SMR Trial was designed to evaluate the safety and efficacy of mitral repair versus replacement for SMR. Secondary outcomes included differences in survival, functional status, quality of life, length of stay, hospital readmission, recurrent MR, LV ejection fraction, adverse events and costs. Regardless of technique, all procedures were performed via full or partial sternotomy or via a right thoracotomy with the use of cardiopulmonary bypass. All mitral replacements were performed with complete chordal sparing. All mitral repair operations were performed with undersized complete rigid or semi-rigid annuloplasty rings with or without the need for CABG and subvalvular procedures to address the presence of chordal tethering

CTSN SMR TRIAL: RESULTS AND IMPLICATIONS

- The principal findings of this study were the demonstration of improved patient outcomes and cardiac function over baseline following the performance of surgical treatment for SMR. Specifically, these data demonstrate that performance of either mitral repair or replacement results in significantly improved LV remodeling and LVESVI, reduced incidence of recurrent MR, reduced NYHA functional class and increased patient quality of life.

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- Based on these findings, the null hypothesis was accepted that post-surgical LV remodeling as assessed by LVESVI is no different between mitral repair and replacement for SMR and remains improved overall. Second, while no significant differences in operative mortality were observed between treatment cohorts, the 1.6% mortality rate for mitral repair and 4.0% mortality rate for mitral replacement compare favorably to current national estimates.

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- Recent data from the Society of Thoracic Surgeons reports nationwide mortality rates following performance of mitral repair + CABG of approximately 5% (4.8% in-hospital mortality and 5.3% operative mortality) compared to 8% (7.8% in-hospital mortality and 8.5% operative mortality) for mitral replacement + CABG.

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- Beyond surgical mortality,one of the most surprising findings in these data was the revelation that mitral repair demonstrated a 32.6% rate of recurrent moderate and rarely severe SMR compared to the much lower rate of 2.3% among those undergoing mitral replacement at 12 months follow-up.These rates were more than expected based on reported literature that have documented much lower rates for the performance of mitral repair.

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- these data report on short- and mid-term results and do not, at present, provide results related to long-term durability or survival following mitral repair or replacement.
- These data do not provide results for patients with poor preoperative risk owing to *pulmonary hypertension or severe renal or hepatic disease*.
- In summary, the CTSN SMR Trial represents the largest prospective randomized clinical trial to date that addresses the relative benefits of mitral repair and replacement in patients with severe IMR within a multi-institution cohort of patients.

CTSN: PREDICTING RECURRENT MR AFTER MITRAL REPAIR

- This study analyzed 116 patients who underwent MV repair (96% of patients with SMR and 4% with moderate IMR at enrollment). A comparison of patients without MR recurrence to those with recurrent MR revealed that recurrence was associated with a higher frequency of basal aneurysm/dyskinesis, history of ventricular arrhythmias and lower frequency of New York Heart Association (NYHA) Class III and IV. Importantly, six patients underwent MV replacement before leaving the OR because repair did not sufficiently correct the MR.

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- As a result, a total of 76 patients experienced moderate/SMR or death over time (53 MR recurrences, 10 deaths and 13 combined MR recurrences and deaths).

CONCLUSIONS

- Severe IMR remains a significant clinical challenge in the modern surgical era that can be corrected with surgical mitral repair using restrictive annuloplasty or complete chordal sparing replacement techniques. Both surgical approaches improve LV remodeling with reduced LVESI at 12 months and are associated with similar 1-year mortality. Higher rates of recurrent MR after MV annuloplasty are more common among patients with preoperative evidence of basilar LV aneurysms and/or dyskinesis. For these patients, either MV replacement or repair techniques that address leaflet tethering may provide a more durable, long-term result

- **Thanks**