Predictors of Long Term Left Ventricular (LV) Function Following Surgical Correction of Mitral Regurgitation (MR).

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Background

- Mitral valve degeneration is the leading cause of mitral regurgitation (MR) in North America.[4]
- Impairment of mitral valve function causes chronic volume overload that is often masked by the favorable loading conditions in MR and unmasked by mitral valve surgery.[2]
- Chronic volume overload leads to compensatory ventricular remodeling and myocardial dysfunction which may become irreversible over time increasing morbidity and mortality. [1,4]
- Left ventricle systolic function and size has been shown to be strong predictors of long term cardiac function after surgery.[1,2,4]

Aims

- Identify comorbid conditions and / or preoperative echocardiographic measurements predictive of long term impairment or improvement in left ventricle function
- Identify postoperative medical management strategies that are associated with improved left ventricle function

Significance

- There is limited data assessing all the factors involved in long term ventricular function after mitral valve surgery.
- Our study is unique because it includes all surgical techniques for correction of mitral valve regurgitation.
- Identifying comorbid conditions, preoperative echocardiographic measurements, and postoperative management strategies predictive of subsequent LV performance could be used to improve the quality of care provided to patients with MR.

Methods

- Preoperative variables:
  - Medications Co-morbidities
  - Echocardiogram
  - Preoperative right and left heart catheterization

- Intraoperative variables:
  - Time on inotropic support
  - Inotropic support
  - PA pressure
  - Time to extubation
  - Final cardiac rhythm
  - Time on inotropic support

- Post operative course:
  - Postoperative Echo
  - NYHA class
  - Management strategies
  - Degree of residual mitral valve regurgitation

- Follow up:
  - Length of stay
  - Discharge medications

- Preliminary data and literature review

- Postoperative decrease in left ventricular ejection fraction, left ventricular end-diastolic dimension (LVIDd) and left atrial volume index was noted (Table 1). This is consistent with findings from other studies (Table 2).[5]
- The mean decreases in left ventricular ejection fraction in patients who had mitral valve repair was different from the mean decrease in patients who had mitral valve replacement (Table 1). This is inconsistent with findings from other studies which noted no difference or improvement in LV function following repair versus replacement.[4,5]
- Findings from related studies suggest that the Independent predictors of a lower postoperative ejection fraction include [1-5]
  1. The presence of preoperative atrial fibrillation, P value 0.05.
  2. NYHA class , P value 0.008.
  3. Preoperative ejection fraction, P value 0.001.
  4. Larger preoperative left heart dimensions, P value 0.001.[1-9]

Conclusions

- Ongoing study
- Assess differences between MV repair and replacement
- Larger and more diverse population
- Potentially expand study to include data from more providers and hospitals
- Compare to findings in the literature.

References