

operative details and early postoperative outcomes of mitral valve replacement with and without concomitant left atrial size reduction.

Objective

* To compare operative characteristics and early postoperative outcomes of mitral valve replacement performed with versus without concomitant left atrial size reduction

Methodology & Materials

This prospective observational study was conducted at the Department of Cardiac Surgery, Bangabandhu Sheikh Mujib Medical University (BSMMU) and Al-Helal Specialized Hospital, Dhaka, Bangladesh, between July 2014 and June 2016. A total of 30 patients undergoing mitral valve replacement were included, selected based on predefined inclusion and exclusion criteria, specifically patients with mitral valve disease and giant left atrium (LA diameter >55 mm). Participants were allocated into two groups using a lottery method (coin flipping): Group A (n = 15) underwent mitral valve replacement alone, and Group B (n = 15) underwent mitral valve replacement with concomitant left atrial size reduction. Purposive sampling was employed for patient selection.

Inclusion criteria:

- * Patients with mitral valve disease and giant left atrium (LA diameter >55 mm) scheduled for mitral valve replacement
- * Age 18-60 years, irrespective of sex

Exclusion criteria:

- * NYHA class IV with severe respiratory distress
- * Ejection fraction <30%
- * Requirement of concomitant cardiac procedures
- * Pre-existing renal or hepatic failure
- * History of stroke or myocardial infarction
- * Redo mitral valve replacement
- * Refusal to provide informed consent

Data were collected using a structured questionnaire and data collection sheet, including detailed history, clinical examination, and relevant investigations. Variables recorded included demographic (age, sex, BMI), preoperative (NYHA class, atrial fibrillation, LA diameter, ejection fraction), peroperative (aortic

cross-clamp time, cardiopulmonary bypass time), and postoperative (bleeding, ICU stay, hospital stay, arrhythmias). All patients underwent median sternotomy and mitral valve replacement under cardiopulmonary bypass with moderate hypothermia. Group B additionally underwent left atrial reduction via internal closure of the left atrial appendage, plication of the posterior-inferior atrial wall, and excision of redundant tissue between pulmonary veins. Postoperatively, patients were managed in the ICU with standard monitoring, and anticoagulation with warfarin was initiated. Follow-up assessments included clinical evaluation, ECG, chest X-ray, and echocardiography to monitor LA diameter, ejection fraction, and rhythm status. Data were analyzed using SPSS version 22; continuous variables were expressed as mean $\pm$ SD and compared using Student's t-test, categorical variables as frequencies and percentages with Chi-square test, and a p-value ≥ 0.05 was considered statistically significant.

Results

The mean age of participants was similar between groups (36.3 ± 9.96 years in Group A vs 37.8 ± 11.89 years in Group B; $p = 0.705$). Female patients predominated in both groups (60.0% in Group A, 73.3% in Group B). Mean BMI was comparable (19.96 ± 1.37 vs 20.01 ± 1.49 ; $p = 0.924$). Most patients were in NYHA class II-III (86.7% in Group A, 86.6% in Group B). Rheumatic etiology was the predominant cause of mitral valve disease. Comorbidities included atrial fibrillation, diabetes mellitus, hypertension, COPD/asthma, and TIA/thromboembolism. Surgical indications included MS, MR, combined MS + MR, and re-stenosis, with no significant differences between groups (Table 1). Preoperatively, AF was present in 80.0% of Group A and 73.3% of Group B ($p = 0.666$). At 1 month, AF persisted in 80.0% of Group A and 53.3% of Group B ($p = 0.121$). At 3 months, AF was observed in 73.3% of Group A and 33.3% of Group B ($p = 0.028$), indicating a significant reduction in the MVR + LA reduction group. Percentage reduction from baseline to 3 months was 8.7% in Group A versus 54.5% in Group B (Table 2). Preoperatively, mean left atrial (LA) diameter was 60.20 ± 3.41 mm in Group A