

# FREQUENCY OF EARLY ATRIAL FIBRILLATION IN POST MITRAL VALVE REPLACEMENT SURGERY

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## ABSTRACT

**Objective:** To determine the frequency of atrial fibrillation after mitral valve replacement surgery.

**Methodology:** This study was performed in cardiac surgery ward of Lady reading Hospital (LRH) Peshawar. It was a descriptive cross sectional study. Data was collected from 1.3.2014 to 28.02.2015. Statistical analyses were performed using SPSS version 14. Mean  $\pm$  SD were used for quantitative and Frequencies and percentages were used for categorical variables.

**Results:** Total 120 patients undergone through mitral valve replacement. Male patients were 48 (40%), Mean age of the study population was 46.20 years  $\pm$  9.14SD. Atrial fibrillation (AF) was observed in 45 (37.5%) patients. Post operative AF was similar between both gender and all ages.

**Conclusion:** Atrial fibrillation is common finding in patients undergoing Mitral valve replacement surgery and is not affected by age and sex

**Key Words:** AF, Coronary artery bypass grafting, Mitral valve replacement

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## INTRODUCTION

Atrial fibrillation (AF) is form of rhythm disturbance which affect 60 Lac People in US. AF is notorious for increased risk of stroke, peripheral thrombo embolism, cardiac failure and increase mortality<sup>1</sup>. In non valvular AF, annual risk of stroke is 3%–5%, which is even higher in valvular AF<sup>2</sup>.

Mitral valve is more often associated with AF as compared to other valvular lesions. Mitral valve disease is associated with structural changes in left atrium which leads to the development of AF<sup>3</sup>.

AF is very common after cardiac surgeries and is usually seen up to 50% patients after valvular surgery and 11-40 % after coronary artery bypass grafting (CABG)<sup>4</sup>. It is usually found in 2-3 day post operatively and associated with increased surgical complications, ICU and hospital stay and cost of treatment with increased mortality<sup>5</sup>.

The treatment of post operative AF is same as in other circumstance by rate control vs. rhythm control, cardio version and anticoagulation<sup>5</sup>. Post operative AF can be prevented by pre operative administration of beta blocker or amiodarone<sup>6</sup>.

This study was performed to find the frequency of post mitral valve replacement AF in our local setup which will help the cardiac surgeons to take measures

for prevention and to treat these patients properly and aggressively to reduce its complications.

## METHODOLOGY

This study was performed in Department of Cardiovascular Surgery, Lady Reading Hospital, Peshawar. It was a descriptive cross sectional study. Data was collected from 1.3.2014 to 28.02.2015 for a period of one year. Sampling technique was non probability consecutive sampling. Patients with both genders, age 20 to 65 years were included in the study. Patients already having atrial fibrillation as detected by electrocardiography, chronic obstructive pulmonary disease as diagnosed by FEV<sub>1</sub>/VC ratio less than 70% of predicted value, patients with creatinine more than 1.5 mg/dl were excluded from the study. The above mentioned conditions act as confounders and if included, introduce bias in the study results.

The study was conducted after approval from hospitals research and ethical board. All patients meeting the inclusion criteria were enrolled in the study through OPD after informed consent and were admitted in Department of Cardiovascular Surgery for further work up.

After history and examination, routine pre operative investigations like complete blood count, Renal function tests; random blood sugar, Hepatitis B, C and HIV screening and ECG were done in all patients. All patients undergone standard mitral valve replacement surgery

by cardiovascular surgeon having minimum of 5 years of experience in cardiac surgery. Postoperatively all patients were observed daily till discharge through ECG to detect atrial fibrillation. All the above mentioned information including name, age and sex were recorded in a pre designed proforma.

Statistical analyses were performed using SPSS version 14. Mean  $\pm$  SD were used for quantitative and Frequencies and percentages were used for categorical variables. Chi-square test was applied for analysis and  $P < 0.05$  was taken as significant.

## RESULTS

A total of 120 patients undergoing mitral valve replacement surgery were included in the study. Male patients were 48 (40%), Mean age of the study population was 46.20 years  $\pm$  9.14SD. Base line characteristics of study population are given in table 1. Patient's were divided into two groups on the basis of age equal or less than 50 years (group A) and more than 50 years (group B). Group A was having 70 while group B was having 50 patients. (Table 2)

AF in patients undergoing mitral valve replacement surgery was observed in 45 (37.5%) patients. Age wise distribution of AF shows that there was no significant difference of AF in younger patients as compare to older patients. (Table 2) Gender wise Atrial Fibrillation in patients after mitral valve replacement surgery shows that AF was similar between both groups. AF was found 39.5% in males as compared to 36.1 % in females ( $P=0.421$ ). (Table 3)

## DISCUSSION

AF in patients undergoing coronary artery bypass grafting surgery (CABG) is found with increase mortality in many studies<sup>7</sup>. Few studies are only available to see the effect of AF on long term survival in valvular surgeries patients<sup>8,9</sup>. Mariscalco and Engstrom reported that Post Op. AF is associated with reduced survival in post CABG but not after valvular surgery, whereas Filardo et al<sup>9</sup> found that AF reduces long term survival in post valvular replacement patients. Survival benefit is seen probably by reducing stroke rate and by prevention of tachycardia-related cardiomyopathy<sup>10</sup>.

Previous studies are performed mainly on post CABG patients to see incidence of AF<sup>11,12</sup>, limited studies report this complication after mitral valve surgery, and mostly done on double-valve surgery<sup>13</sup>. Maisel reported that incidence of atrial fibrillation (AF) is as high as 65%<sup>13</sup>. Some other studies showed that AF occurs in up to 40% patients after CABG, and 50% after valve replacements<sup>13</sup>, in up to 60% undergoing valve replacement plus CABG<sup>13,14</sup>, and 24% after cardiac transplantation<sup>14,15</sup>. We found that AF was present in 37.5 % of post MVR patients which is close to the findings noted in these previous studies.

Regarding gender distribution we found same frequency of AF in both male and female population, this fact is already proved by Rehman et al in their study<sup>16</sup>. Patients undergoing mitral valve repair or replacement, there are several risk factors for development of post operative. AF. These risk factors are advance age, COPD, digoxin use, hypertension and cardiac venting<sup>11</sup>. We

**Table 1: Baseline characteristics of study population**

Variables	Number (n)	Percentage (%)
Male sex	48	40
Age $\leq$ 50 years	70	58.3
Diabetes mellitus	18	15
Hypertension	36	30
Smoking	8	6.66
Mitral stenosis	20	16.66
Mitral regurgitation	100	83.33
Ejection fraction $\leq$ 50%	30	25
Patient need CABG	10	8.33

**Table 2: Age wise distribution of the patients**

Age group	Number of patients	Patients with AF	Percentage	P value
Group A	70	25	35.71%	0.82
Group B	50	20	40%	
Total	120	45	37.5%	

**Table 3: Gender wise distribution of atrial fibrillation**

Atrial fibrillation	Male	Female	Total	P-value
Yes	19 (39.5%)	26 (36.1%)	45 (37.5%)	0.421
No	29 (60.5%)	46 (63.9%)	75 (62.5%)	
Total	48 (100%)	72 (100%)	120 (100%)	

also found in our studies that advance age was little bit more prone to development of AF but it was not significant statistically.

Postoperative AF is a common complication after mitral valve surgery, even in patients with no previous history of AF and it is of course not incidental finding in post Op. patients but is a harbinger of recurrent AF.

### STUDY LIMITATION

The limitation of our study is small sample size. Our second study limitation is the selection of our patients. We selected all patients who were admitted for MVR irrespective of type of valve lesion. Finally pre operative left atrium size and left atrium volume may affect the outcome.

### CONCLUSION

Atrial fibrillation is common finding in patients undergoing Mitral valve replacement surgery and is not affected by age and sex

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### CONTRIBUTORS

NW conceived the idea, planned the study, and drafted the manuscript. I, AK and AM helped acquisition of data and did statistical analysis. RAK critically revised the manuscript and supervised the study. All authors contributed significantly to the submitted manuscript.