

Outcome of Balloon Mitral Valvotomy in Severe Mitral Stenosis admitted in Suretech Hospital Jamtha, Nagpur

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Abstract: Balloon mitral valvotomy (BMV) is a standard procedure for relief of severe mitral valve stenosis in eligible patients when mitral valve is pliable. This study retrospectively evaluated the success rates and periprocedure complications of BMV in severe mitral stenosis. 49 patients of mitral stenosis screened out of which 21 were eligible for the study. BMV was successfully completed in all 21 patients. Complication occurred in 1 patient of mild pericardial effusion. No other complication developed. This study suggests that BMV is a relatively safe procedure with a very less complication rate if done by experienced.

Keywords: Balloon mitral valvotomy BMV Mitral stenosis Rheumatic heart disease Accura balloon

1. Introduction

Percutaneous balloon mitral valvuloplasty (BMV) was introduced in 1984 by Inoue who developed the procedure as a logical extension of surgical closed commissurotomy. With increasing experience and better selection of patient, the immediate results of the procedure have improved and the rate of complications declined. When the reported complications of BMV are viewed in aggregate, complications occur at approximately the following rates: mortality (0–0.5%), cerebral accident (1–2%), mitral regurgitation (MR) requiring surgery (1.6–3%). These complication rates compare favorably to those reported after surgical commissurotomy (1, 2). Several randomized trials reported similar hemodynamic results with BMV and surgical commissurotomy (1, 2).

So, we conducted this study - audit to evaluate BMV procedure success rates and its immediate complications.

2. Aims & Objectives

This audit study was designed to evaluate the immediate BMV procedure results and periprocedural complications in symptomatic (NYHA II to IV) patients having moderate to severe mitral stenosis admitted in Suretech Hospital Jamtha, Nagpur.

3. Methods & Material

We conducted a retrospective analysis of patients undergone balloon mitral valvotomy at Suretech Hospital.

Patients having moderate to severe mitral stenosis with pliable mitral valve in NYHA class II to IV admitted in Suretech Hospital from 01 January 2021 to 30 October 2022 were included in the study.

Severe or moderate mitral stenosis was defined as mitral valve area equal or less than 1.5 sq. cm by planimetry method of 2D echocardiography.

Mitral valve was defined as pliable when its Wilkins score is less than or equal to 10.

A successful BMV was defined as an uncomplicated procedure yielding a final mitral valve area of $> 1.5 \text{ cm}^2$ with at least 25% increase in valve area and post-valvuloplasty mitral regurgitation of $< 3+$.

Exclusion

Wilkin's score more than 10.

Mitral valve area more than 1.5 sq. cm

Left atrial clot.

Moderate to severe mitral regurgitation ≥ 3 grade.

Associated moderate to severe aortic stenosis or regurgitation.

Endocarditis.

4. Technique

Echocardiography was done by GE T9 machine. BMV was done in Siemens cath lab.

In all patients, access was taken from femoral vein. Standard antegrade technique of mitral valve dilation was used.

Transeptal puncture was done by Brockenbrough needle.

Balloon mitral valve dilation was done using Accura balloon.

Balloon diameter was selected using height of the patient [diameter = $0.1 \times \text{height (cm)} + 10$].

Echo was done before and after balloon mitral valve dilation to evaluate and compare pre and post BMV mitral valve area, mitral regurgitation and pericardial effusion.

Mitral valve gradients were noted using catheters in left atrium and left ventricle pre and post BMV.

Any post procedure access site hematoma, cerebrovascular accident and/or death were noted.

5. Results

49 patients of mitral stenosis screened out of which 21 were eligible for the study.

Volume 12 Issue 5, May 2023

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Mean age of the patient was 32 years. Males were 12 and females were 9.

BMV was successfully completed in all 21 patients.

Complication occurred in 1 patient of mild pericardial effusion. No other complication developed.

Table 1: Showing mitral valve gradient (MVG) and area (MVA) before and after BMV.

	Pre BMV	Post BMV
mean MVA	0.9 sq. cm.	1.8 sq. cm
mean MVG	10 mmHg	2 mmHg

Table 2: Showing complications occurred during the procedure.

Complications	Number of patients
≥ grade 3 Mitral Regurgitation	0
CVA	0
Access site hematoma	0
Pericardial effusion	1
Death	0

Mild pericardial effusion occurred in one patient because of left atrial trauma which didn't cause pericardial tamponade and procedure was successfully completed in that patient. All patients were discharged the next day of procedure.

6. Discussion

In recent years, balloon mitral commissurotomy has become the treatment of choice in many patients with rheumatic mitral stenosis. The main target of this procedure is to resolve the stenotic mitral orifice without causing extensive damage to the commissures, leaflets and subvalvular apparatus, thus leading to excessive mitral regurgitation. The most common serious complication is haemopericardium, with an incidence of 0 to 2.0% (3). Severe MR is another important and common serious complication after BMV (4). Many studies have shown that acute procedural results, including final MVA and post - procedural MR, independently predict the long - term outcome after BMV (5). When severe mitral regurgitation occurs after BMV, prosthetic mitral valve replacement is required immediately. Most mild but significant cases of MR are caused by commissural split and do not require surgery.

7. Study Limitations

The participants in this study were all suitable for MBV, and we did not include patients who had a borderline Wilkins score >10

8. Conclusion

This study suggests that BMV is a relatively safe procedure with a very less complication rate if done by experienced hands.

References

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