

# Rheumatic Heart Disease Post Mitral Valvotomy Paves the Way to Safe Motherhood

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**Abstract:** *The postpartum period is a critical time for reassessing the patients with rheumatic heart disease (RHD) who have undergone balloon mitral valvotomy. This case study presents the management of a 25-year-old pregnant woman with a history of rheumatic heart disease and severe mitral stenosis, who underwent balloon mitral valvotomy nine years ago. At 31+4 weeks of gestation, she presented with bleeding and a posterior low-lying placenta. Despite being asymptomatic, her non-compliance with antibiotic prophylaxis led to complications, including heart failure postpartum. A multidisciplinary team ensured a successful emergency caesarean delivery and stabilized her condition. This study highlights the importance of vigilant, multidisciplinary care for pregnant women with cardiac conditions and the need for timely interventions to reduce maternal and fetal morbidity. Following an emergency caesarean section in view of antepartum hemorrhage, the patient developed symptoms of left heart failure on postoperative day 4. Patient was managed with medications and close monitoring. As per cardiology team, repeat balloon mitral valvotomy was planned at six weeks postpartum. This case highlights the importance of vigilant, multidisciplinary care throughout pregnancy and the postpartum period for women with RHD, as well as timely interventions to reduce maternal and fetal morbidity and mortality. Repeated regular cardiology evaluation and antibiotic prophylaxis in antenatal period are crucial. Early detection and management of complications like pulmonary edema, arrhythmias, and heart failure are essential to ensure positive outcomes for both mother and child.*

**Keywords:** Rheumatic Heart Disease, Mitral Stenosis, Balloon Mitral Valvotomy, Prenatal counselling, Postpartum care

## 1. Introduction

The risk of adverse maternal and fetal outcomes increases with the presence of valvular disease in pregnant women, thus posing a great challenge to obstetricians. Mitral stenosis, is one of the most common valvular disease seen in pregnancy. Prevalence of rheumatic heart disease with severe mitral stenosis is higher in developing countries accounting for 40–50% of all cardiac diseases seen in pregnancy. The normal cardiovascular changes that occur during pregnancy are well known which includes increased plasma volume, heart rate and cardiac output. Intravascular volume begins to rise early in the first trimester reaching its peak by third trimester. There is 30–40% increase in preload early in pregnancy and 10–20% increase in heart rate later in pregnancy thus increasing cardiac output by 30–60%.<sup>2</sup>

There is also decreased systemic vascular resistance with a mild decrease in systolic blood pressure. Predictably, these changes are not well tolerated in patients with mitral stenosis due to restricted left ventricular inflow and resultant increases in left atrial and pulmonary pressures. Conversely, in patients with mitral regurgitation, the increase in intravascular volume (preload) is offset by the decrease in systemic vascular resistance (afterload) and hence is generally well tolerated. The care of pregnant women with severe mitral valve disease requires an experienced, multidisciplinary team comprising obstetricians, cardiologists and anaesthesiologists at tertiary care centre.<sup>3,4,5</sup> Ideally, care should begin with preconception counselling, assessment and optimization of haemodynamic status, and should continue through gestation, labour, delivery and postpartum.

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## 2. Case Report

A 25 Year old G2P1L1 at 31<sup>+4</sup> weeks gestation referred from Primary Health Centre, presented in high risk pregnancy clinic, department of obstetrics and gynaecology, MMIMSR, a rural tertiary care centre with complaint of vaginal bleeding for 1 day, not associated with pain lower abdomen. Patient had past history of rheumatic heart disease with severe mitral stenosis (NYHA class III) 9 years back, following which she underwent balloon mitral valvotomy via right femoral approach since then patient was taking injection benzathine penicillin 1.2 million units every 3 weekly (no documents available). Patient was non-compliant and had stopped penicillin one year back since patient was asymptomatic.

On examination - Patient was calm, conscious, well oriented to time, place and person with PR - 104 per minute, BP- 106/72 mmHg, Respiratory system examination – unremarkable, CVS examination - Normal heart sounds heard with high-pitched mid diastolic murmur best appreciated at apex, On per abdomen examination - Uterus is 32 weeks size, relaxed, non tense, non tender with fetal heart sound- 132 bpm, regular. On per speculum examination- os closed, bleeding per vaginum(++), Non stress test- reassuring

All baseline investigations were reported within normal limits. Bedside Ultrasonography confirmed posterior low lying placenta.

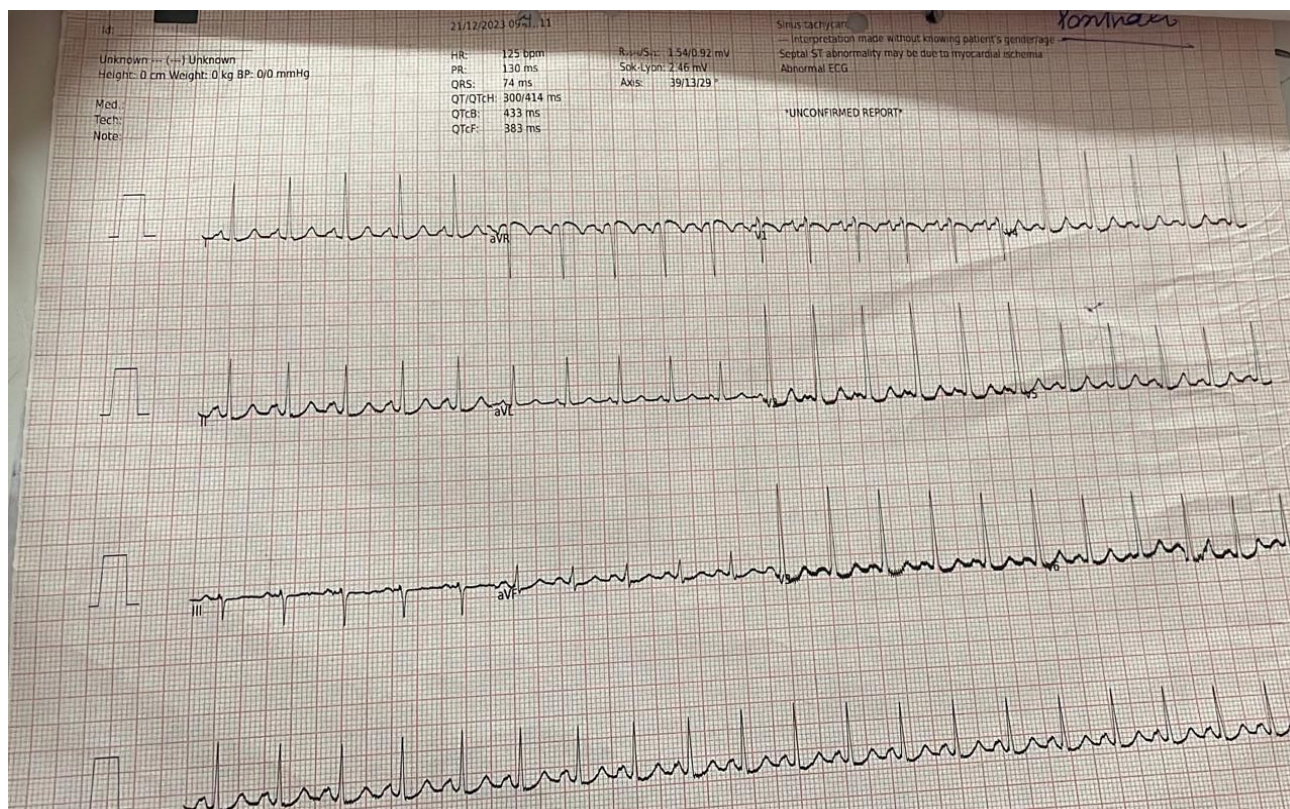
Patient was managed conservatively as per Johnson and McAfee regime. Resuscitative measures taken and steroid

cover for fetal lung maturation was initiated. On Cardiology consultation patient was initiated on tablet Metoprolol 25 MG OD and injection benzathine penicillin 1.2 million units every three weekly. ECG showed sinus rhythm with 1:1 AV conduction with bifid P waves with normal axis with no obvious ST changes. On echocardiography: severe mitral stenosis (with restenosis and area of MV = 1.2 cm<sup>2</sup>) with normal LV systolic function with anterior mitral leaflet thickening with AV valve thickening.

An emergency LSCS under high risk consent for cardiac dysfunction was performed in view of excessive bout of bleeding per vaginum due to posterior low lying placenta at 33<sup>+4</sup> weeks gestation. Patient delivered a male baby of weight 1.8kg and APGAR score of 7 and 9. Baby stayed in NICU for 2 days for observation. Patient was hemodynamically stable for first 72 hours.

On post-operative day 4, patient complained of cough with mild expectoration (NYHA class III) and shortness of breath. Symptoms aggravated more in lying down position and relieved on sitting and standing.

Urgent cardiology opinion with ECG and echocardiography was performed. Patient was started on tablet Metoprolol 25 MG one tablet once daily, Tab Torsemide 10 MG one tablet once daily and repeat dose of injection benzathine penicillin 1.2 million units was given. Patient is planned for repeat balloon mitral valvotomy at 6 weeks postpartum. Patient was discharged on post operative day 14 with symptoms resolved with further follow-up after 1 week in postnatal clinic and cardiology department.



ECG: sinus rhythm with 1:1 AV conduction with bifid P waves with normal axis with no obvious ST changes

### 3. Discussion

An early and specialised multidisciplinary approach of a cardiology and obstetrics team in the antepartum, peripartum and postpartum period in a tertiary care centre is essential for the management of pregnant women with rheumatic heart disease for safe maternal and fetal outcome. Due to high prevalence of rheumatic heart disease with mitral stenosis, the complications associated such as pulmonary edema, sustained arrhythmias, stroke, cardiac arrest, high maternal morbidity and mortality cannot be neglected.

Timely intervention by early detection of symptoms associated with complications and their treatment can save many a lives. Limitation of physical activity (exercise), medical management by beta- blockers, calcium channel blockers, digoxin, heparin, hydralazine, aspirin and surgical management by percutaneous balloon mitral valvuloplasty in postpartum period may be required in certain cases. Prenatal counselling of patients with NYHA class III and IV will be highly beneficial which is often neglected in India. Our case is rheumatic heart disease with severe mitral stenosis post balloon mitral valvotomy, NYHA Class III or modified WHO class IV where pregnancy is contraindicated and MTP is advised given the patient has reported in preconception period or first trimester. The purpose of this case study is to illustrate the importance of multidisciplinary management and preconception counseling for pregnant women with rheumatic heart disease to ensure positive maternal and fetal outcomes.

### 4. Conclusion

Severe mitral stenosis with NYHA class III/IV can lead to one of the dreaded complications in pregnancy and postpartum period with underscored preparedness of obstetrician. Vigilant antenatal, intranatal, postpartum care and discharge delayed atleast to postoperative day-10 can pave the way to safe motherhood. Multidisciplinary approach with a team of obstetrician, cardiologists, anaesthesiologists, neonatologist and skilled nursing staff is mandatory to prevent adverse maternal and fetal outcomes. Prenatal counselling is essential for educating the couple regarding right time of conception and anticipated complications of cardiac disease in pregnancy.

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