

WORLD CONGRESS ON RHEUMATIC HEART DISEASE

2-4 November 2023 • Abu Dhabi



Submission Id: 99

Title: MATERNAL AND FETAL OUTCOMES OF PER CUTANEOUS BALLOON MITRAL VALVULOPLASTY -IN RHEUMATIC HEART DISEASE(PBMV) DURING PREGNANCY

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Background & Aims: The incidence of cardiac diseases during pregnancy is 01-03%. However, in developing countries, Rheumatic Heart Disease (RHD) remains the most common of them averaging up to 69%. The maternal mortality rate is as high as 07% and morbidity is around 30% during pregnancy. The adverse maternal event rate was as high as 13.8% when there was no intervention done. Timely cardiac intervention in severe valvular heart disease improves maternal as well as fetal outcomes. We studied immediate maternal and fetal outcomes of women undergoing PBMV (Per cutaneous Balloon Mitral Valvulotomy) during pregnancy

Methods: This retrospective, single centre, observational study which was conducted between January, 2008 and March, 2023. A total of 192 pregnant patients were included in this study which required PBMV during their gestation period due to critical or severe MS with pulmonary hypertension. Detailed clinical history and examination for symptoms class, serial echocardiography and obstetric ultrasounds were performed for all patients. The patients on Warfarin were changed to unfractionated Heparin at 06 to 12 weeks of gestation after counselling and informed consent. Warfarin was restarted at 12 weeks with switch over to Heparin at 36 weeks. Standard Inoue technique was used for the PBMV. Radiation protection measures were taken to avoid fetal irradiation. Maternal adverse outcome was defined as Sudden Cardiac Death (SCD), new onset arrhythmia, thrombo-embolic event, and hospitalization for other cardiac reasons or interventions. Fetal adverse outcomes were defined as fetal death, pre-term birth, and low birth weight.

Results: The mean age of study population was 26.7 years. Mean gestational age was found to be 25.4 weeks. Majority of patients (57.20%) were in NYHA II. 15 (07.81%) patients had new-onset atrial fibrillation. All the patients had significantly increased pulmonary artery hypertension (mean PASP by TR jet >40 mm Hg). Mean Wilkins score was 8.5 foetal viability study was done in all case before & after procedure. Procedure was successful in 182 patients (94.79%). Six patients (3.1%) developed significant commissural Mitral regurgitation (MR) and managed conservatively. Two patients (1.04%) complicated with rupture of anterior mitral leaflet required emergency mitral valve replacement. There were no immediate adverse fetal outcomes. The mean Mitral Valve Area (MVA) was found to be 0.8 cm² in preprocedural period, which increased to 1.4 cm² (p < 0.05). Before BMV, the mean peak Trans-Mitral Gradient (TMG) was found to be 27.33 which decreased to 14.13 after PBMV. Similarly, the mean gradient fell down from 17.80 mm Hg to 07.90 mm Hg which showed efficacy of the procedure.

Conclusions: Women with critical MS carries a high risk for both mother and foetus. The optimal management of RHD during pregnancy requires multimodality approach by Obstetrician and Cardiologist for preconception counselling, early diagnosis, recognition of deterioration of symptoms, and timely cardiac interventions. PBMV was found to be a safe interventional modality to achieve good maternal and fetal outcome with no significant rate of complications even in severely critical patients. Since this study followed up pregnant women up to immediate postpartum period, however, the long term follow up of such patients could not be documented, which is a limitation of this study.