

Case Report

CLOSED MITRAL VALVOTOMY IN PREGNANCY – A SAFE AND COST EFFECTIVE PROCEDURE

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ABSTRACT

Rheumatic mitral valve stenosis contributes to significant morbidity in pregnancy. The management of a patient with mitral stenosis is a subject of debate with regards to the optimal type of treatment and the time of intervention. We report here two patients with mitral stenosis who did not respond to medical therapy underwent successful closed mitral valvotomy with complete resolution of their symptoms. Closed mitral valvotomy during pregnancy is feasible, safe and cost effective in comparison to balloon mitral valvotomy or open mitral valvotomy/replacement. There is marked symptomatic relief, along with excellent maternal and fetal outcome.

Key Words: Mitral Stenosis, Pregnancy, Closed Mitral Valvotomy

INTRODUCTION

Pregnancy is associated with significant hemodynamic changes in the maternal cardiovascular system which increases the workload of the heart. Rheumatic valvular lesions constitute over 90% of all cases of organic heart disease complicating pregnancy. Mitral stenosis is by far the most common individual lesion. Rheumatic heart disease, while on the decline in developed countries, continues to be a major health problem in the developing world (Vijaykumar *et al.* 1994). The patient with cardiovascular disease who is well in the non-pregnant state may have cardiac failure as the demand on the cardiorespiratory system increases during pregnancy (Presbitero *et al.* 1996). Complications of mitral stenosis during pregnancy may cause acute pulmonary edema, thrombo-embolism, and congestive cardiac failure and put the lives of both mother and fetus at risk. We present here two cases of pregnancy complicated by rheumatic heart disease that were effectively and timely operated thereby preventing further morbidity from this disease through their pregnancy. Both patients hailed from a low socio-economic background with meager resources.

CASES

Case 1

A 20 year old female with 17 weeks of pregnancy, admitted in Obstetrics & Gynecology department with the complaints of dyspnea (NYHA Class IV) since last 10 days. She had features of congestive cardiac failure. She was a known case of rheumatic heart disease since last 2 years and was having progressive symptoms. She was on antifailure drugs (digoxin, diuretics) and had stopped treatment 2 months ago. She also had taken anti tubercular treatment one year back.

General examination revealed a breathless patient with a blood pressure of 100/60 mmHg and pulse rate of 110/min. Chest auscultation showed bilateral crepitations, and on cardiovascular examination there was a loud S2 and a middiastolic murmur at the apex.

Her routine blood examinations were normal except a microcytic hypochromic anemia. Echocardiography showed severe mitral stenosis (mitral valve area = 0.7/1.0) with severe tricuspid regurgitation and severe pulmonary artery hypertension.

Patient was transferred to CTVS department. Closed mitral valvotomy via left anterolateral thoracotomy was done and mitral valve was dilated up to 3.5 cm using Tubb's dilator. Patient was shifted back to

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Obstetrics & Gynecology department and she had improvement in symptoms in antenatal period. She delivered a normal fetus at term.

Case 2

A 26 year old female patient with 26 weeks pregnancy (G₃P₂₊₀) was admitted in Obstetrics & Gynecology department with the complaints of dyspnoea on exertion with cough and expectoration for the last 2 months. She was a known case of rheumatic heart disease since last 7 years and was under the care of the cardiology department. Her routine blood examination was normal except a slightly raised bilirubin level. Her Echocardiography showed severe mitral stenosis (mitral valve area 0.5/0.6 and valve score was 9/16) , trivial mitral regurgitation, moderate tricuspid regurgitation and pulmonary artery hypertension. Patient was referred to CTVS department for worsening of symptoms despite adequate medical treatment. She underwent closed mitral valvotomy via a left anterolateral thoracotomy incision and mitral valve was dilated up to 3.25 cm using Tubb's dilator. She underwent an ultrasound on the first postoperative day to assess fetus, which was normal.

DISCUSSION

In the west, several reports of valvotomy performed during pregnancy had earlier appeared. However, the published experience of each of these authors was limited (Marshall and Pantridge 1957).

More recently, the role of balloon mitral valvotomy in pregnancy complicated by rheumatic heart disease was studied by Oto *et al.*, (Oto *et al.* 1997). Percutaneous balloon valvuloplasty of the mitral valve showed to be a safe and effective alternative to surgical therapy if medical management is unsuccessful.

There are conflicting reports about the optimal management of these patients either by percutaneous interventional techniques or by open or closed cardiac surgical procedures (Vosloo and Reichart 1987 , Mishra *et al.* 2001). Economic concern in developing countries is also a factor in determining the most cost-effective and safe protocol for the management of these patients (Kasturi *et al.*, 2004).

While balloon mitral valvotomy is associated with relatively less trauma compared to closed or open heart procedures, its routine use is restricted in the developing world by its limited availability and the cost. The relatively limited duration of freedom from symptoms due to early restenosis, coupled with the risk of radiation hazard restricts its use in the first trimester. The major advantage of balloon mitral valvuloplasty is that it can be performed under local anaesthesia. There is always the possibility of an emergency surgical intervention in the event of failure of the interventional procedure.

The open cardiac surgical procedures in the form of either an open mitral valvotomy or mitral valve replacement are associated with a higher incidence of maternal morbidity, mortality, as well as fetal loss. A maternal mortality of up to 2.9% and fetal loss as high as 35% have been reported. Subbarao *et al.*, in their study of 51 patients, reported only a single case of fetal loss (1.96%), but no maternal death (Kasturi).

Closed mitral valvotomy is one of the oldest modern heart surgeries having been around for decades. Lots of papers support its simplicity, high efficacy, lower cost and excellent long term results, even in pregnancy (Pavankumar *et al.* 1988, Tütün *et al.* 2003, John *et al.* 1983).

We conclude that in a setting like India with high prevalence of rheumatic heart disease complicating pregnancy, a low socio-economic status of most patients and poor access to facilities, procedures like Interventional cardiology or open heart procedures have a limited option, while closed mitral valvotomy is a relatively safe and cost effective option.

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