

# Percutaneous Transvenous Mitral Commissurotomy in 71 Years Old Woman with Mitral Stenosis- A Case Report

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## Key Words:

PTMC, Mitral  
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## Introduction:

Rheumatic mitral stenosis (MS) is a progressive disease and without treatment it carries significant mortality and morbidity. The mitral valve (MV) is the most frequently affected valve in chronic rheumatic heart disease. It is solely affected in 25% and about 40% have combined mitral stenosis and mitral regurgitation (MR), multivalve involvement is seen in 38% of MS patient.<sup>1</sup> All symptomatic patients should undergo intervention to improve cardiac function as well as to prevent complication.

Inoue K and colleagues were the first to perform percutaneous transvenous mitral commissurotomy (PTMC) in 1982. Since then PTMC became a standard procedure to help patients with MS favorable for it and tends to delay the need for MV replacement for about ten years or more.<sup>2,3,4</sup> PTMC is of maximum benefits in patient with pliable mitral valve, fused and restricted commissures without calcification or fibrosis assessed by using Wilkins criteria. In general, patients with a Wilkins score of <9 and less than moderate mitral regurgitation has the best outcomes, although many patients have benefited from PTMC despite higher valve scores.<sup>5</sup>

Although reports regarding safety and efficacy of PTMC in older children and young adult are available but there are limited data about PTMC in elderly people. We have done PTMC

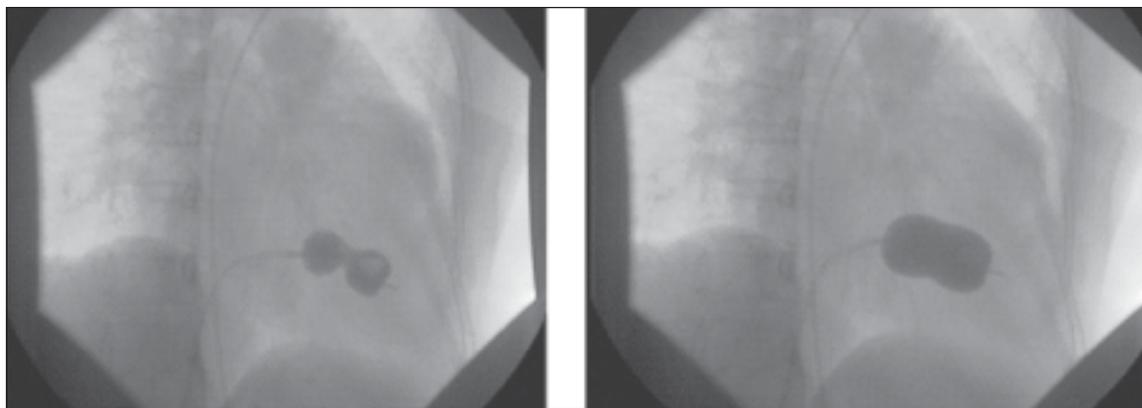
successfully in a 71 years old female which may be the first reported case in Bangladesh.

## Case:

A 71 year-old woman with known mitral stenosis (MS) admitted on 19.01.2013 in National Institute of Cardiovascular Disease (NICVD), Dhaka with history of palpitation and dyspnea on exertion for several years. On examination, her blood pressure was 100/70 mm Hg and her heart rate was 72 per minute, irregular. JVP is raised with absent a wave. There was a tapping apex beat, palpable P<sub>2</sub> and a diastolic thrill over the apical area. The 1st and the pulmonary component of the 2nd heart sounds were loud, and a low-pitched, localized, mid diastolic murmur of grade 4/6 was heard over the apical area. Total leukocyte count was 10400/mm<sup>3</sup>, erythrocyte sedimentation rate 18 mm in 1st hour, hemoglobin 10.8 gm/dL, C-reactive protein negative, anti-streptolysin O (ASO) titer <200 IU, bleeding time 3.15 minutes, clotting time 5.45



Fig.-1: MVA in planimetry



**Fig.-2:** *Inflated balloon during PTMC*

minutes, prothrombin time was normal. In ECG heart rate was 80/min with atrial fibrillation. Chest X-ray showed straightening of the left cardiac border, widen angle of carina, double counter right border. Echocardiography revealed severe mitral stenosis due to chronic rheumatic heart disease with mitral valve area (MVA)  $0.9\text{cm}^2$ , mildly dilated left atrium (44 mm), with pulmonary artery systolic pressure (PASP) 41mm Hg. Doppler studies showed a peak mitral valve gradient (MVG) 21mm of Hg. Trivial MR, moderate tricuspid regurgitation, normal left ventricular (LV) size with ejection fraction (EF) 63%, no left atrium (LA) thrombus, and mitral valve Willkin's score was 7. Coronary angiogram (CAG) was done before PTMC and was found normal epicardial coronary vessel. PTMC was done successfully through right femoral vein approach. Left atrial pressure fall down from 38/18/25 mm of Hg (systolic/diastolic/mean) to 22/10/15 mm of Hg (systolic/diastolic/mean). Before PTMC aortic pressure was 100/80/90 mm of Hg (systolic/diastolic/mean) after 110/85/95 mm of Hg (systolic/diastolic/mean). Whole procedure and the postoperative period were uneventful. Patient was discharged on 4<sup>th</sup> postoperative day and followed up after 5 months. She had no palpitation and shortness of breath. Follow up echocardiography showed MVA-1.8-2.0  $\text{cm}^2$  with trivial MR. MVG 6.07mm of Hg PASP 36 mm of Hg. No vegetation or thrombus. LV systolic function was good.

#### **Discussion:**

Although once rheumatic fever and its consequences were the major cause of valvular

heart disease in the developed world, this disease has become exceedingly rare today. Now it is predominantly a disease of developing country.<sup>5</sup>

The medical therapies for patients with MS in sinus rhythm are relatively limited. AF commonly accompanies MS and is more related to age than to stenosis severity.<sup>6</sup> MS is a mechanical obstruction to forward flow; the only definitive therapy is mechanical relief of this obstruction. There are three procedures for effective relieve of such obstruction. These are PTMC, surgical commissurotomy, and mitral valve replacement. Because clinical trials have found PTMC to be superior to closed surgical commissurotomy, the latter procedure has been largely abandoned.<sup>7,8</sup> Successful PTMC is usually defined as a postprocedure mitral valve area of  $1.5\text{ cm}^2$  with no more than moderate mitral regurgitation. In fact, postprocedure mitral valve area is usually close to  $2.0\text{ cm}^2$  in many reported studies.<sup>9,10</sup> Benefits of PTMC are sustained in a majority of the patients on long-term follow-up.<sup>9</sup>

Though there is no age limit for PTMC but favorable outcome is observed in younger age group.<sup>10</sup> This may be due to prohibitive valve score for BMV/CMV and associated co-morbid conditions.<sup>11,12</sup> But elderly patients are promising for PTMC for several reasons. In developing country like Bangladesh, the need for treatment of severe mitral stenosis arising more frequently in the elderly; these patients often have associated cardiac or extra-cardiac diseases which might require surgical

intervention, but in some this course of action may be contra-indicated. The technique of PTMC is no different for elderly patients, but the procedure is often more of a technical challenge. Tortuous iliac vessels, huge atria, and distorted cardiac anatomy combine to make left atrial access more hazardous, while subvalvar disease and heavy valvar calcification test the self positioning capability and toughness of the Inoue balloon.

Immediate and mid-term results of PTMC were assessed in 75 patients aged >70 years by B. Iung and colleagues. PTMC in the elderly results in moderate but significant improvement in valve function at an acceptable risk; although subsequent functional deterioration was frequent. PTMC was useful and only palliative treatment in those patients.<sup>13</sup>

Sutaria and colleagues describe long term outcome for elderly patients undergoing PTMC at one high volume UK centre. They found PTMC was a safe and useful palliative procedure in elderly patients who are unsuitable for surgery.<sup>14</sup> According to Hildick-Smith et al the long term outcome of PTMC in elderly people is also reasonable and a moderate increase in mitral valve area can be achieved at low procedural risk and the subsequent risk of re-stenosis is low.<sup>15</sup>

Frederico de M R et al in their case report from Brazil showed 70 years male with mitral stenosis and pulmonary fibrosis developed sepsis after PTMC which was also managed successfully.<sup>16</sup>

In our case, the valve morphology was very suitable for PTMC. Patient had no other comorbid conditions and her CAG was also normal. So the outcome was very favourable.

### Conclusion:

PTMC has the advantages of shorter hospitalization and lower invasion for the patients compared with surgery, therefore PTMC is an effective treatment in both elderly and young groups. Elderly patients with severe mitral stenosis have higher risk of PTMC and are needed discreet strategy.

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